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Persuasion Strategies: Canadian Campus Fossil Fuel Divestment Campaigns
and the Development of Activists, 2012–20

by

Milan Prazak Ilnyckyj

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Abstract

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Activists, 2012–20

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Starting in July 2012, the climate change non-governmental organization 350.org proliferated the idea of fossil fuel divestment campaigns at universities. They provided a “campaign in a box” with a common demand for divestment from the 200 corporations with the largest fossil fuel reserves over five years and a standard set of tactics, then supported individual campaigns largely by shaping the overall media narrative. Campaigns were launched across Canada with the strategic objectives of persuading universities to divest, delegitimizing the fossil fuel industry in the eyes of the public and decision makers, and recruiting and developing a new cadre of climate change activists. Using the contentious politics theoretical framework, this dissertation provides an anatomy of the campus fossil fuel divestment (CFFD) movement, including the political opportunity structure in which it arose, the mobilizing structures campaigns used to organize labour and make decisions, and the activist repertoires they employed. My chief research question is how involvement in the CFFD movement influenced the political beliefs and behaviours of activists. Based on my interviews with organizers in Canadian campaigns, a review of the journalistic media and published scholarship on divestment, and social media monitoring of campaigns, I conclude that the main effect of

the CFFD movement on activist beliefs was to differentially socialize them into climate justice (CJ) and CO₂-energy (CO₂-e) worldviews. These differ in their account of the root causes of climate change, and most notably in the political project which they call for in response. For CJ advocates, climate change is one manifestation of profound global injustices including colonialism and racism. Eliminating the problem of climate change thus requires eliminating those causes, and thus a radical global programme of political and economic reform. CO₂-e advocates question whether the issue linkages at the heart of the CJ strategy are analytically convincing and, more importantly, part of a sound strategy for avoiding the worst projected effects of unconstrained climate change. While the CJ worldview has helped overcome some of the emotional and motivational problems that block effective climate action, it only speaks to a limited subset of the population that embraces the progressive assumptions behind it. Producing a sufficient coalition to enact effective climate change policies and keep them in place requires support from non-progressive flanking coalitions who share an interest in climatic stability but do not embrace the rest of the CJ agenda.

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Acknowledgements

Land recognition

The cultural norm in Toronto and Canada is increasingly to acknowledge the prior Indigenous presence in what is now called Canada. It feels most appropriate and respectful to begin with the University of Toronto's land recognition and then provide some personal context.

The Land Acknowledgement Statement reads:

I (we) wish to acknowledge this land on which the University of Toronto operates. For thousands of years it has been the traditional land of the Huron-Wendat, the Seneca, and most recently, the Mississaugas of the Credit River. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.

The protocol for using the statement is:

Statement of Acknowledgement of Traditional Land to be used at specific university ceremonies such as Convocation, Groundbreakings, and Building Openings. This statement was developed

in consultation with First Nations House and the Elders Circle, some scholars in the field, and senior University officials. The statement is applicable to all three campuses — UTM, UTSC, and St. George — as well as the Koffler Scientific Reserve at Jokers Hill, the Institute for Aerospace Studies (UTIAS), and is available to all members of the University community for use at University events as appropriate.

I performed the research for this dissertation primarily beginning with the approval of my research protocol in August 2017, though the project is based upon my research during the earlier years of my PhD during which I lived at Massey College. Massey College is on land that is part of the Treaty Lands and Territory of the Mississaugas of the Credit. During my time in Toronto I have lived between College and Ossington, Bloor West Village, the U of T campus, the Harbord and Bathurst neighbourhood, and North York near Glencairn. Those are the places I have lived during my coursework and employment as a teaching assistant, the preparation of the research project with a theoretical framework and ethics protocol, the interviewing and data collection, data analysis, literature review, and writing up. I am grateful to all the Indigenous peoples who have shared the land where I lived during this project as well as where I have lived before in Vancouver, Oxford, and Ottawa, and to all the Indigenous people who have been fearless and selfless in defence of the Earth.

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This program has been immensely personally difficult for me, and I would not have made it through without the support of my family, especially my mother, and my committee, especially Professor Vipond and Professor Carens. I would never have gotten through the most painful parts alone, so finishing the PhD is a testament to the support and kindness that I have received.

The dissertation is dedicated to my parents, who shaped my life in a way that made doing this research possible, and who supported me with unwavering kindness and generosity all thorough the long process of the PhD.

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My stellar committee helped me develop the initial manuscript, based on my thoughts and what I had learned in my interviews, into a fully realized document which speaks to areas of scholarly interest as well as activist strategy. As my supervisor, Professor Robert Vipond quarterbacked the committee and the project with great competence and sagacity. I am grateful to Professor Andrea Olive and Professor Kate Neville for their valuable contributions to the early development of this project. Professor Joseph Carens rescued this project during one of its most unpromising stages, and also has my gratitude as an ever-candid source of good sense and guidance, beyond academia and into in the realm of human relations. Extensive meetings and discussions with Professor Vipond and Professor Carens substantially reshaped this text and helped make it disciplined in discussing side issues and well structured for the reader. Professor Steven Bernstein I first remember from my assigned reading during my M.Phil in Oxford, and at the University of Toronto has been ever-generous in his guidance and assistance. My thanks as well to my internal and external examiners, Professor Matthew Hoffmann and Professor Robert O'Brien.

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Preface on positionality

Nobody's political ideas arise from nothing or from pure thought alone, and there is a noteworthy trend in scholarship — especially on social justice — to include a statement on the author's positionality based on their biography and experiences. Explaining my background will help the reader understand how I came to this topic and these conclusions.

I will provide that background here in part to emphasize that my aim is not to write a polemic, but rather an empirically-grounded description of what occurred accompanied by a statement of my normative position which is justified in detail through argument and references to sources. The hope is that even for those who disagree with me this critique will provide a mechanism for refining their own thinking. Nobody knows how to solve this problem, and we cannot run multiple trials to find out. As part of the process of combatting climate change as an unprecedented and existential problem, we must all be willing to evaluate our beliefs on the basis of empirical facts and logical arguments. Without question, my personal views affect my analysis and arguments, but the hope with a piece of scholarly writing is that the support for those arguments is also included, allowing for a sophisticated and nuanced response. Even where I am wrong, by writing in this scholarly format I hope it will be possible to isolate and engage with the steps and support in my argument, allowing us collectively to work iteratively toward an account that is more nearly correct, using the processes of intellectual deliberation and political strategizing.

My intent is that the chapters on political opportunity, mobilizing structures, and repertoires are factual and empirical rather than explicitly normative. These chapters make use of my interviews and other

data sources to engage analytically with the questions of where the campus fossil fuel divestment (CFFD) movement arose from, how it organized itself, and what it actually did. While these chapters doubtless have some of my biases and conclusions embedded, I have tried to provide an empirical account based on facts, not unduly shaped by my own commitments, and supported by other sources. The high degree of overlap between my account and the empirical claims in other scholarly analyses — most important from Joe Curnow (2017) and her collaborators, Emilia Belliveau (2018), and Shadiya Aidid (2022) — provides some confidence that this effort to keep an empirical grounding has been successful, in part because these authors broadly do not share my normative conclusions. I will explicitly defend my normative position in the chapter on the merits and limitations of the climate justice (CJ) framing. Without question, I have a commitment that shapes my normative stance, but I believe that it is grounded in pragmatism and the need for a solution that addresses the problem of climate change. The critical problem with the CJ view is not that it lacks internal logic and coherence, but rather that it has not yet won sufficient popular support to be implemented in policy and, in my view, lacks a compelling pathway toward doing so.

I have been involved in environmental organizations since I attended a conference in Vancouver in 1995 organized by Leadership Initiative for Earth (LIFE) and two of their subsequent LIFEboat Flotilla marine

¹See: [Positionality in the CFFD literature p. 13](#)

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youth conferences. By the time I started at UBC in 2001, I knew I wanted to focus my academic work on environmental politics. I did work on fisheries and persistent organic pollutants (POPs) and then, during my MPhil at Oxford, I wrote my thesis on the role of science in global environmental policy making, and specifically in the areas of POPs and climate change. During my research into climate change science and policy, I began fully coming to terms with the magnitude of the threat and challenge facing us and the primacy of climate change mitigation among political and environmental projects. I had become convinced by that point that my work on climate change would be lifelong and it was with that aim in mind that I accepted a job at Environment Canada before leaving the UK.

As a civil servant I had sat in an office reading scientific reports while the bitumen sands and the oil and gas industry grew and grew. My colleagues were well-intentioned and had sensible and plausible strategies for having an influence by being involved in implementation in the long term, rather than an outside voice. I couldn't bear working in an environment where I felt like we were the shop with the name of the crisis on our door, and that most of what we were doing was waiting while dirty Canadian industries convinced politicians to adopt lacklustre and inadequate mitigation targets and diplomats over-worked themselves to invent fictitious forms of emission reduction: anything but actually getting aggressively and immediately off of fossil fuels by ending investment in new infrastructure. Quickly, and with increasing depth of feeling and concern over my time in government, I found that the role of civil servants under the politicians Canadians have elected to power has largely been the protection of *status quo* actors including the fossil fuel industry. Eventually I became convinced that I was temperamentally incapable of thriving or even enduring in a context where it was my job to implement policies that would lead the world toward disaster, and I therefore became convinced of the need to leave the public service.

The importance of chance and contingency in human affairs is often underestimated. I left the federal

government in 2012 because they would not allow me to take part in the public debate about climate change policy. I chose to do a PhD in significant part because it would provide a platform where I would be able to advocate for effective policies to control the seriousness of climate change. In the summer of 2011, between leaving Ottawa and starting at the University of Toronto, I heeded a mass email invitation from Bill McKibben to come to Washington D.C. to protest the Keystone XL pipeline. For 15 days in August and September, I spent each morning photographing the day's group of protestors being arrested outside the White House and then being released from Anacostia jail; each evening, I photographed the training and non-violent direct action practice simulations for the people to be arrested the next day. When I was living in Toronto in June 2012, 350.org sent an email to their Toronto-based supporters explaining that a 350.org staffer was traveling with the band Radiohead and that 350.org was seeking volunteers at each performance to canvas and sign up new supporters. Before the park opened to the general crowd, the staffer and 350.org volunteers were sitting about 10 metres from the stage when the scaffolding above it began to shift and collapse, killing drum technician Scott Johnson right in front of us. The concert was cancelled, but that group of volunteers became the seed of Toronto350.org when we began meeting weekly on Tuesdays. To begin with, the group pursued a broad and entrepreneurial agenda, happy to provide assistance to the initiatives of members which supported our aim of building a movement to confront the climate crisis. I served as group president from when the group first began electing an executive until I needed to step back to focus on my comprehensive exam in Canadian politics in 2013.

In July 2012, McKibben published the *Rolling Stone* article which kicked off the fossil fuel divestment movement. As a first year PhD student at U of T dedicated to working on climate change, it made sense to commit a substantial amount of my effort to the undertaking. Along with a growing group of fellow students,

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I worked to advance the U of T campaign by serving as the primary author of the divestment brief which we presented to the administration. I attended nearly every planning meeting, worked on outreach to the administration and faculty association, and wrote the speech for when the brief was formally presented. I photographed marches and protests and took part in hurried strategy sessions online and in U of T classrooms when significant developments took place. Inspired by my experience with the Keystone protests, my plan for my dissertation research was to study the pipeline resistance movement, and specifically the cross-border Keystone XL pipeline in comparison to proposed Canadian projects. Along with the focus on infrastructure resistance which my experiences in Washington cultivated, studying pipelines while working as an activist on divestment provided a measure of helpful compartmentalization between obligations and commitments to different organizations and purposes. Studying pipeline resistance remained the plan until the election of Donald Trump in 2017. At that point, I decided with my supervisor at the time that it would be infeasible to provide robust participant protection for Canadian and US activists opposing fossil fuel infrastructure while traveling across a border where devices could be seized or other means of surveillance could be brought to bear. Given the extent of my involvement in divestment by that time, I was urged to take divestment on as a new topic. The Toronto350.org divestment campaign at the University of Toronto had also ended in 2016 after President Meric Gertler's rejection of the demand to divest.

For the first five years of my PhD, it was not my intention to write my dissertation on fossil fuel divestment. While the contents of this text certainly reflect debates that transpired within the U of T campaign, I did

not write the dissertation to correspond to the views I held during or at the end of the campaign. Indeed, the exact research question and line of argumentation shifted and evolved substantially through the process of working with my second and final supervisor. My earlier drafts provided more of a survey on the history of the movement, with engagement on specific points; the specific style of argument used and conclusions defended in the final document developed through that process of iterated critique and commentary from committee members and should not be considered preordained. By myself, I would have written a substantially different document.

My experience in the first U of T CFFD campaign made me want to comprehensively examine how it compared to other Canadian university campaigns. It also directed my interest toward the contentious politics literature, since a vital dimension of the climate change activist movement is internal contention about what ought to be done, at the same time as the movement is contentiously engaged in trying to change public policy and attitudes.

A note to the audiences of this text

Despite efforts to be as clear as possible and to repeat the point, I have found myself frequently misunderstood as a personal champion of the CO₂-energy (CO₂-e) framing and a critic of the CJ framing, with the implication drawn that I want CJ advocates to adopt a CO₂-e perspective.² In fact, I don't see encouraging such a progression (or reversion) as plausible or useful, given the deep commitments of CJ activists and the appealing and motivational features of the worldview which I discuss.³ What I cannot help drawing attention to is how politicians and political parties who hold power, and the general public who elects them, have not embraced intersectional analysis or an integrated progressive response to climate change. Where such proposals exist, they are at the progressive edge of what left-leaning parties support and have mostly not translated into policy. Where they have become policy, it is precarious because of the narrowness of its societal support: suggesting the ongoing risk of reversal when a change of government occurs and thus the

²See: [Interpreting contention between the CJ and CO₂-e framings](#) p. 176

³See: [The appeal of the CJ framing for activists](#) p. 186

inability of such policies to remain in place for long enough to avert catastrophic climate change. To CJ activists, my message is that a broader societal base of support is needed for effective climate policies. I call on them to heed Hayhoe's words quoted at the opening of chapter 5 about how convincing people of the need to act on climate change because of the values which they already hold is far more plausible than getting them to support such action for the reasons progressive CJ advocates do. My second point to CJ activists is that they have insufficiently explained why only a revolutionary structural change can mitigate climate change and, more importantly, exactly how the political and economic changes which they endorse will actually control climate change. It cannot simply be an expected result of overthrowing capitalism, justified only by the ways in which capitalism has encouraged fossil fuel use. Also, CJ advocates need to dedicate more effort specifically to deploying physical climate change solutions in the form of non-fossil energy. A progressive climate movement which rejects all of our imperfect non-fossil options because of their trade-offs and drawbacks will serve in effect to perpetuate the fossil fuel *status quo*.

CO₂-e advocates also do not have a ready-made and fully articulated solution to climate change. The

oft-repeated points about how people aren't much motivated by scientific and statistical arguments are important for crafting an effective political solution to climate change. Whereas CJ advocates confront a gap between what their agenda calls for and what controlling climate change requires in terms of physical infrastructure replacement, CO₂-e advocates face a gap between expressing the course of action which they portray as logical and desirable in human terms and achieving the intermediate political steps needed to turn that into an implemented agenda.

A quotation from a YouTube video about making collaborative art helps illustrate the nuance of my position:

When smart people disagree that's a gift, because when two smart people are talking about something and they don't agree that means they're both wrong. It means that the third thing that neither one of them has thought of yet has yet to be revealed, and this is the process by which it is revealed.⁴

At several points in the dissertation, I draw attention to how our political systems, political philosophies, and theories of ethics are all working to incorporate new scientific information about the Earth and the physical and biological systems that sustain us.⁵ Among the most notable features of this effort is its incompleteness, and the CJ / CO₂-e divide is an important example of an intellectual debate that engages with the insufficiency of our ideas and actions so far.

I know that this dissertation will be read by some in the climate activist community as a rejection of the core ideas and hopes which motivate them. What I would encourage and invite readers to do, however, is to see this dissertation as an effort to provide clear and cited justifications in support of my arguments, not in the hope that it will instantly convert anybody's way of thinking, but in the hope of encouraging them to evaluate the sources of support for their own positions and the ways in which they may be refined to help drive climate change solutions. In addition to being about the persuasion strategies activists use with their targets and among themselves, this dissertation is a persuasion strategy aimed at a cooperative undertaking with the reader. My work in refining the manuscript with Professor Vipond and Professor Carens has been immensely valuable in forcing me to focus on a specific intellectual argument and the supporting evidence which is necessary to make it credible, as opposed to my more undisciplined personal drafts which often found the interest of the subject matter reason enough for long asides and discussions of adjacent issues

⁴Alissa Mortenson. *Making Collaborative Art That Doesn't Suck*. 2011. url: <https://www.youtube.com/watch?v=9yRx-cW0gfA> (visited on 07/11/2020).

⁵See: [The long-term view: reconciling our political theories and philosophies with environmental science p. 41](#)

and ideas. Just as my discussions with committee members immeasurably improved this dissertation as a coherent and readable text for a broad audience, I hope post-publication discussions with and within the activist community in response to this dissertation will play a part in us collectively making sense of what the CFFD movement achieved and how that relates to the top-level objective of sustaining stable and habitable conditions on Earth.

My involvement in the climate change activist movement has left me with the hope that success is possible, even though it cannot arise from the policy approaches which we have tried so far. Providing that hope, popularizing the concepts of a global carbon budget and bubble, and providing a template for the autonomous self-formation and governance of student activist groups have been world-changing achievements

for the climate movement. For that hope to be realized, maintaining the Earth's stability must spread to being a broad aspiration in a population willing to accept the trade-offs of non-fossil energy. Bringing about that broadening — and confronting and undermining the implicit and explicit climate change denial in our politics — will be the next stage in our fight for a living planet.

Chapter 1

Research question and issue context

In 2011–12 organized student groups at a number of Canadian universities began to demand that universities divest from fossil fuel companies. Many of these groups shared such a common agenda that this development acquired a name: the campus fossil fuel divestment movement or CFFD for short. This thesis explores a number of questions about the CFFD movement. It asks why the movement emerged when it did and why it took the particular form that it did. In particular, the thesis explores questions about unity and division within the CFFD movement. In what ways was the movement unified and why? In what ways was it divided and why? How did those patterns of unity and division within the movement matter, and how should we evaluate the different perspectives within the CFFD that generated unity and division?^{1,2}

Questions about unity and division among activists concerned about climate change are not new. In Copenhagen, Denmark in 2009 the state parties to the United Nations Framework Convention on Climate Change (UNFCCC) met officially for the 15th time to discuss how to live up to their 1992 promise to prevent “dangerous anthropogenic interference with Earth’s climate system.”^{3,4,5} Delegates from states with divergent interests — which ranged from major fossil fuel producers to states with widespread extreme poverty to small island states threatened existentially by the rising seas — were accompanied by a vibrant civil society and activist presence.

In *Networks in Contention*, Jennifer Hadden studied the activist cleavages in Copenhagen.⁶ She consid-

¹The CFFD movement and its focus on private actors can be seen as an attempt to get around the structural barriers to climate change action, which include individual psychology, institutions ill-adapted to address long-term problems, and the huge investment in fossil fuel capital stock. These barriers are relevant in the university context as well, including the influence of *status quo* economic elites, and activist perceptions on their nature and potential to overcome them influenced CFFD strategy. For a detailed summary, see: Milan Ilnyckyj. *Structural Barriers to Avoiding Catastrophic Climate Change*. 2022. url: https://www.academia.edu/75456821/Structural_Barriers_to_Avoiding_Catastrophic_Climate_Change (visited on 07/21/2022).

²Stephen Gardiner set out eight propositions on climate ethics which are also revealing about the barriers to action. He described how “our position is not that of idealized neutral observers, but rather judges in our own case, with no one to properly hold us accountable. This makes it all too easy to slip into weak and self-serving ways of thinking, supported by a convenient apathy or ideological fervor.” He also warned that we are susceptible to self-serving “shadow solutions” “that do not respond to the real problem.” Stephen M. Gardiner. *A Perfect Moral Storm: the Ethical Tragedy of Climate Change*. Oxford: Oxford University Press, 2011, p. xii–xiii.

³State Parties to the United Nations Framework Convention on Climate Change (UNFCCC) (1992). *United Nations Framework Convention on Climate Change*. 1992. url: https://treaties.un.org/doc/Treaties/1994/03/19940321%2004-56%20AM/Ch_XXVII_07p.pdf (visited on 07/10/2022).

⁴Specifically, at COP13 in Bali in 2007 the delegates agreed to an action plan wherein the Copenhagen COP was meant to produce a successor to the 1997 Kyoto Protocol. Jennifer Hadden. *Networks in Contention: The Divisive Politics of Climate Change*. New York: Cambridge University Press, 2015, p. 29.

⁵State Parties to the United Nations Framework Convention on Climate Change (UNFCCC) (1992). *Bali Action Plan*. url: https://unfccc.int/files/meetings/cop_13/application/pdf/cop_bali_action.pdf (visited on 07/21/2022).

⁶Hadden described how in prior UNFCCC COPs “civil society participation... had been managed by mild-mannered scientif-

ered how civil society organizations mobilized on climate change, how they chose their strategies, and what consequences followed. Hadden identified an important cleavage in the climate activist movement which related to each organization's position in an activist network. That cleavage was between a "traditional scientific approach" and "an issue framing that focuses on equity and justice issues."⁷ The climate justice approach differed in three areas: supporters placed priority on issues of justice over developing an environmentally sound climate treaty, were willing to reject a deal they saw as unjust, and were willing to proceed more slowly politically than urged by those focused on scientific urgency.^{8,9,10}

One of Hadden's goals was to explain why this cleavage had emerged within the climate change activist movement. Hadden argued that political process and organizational theories are important, but that they overlook the importance of relations within a network where social ties "allocate resources, information, and meaning differentially across populations of actors" while "patterns of interorganizational relations influence organizational strategic decisions."¹¹ The choices that activist organizations make among the contentious tactics available to them are influenced by their peers through information sharing, resource pooling, and social influence, including changes in underlying identity.¹² Hadden's argument was that the increased salience of climate change and changes in the political opportunity structure enlarged the network mobilized around climate change and complicated its membership, which led to a divided network with two main competing coalitions defined around conventional scientifically-based advocacy and climate justice. In the Copenhagen case, the two sides "rarely communicated or coordinated collective action."¹³ In the end, there was a "new cleavage in international politics" which added turbulence to the negotiations.¹⁴

It is perhaps not surprising, at least in retrospect, that the organizations and activists whom Hadden examined were inclined toward contention with one another. Multilateral institutions must contend with complex challenges and patterns of interests, including conflicts between the global North and South, disagreements over who bears responsibility for climate change and what obligations that implies, and who might be owed compensation for climate damage or for forbearing to use fossil fuels in order to protect the climate.

One might have expected that a smaller and more homogeneous group of activists would be less divided than those studied by Hadden. The CFFD movement was composed only of campus organizations made up of activists who were university students in Canada. Moreover, the student organizations in the movement were largely fostered and shaped by one organization (350.org), which provided activists with a specific target (fossil fuel divestment) and with a specific organizing strategy (the "campaign in a box").

Nevertheless, the CFFD movement has been a site of internal contention for as long as it has existed. Specifically, there has been a philosophical, normative, and strategic division between two groups. Intersec-

ically sophisticated nongovernmental organizations" but at Copenhagen more radical groups which were "well versed in the politics of the global justice movement" brought in a confrontational style of direct action from the antiglobalization movement. Later, she noted that the effort to reframe climate change in broader justice terms led some activists to adopt a "risky outsider protest strategy inherited from the global justice movement." Hadden, *Networks in Contention: The Divisive Politics of Climate Change*, p. 2-3, 14.

⁷Hadden, *Networks in Contention: The Divisive Politics of Climate Change*, p. 154.

⁸Hadden, *Networks in Contention: The Divisive Politics of Climate Change*, p. 156.

⁹Even during the Kyoto Protocol negotiations, divides emerged in the activist network over "carbon markets, coalition governance, north-south equity, and the use of disruptive tactics." Hadden, *Networks in Contention: The Divisive Politics of Climate Change*, p. 26.

¹⁰Chad Carpenter. "Businesses, Green Groups and the Media: The Role of Non-governmental Organizations in the Climate Change Debate". In: *International Affairs* 77.2 (2001), pp. 313-328. url: <https://www.jstor.org/stable/3025543> (visited on 07/21/2022), p. 321.

¹¹Hadden, *Networks in Contention: The Divisive Politics of Climate Change*, p. 6, 8.

¹²Hadden, *Networks in Contention: The Divisive Politics of Climate Change*, p. 8-9.

¹³Hadden, *Networks in Contention: The Divisive Politics of Climate Change*, p. 10.

¹⁴Hadden, *Networks in Contention: The Divisive Politics of Climate Change*, p. 11.

tional climate justice (CJ) activists emphasized the linkages between climate change and other justice issues in both diagnosing the causes of climate change and in crafting their political strategy to control it, insisting that only revolutionary political and economic changes like the overthrow of capitalism will let humanity preserve a stable climate. This analysis and prescription is challenged by CO₂-energy (CO₂-e) activists who see climate change as fundamentally about fossil fuel energy, with a solution that lies in replacing coal, oil, and gas. So, in many ways the division within the CFFD movement mirrors the divisions among the global activists whom Hadden studied, despite the greater homogeneity one might have expected from the similarities among the activists and the coordinating role of 350.org.

One way to understand this basic division within the CFFD movement (as well as the wider global movement) is to think of the CJ and CO₂-e approaches as two different ways of framing the problem of climate change. Within the contentious politics theoretical framework, “framing” refers to broad efforts at making sense of the world and how to achieve change. Doug McAdam defined framing as “conscious strategic efforts by groups of people to fashion shared understandings of the world and of themselves that legitimate and motivate collective action” and Quintan Wiktorowicz defined it by saying: “Frames represent interpretive schemata that offer a language and cognitive tools for making sense of experiences and events in the ‘world out there.’”^{15,16,17} This dissertation focuses on how activists within the CFFD framed climate change and its solutions and how differences in the frames affected the development of the movement overall.

Those who have studied the CFFD movement all agree that the climate justice perspective is the dominant frame of the movement today, but not all agree on when, how and why this happened or on whether or not this development is a good thing overall for the effort to address climate change. The existing literature on the CFFD gives rise to three basic narratives. First, there is Joe Curnow and Allyson Gross’ narrative of a grassroots rebellion arising from campaign organizers and situated particularly at divestment conferences called ‘convergences,’ in which the overly narrow numerical framing of 350.org’s campaign in a box was supplanted over time by an embrace of climate justice. Second, there is the narrative that 350.org co-founder Bill McKibben sent me by email in April 2022, which presented the change as a non-conflictual progression from weaker earlier ideas to strong later ones, part of a ‘big tent’ movement in which a variety of ideas were welcome. Third, there is the narrative which I think is most defensible: that throughout the CFFD movement there has been a persistent tension between the CO₂-e and CJ framings which is still not resolved at the time of writing.

Curnow’s dissertation and her chapter with Gross present the move toward the climate justice framing as a productive, positive, and largely complete re-framing initiated by individual campaign organizers and by divestment proliferators other than 350.org, specifically the Divestment Student Network (DSN) where Gross was an organizer and the Canadian Youth Climate Coalition (CYCC). As described by Curnow and Gross, the climate justice framing “intentionally integrates an analysis of race, colonialism, and capitalism... and centers the experience of frontline communities” and has value precisely because of how it socializes divestment organizers into this worldview “shap[ing] a generation of activists to be more attentive to the racialized, classed, and gendered impacts of climate change.” They emphasized how the prospects for such socialization arose in part from the inexperience of CFFD organizers, some of whom found “the language

¹⁵Doug McAdam. *Political Process and the Development of Black Insurgency, 1930-1970*. Chicago: University of Chicago Press, 1982, p. xxi.

¹⁶Quintan Wiktorowicz, ed. *Islamic Activism: A Social Movement Theory Approach*. Bloomington: Indiana University Press, 2003, p. 15.

¹⁷Quintan Wiktorowicz. “Islamic Activism and Social Movement Theory: A New Direction for Research”. In: *Mediterranean*

of colonialism” to be “completely new material for them,” while settler students in general were “under-equipped” to “take on anticolonial and decolonizing work.”¹⁸

Curnow and Gross present the non-adoption of the climate justice frame by some CFFD organizers as a matter of not *understanding* “a political analysis that ties climate change to race and colonialism explicitly.”¹⁹ As such, they present the move to climate justice as something all CFFD organizers can and should undertake, rather than recognizing that the progressive analysis underpinning the climate justice view remains substantively opposed by CO₂-e advocates who see and prefer a path to controlling climate change without such root and branch reorganization of global political and economic systems.

When I asked McKibben about where the shift in emphasis toward climate justice came from, he responded by email:

People just figured out lots more good arguments as time went on, and everyone figured out what worked in different circumstances. Different arguments might sway, say, Catholic universities and Norwegian pension funds and French insurance companies and Australian Christians. I don’t remember any internal contention, then or now—many of the people who were working on it back then are still at work on it. Others have done remarkable things, like working out a Green New Deal.

movements are great—they learn as they go along.

What most distinguishes this account is the idea that the re-framing arose non-conflictually, through a collective process of evolution in thinking.

Without questioning the sincerity of the thoughts expressed, some consideration of context helps explain McKibben’s interpretation. Curnow and Gross explicitly discuss the move toward climate justice as refocusing the movement away from McKibben personally as the DSN sought to “elevate frontline voices over the traditional leaders of the environmental movement.”²⁰ As the person most closely associated with divestment by the public and the media, McKibben needs to navigate the politics of the movement and how it relates to his personal legacy. He also likely wants to sustain the public perception that the movement is coherent and united. Thirdly, as suggested by Lee Ann Fujii, movement advocates are often hesitant to directly discuss conflict and likely to deny or downplay the presence of contention when asked directly about this.²¹ A researcher may nevertheless find revealing evidence of contention through the details of their accounts of how the movement progressed.

The narrative about the CFFD movement which I present and substantiate is that of two competing and contradictory worldviews ‘warring in the bosom’ of a single movement. While the CFFD movement has socialized most participants toward a climate justice framing, people who question the analysis and prescriptions of that view have been present throughout the movement and the contention between the two camps is evident at each stage of my analysis: in the ways they responded to the political opportunity structure in which divestment emerged, in how they organized and made decisions within campaigns, in

¹⁸Joe Curnow and Allyson Gross. “Injustice Is Not an Investment: Student Activism, Climate Justice, and the Fossil Fuel Divestment Campaign”. In: *Contemporary Youth Activism: Advancing Social Justice in the United States*. Ed. by Jerusha

Conner and Sonia M. Rosen. Westport, Connecticut: Praeger, 2016. url: <https://web.archive.org/web/20200112025151/http://joecurnow.com/Curnow%20&%20Gross%202017.pdf> (visited on 02/26/2017), p. 378.

¹⁹Curnow and Gross, "Injustice Is Not an Investment: Student Activism, Climate Justice, and the Fossil Fuel Divestment Campaign", p. 379.

²⁰Curnow and Gross, "Injustice Is Not an Investment: Student Activism, Climate Justice, and the Fossil Fuel Divestment Campaign", p. 376.

²¹See: Lee Ann Fujii. "Five Stories of Accidental Ethnography: Turning Unplanned Moments in the Field Into Data". In: *Qualitative Research* 15.4 (2015), pp. 525–539. url: <https://journals.sagepub.com/doi/abs/10.1177/1468794114548945?journalCode=qrjg> (visited on 01/11/2020).

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the activist repertoires they favoured, and in the developed and articulated framings which they ultimately espoused.

1.0.1 The CFFD movement's three strategic objectives

Part of the challenge in interpreting the CFFD movement arises from how it has sought to advance three strategic objectives, each of which can be in tension with the others: persuading institutional investors to act by selling their fossil fuel holdings, delegitimizing the fossil fuel industry in the eyes of the public and decision makers, and recruiting and developing activists.²² CFFD campaigns had to manage trade-offs between messaging strategies and tactics that did the most to raise the odds of divestment at their institution with those that did the most to delegitimize the industry and fire up activists. These disagreements reflected the different analytical and normative commitments of movement organizers, with CO₂-e advocates more willing to tailor their messages to what university administrators would find convincing while CJ advocates put greater priority on movement building and stigmatizing the fossil fuel industry. The way in which CJ and CO₂-e activists prioritized different audiences is discussed in more detail in the chapter on repertoires. Movement-building through the recruitment of activists has always been an objective of 350.org. By 2011, their email footers included the mission statement: "350.org is building a global grassroots movement to solve the climate crisis." The 'campaign in a box' model for the divestment movement, discussed in detail in the mobilizing structures chapter, implicitly required that campaigns at universities would rely on volunteers that needed to be recruited, trained, and retained. In addition, volunteer recruitment and retention gained priority in the CFFD movement through learning by doing as campaign setbacks and rejections made it necessary to keep bringing in new people while keeping existing volunteers motivated. At every Canadian university except Laval so far, winning a divestment commitment has required multiple rounds of campaigning, and thus the activities required to sustain the effort have had their importance demonstrated.

1.1 How the research questions were explored

I have used categories and ideas drawn from the literature on contentious politics to frame my answers to the questions that I identified in my opening paragraph and to link these answers together in my overall analysis. These metaphors are theatrical, with activists in the role of performers working to persuade or influence an audience.²³ Chapter two uses the concept of political opportunities to consider why the CFFD movement emerged when it did and in the way it did.^{24,25,26,27,28} Chapter three uses the concept of mobilizing structures to explore the ways student campaigns organized themselves, the reasons behind those

²²Among other places, this three-part breakdown can be seen in the UBC campaign's post-success debriefing: Justice UBC. *The UBC Divestment Story*. 2021. url: https://docs.google.com/presentation/d/11R3WAxyIjYFulaP0X-CRCXnU_P3frVHW8FIDUEGcY/edit (visited on 11/20/2022), p. 24, 74.

²³As Merelman explained: "all drama is concerned with the conveyance of impressions to a group of auditors. Such impressions are meant to be accepted as truthful and credible." Richard M. Merelman. "The Dramaturgy of Politics". In: *The Sociological Quarterly* 10.2 (1969), pp. 216–241. url: <https://www.jstor.org/stable/4104746>, p. 217.

²⁴Tarrow described the relationship between the political opportunity structure and contentious politics. Sidney G. Tarrow. *Power in Movement: Social Movements and Contentious Politics*, 3rd ed. Cambridge: Cambridge University Press, 2011.

²⁵Hadden discussed political opportunities in the context of climate activism. Hadden, [Networks in Contention: The Divisive Politics of Climate Change](#), p. 5.

²⁶Wiktorowicz also described the importance of opportunities and constraints on social movements. Wiktorowicz, [Islamic Activism: A Social Movement Theory Approach](#), p. 13–4.

²⁷Tilly and McAdam also discussed the concept. Charles Tilly. *Contentious Performances*. Cambridge: Cambridge University Press, 2008, p. 5.

²⁸Doug McAdam, Sidney Tarrow, and Charles Tilly. *Dynamics of Contention*. Cambridge: Cambridge University Press, 2001, p. 14–5.

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organizational choices, and the consequences of those choices.²⁹ Chapter four uses the concept of repertoires to explore the question of what tactics and strategies campaigns used to interact with others outside the movement and how those choices reflected the shared understandings and commitments of activists as well as the divisions between them.^{30,31} The concluding normative chapter asks what the likely consequences have been from the dominance of the CJ framing, what the CO₂-e framing has accomplished, and how the CJ approach needs to be supplemented in order to address climate change.^{32,33} Using categories that grew from the social movement literature provided a way to structure the central questions of this dissertation, and also set up the answers to speak back to that literature.

Each chapter contributes an original argument, and they collectively build to the main argument of the dissertation. The political opportunities chapter describes three major factors that empowered the movement: the increased salience of climate change together with the structural barriers to conventional ways of bringing about public policy changes, the role of proliferators like 350.org, and the attractiveness of universities as targets for this sort of activism. The mobilizing structures chapter details how the form of organizing and desire for unity in the CFFD movement served to conceal the enduring presence of CJ-CO₂-e contention. The repertoires chapter demonstrates how CJ and CO₂-e activists prioritized different audiences for their contentious performances, and thus differed in their preferred messaging. The concluding chapter provides the central normative position of the dissertation: that a climate activist movement that appeals mostly to progressives won't be able to implement and sustain effective mitigation policies without the support of flanking political coalitions that share a commitment to climate stabilization but not the other political analysis and preferences of the intersectional progressive CJ movement.

1.1.1 Research empirics

With no central organization tracking or coordinating CFFD campaigns, it was necessary to identify campaigns based on their online and media presence, then identify and contact campaign organizers.

1.1.2 Identifying campaigns

The initial process to identify Canadian CFFD campaigns and organizers who could potentially be

interview participants consisted of a survey of all Canadian universities listed in Statistics Canada's Revised Tuition and Living Accommodation Costs (TLAC) survey, which included 110 post-secondary educational institutions.³⁴ I identified whether campaigns existed through a number of means. To begin with, Fossil Free

²⁹Wiktorowicz described the importance of mobilizing structures in social movement theory, and particularly the emphasis on them prior to a scholarly reorientation toward ideational factors. Wiktorowicz, [Islamic Activism: A Social Movement Theory Approach](#), p. 15.

³⁰Many scholars have examined activist repertoires as a way to understand social movements. For example, Soule did so in the context of "shantytown" protests against South African apartheid. Sarah A Soule. "The Diffusion of an Unsuccessful Innovation". In: *The Annals of the American Academy of Political and Social Science* 566.1 (1999), pp. 120–131. url: <https://journals.sagepub.com/doi/abs/10.1177/000271629956600110?journalCode=anna> (visited on 01/04/2019), p. 124–5, 127–8.

³¹On the broader analogy between activist behaviours and theatrical repertoires, see: Merelman, "[The Dramaturgy of Politics](#)".

³²Wiktorowicz and McAdam, among others, emphasize the importance of framing in activist campaigns and contentious politics. Wiktorowicz, [Islamic Activism: A Social Movement Theory Approach](#).

³³Doug McAdam. *Political Process and the Development of Black Insurgency, 1930-1970: Second Edition*. Chicago: University of Chicago Press, 1999.

³⁴The only campaign which I identified which isn't at a post-secondary institution included in the TLAC list was at the Mohawk College of Applied Arts and Technology in Ontario. Their Facebook page was created in April 2013 and was last updated in October 2014. The campaign did interact to some degree with others. In May 2013, two organizers from the Mohawk campaign took part in a divestment training event in Montreal. Divest Mohawk. *Two Representatives from Mohawk*

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Canada (a project of 350.org) provided a simple online tool which would allow someone at any university to initiate an online petition.³⁵ Often these petitions have fewer than 100 signatures and I was unable to locate other information about the campaign. The website was used almost universally by campaigns which could be identified through other means, yet there are campaigns in Canada whose existence was only identifiable because such a petition had been established. In these cases, I tried to find contact information and contact the petition initiator but was unable to do so or to find any other reference to the campaign. As such, having such a petition is a reasonable minimum standard for the existence of a campaign, even if it generated no media attention and seems to no longer be active.^{36,37,38,39,40,41} As of June 2019, I was able to identify 40 campaigns which at least met that standard.^{42,43} Identifying participants in CFFD campaigns is challenging due to the lack of centralized and accessible records. In most cases, activist publications and news reports have provided a starting point for identifying campaign members who I contacted in turn to identify fellow volunteers.⁴⁴

I also obtained information about campaigns by searching Facebook and Twitter for "divest", "fossil free", "sans fossiles", "désinvestir", and "désinvestissement" along with the names of all the TLAC schools; by similarly searching the Factiva and Canadian Newsstream Complete news databases; and by tracking all public references online to "campus" and "university" along with "fossil fuel divestment" via Google

Were Among the Amazing Divestment Trainers This Weekend in Montreal. 2013. url: <https://www.facebook.com/DivestMohawk/posts/426029640827445> (visited on 08/06/2019).

³⁵In a 2018 Facebook post, 350.org staffer Katie Perfitt noted: "350 is re-launching the 'Fossil Free' identity, which will include a revamped website which will host a Canada regional site that will have links to resources for campus divestment and contact information for further support (the Canadian Federation of Students will be stepping in more intentionally to offer campaigning resources)."

³⁶The Sheridan College Institute of Technology and Advanced Learning is an example, in that the only information I could

find on it was such a petition and a Sheridan Sun news article with a screenshot of the petition, some quotes from the organizer, and a description of the broader movement. Jenn Mezer. *Divest Sheridan College from Fossil Fuels*. 2014. url: <https://campaigns.gofossilfree.org/petitions/divest-sheridan-college-from-fossil-fuels> (visited on 07/13/2022).

³⁵Satyarth Mishra. *Sheridan Student Leads Campaign Against Fossil Fuel Free*. 2014. url: <http://sunarchives.sheridanc.on.ca/blog/2014/02/12/sheridan-student-leads-campaign-against-fossil-fuel-free/> (visited on 06/30/2019).

³⁶Other campaigns which were assessed as minimal by these standards include Camosun College, Okanagan College, St. Francis Xavier University, Saint Mary's University, and Laurentian University. I was unable to contact potential interview subjects from any of them and none of my inquiries to participants in more active campaigns within their provinces led to fruitful contact with organizers at those schools.

³⁷This search method is not infallible. One interview participant described having a role in the SFU campaign where they collaborated with UBC and Capilano University, but as of July 2019 the gofossilfree.org campaign listing for the Vancouver area shows only municipal campaigns for the City of Vancouver and Richmond and university campaigns at UBC, SFU, and Kwantlen.

³⁸I also missed the campaign at the University of Prince Edward Island. CBC News. *UPEI Delay on Fossil Fuels Investment Decision Frustrates Divest UPEI Head*. 2016. url: <https://www.cbc.ca/news/canada/prince-edward-island/upei-fossil-fuels-delay-1.3596416> (visited on 10/01/2020).

³⁹Fossil Free Trent had a campaign history online, but I was not able to contact and arrange interviews with organizers there. Sustainable Trent. *Fossil Free Trent*. 2014. url: <https://web.archive.org/web/20201031075156/https://sustainabletrent.org/campaigns/fossil-free-trent-divestment/> (visited on 07/28/2022).

⁴⁰Using different methods and perhaps a different list of accredited universities, Maina-Okori et al. reported 37 active divestment campaigns across nine provinces in Canada. The article included a table showing universities with campaigns, the size of their endowments and fossil fuel investments, whether student and faculty referenda took place, and whether the university decided to divest. Naomi Mumbi Maina-Okori, Jaylene Murray, and Marcia McKenzie. "Climate Change and the Fossil Fuel Divestment in Canadian Higher Education: The Mobilities of Actions, Actors, and Tactics (journal pre-proof)". In: *Journal of Cleaner Production* (2019), p. 119874. url: <https://www.sciencedirect.com/science/article/pii/S0959652619347444> (visited on 12/31/2019), p. 2, 13.

⁴¹An effort in July 2020 to connect active divestment campaigns in Canada attracted participants from U of T (Leap Manifesto campaign), Western, Fanshawe College, the University of Windsor, Brock, Niagara College, McMaster, Mohawk College, Guelph, Queen's, Waterloo, McGill, Lakehead, and Carleton.

⁴²For example: Jennifer Wilson, Trevor Nault, and Eleanor Clarke. *Canadian Universities Leave Students In The Dark About Investments In The Oil Industry*. 2017. url: <https://www.langaravoice.ca/canadian-university-still-dont-disclose-their-energy-sector-investments-to-students/> (visited on 08/22/2018).

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Alerts.^{45,46,47} Since nearly all interview participants made reference to campaigns at universities other than their own, the process of interviewing further validated that the list of campaigns identified through these methods was as complete as could be managed, though it may have missed very small or short-lived campaigns which did not establish an online presence or seek media attention.⁴⁸ For example, one interview subject brought up "behind the scenes" negotiations at Concordia in 2013, taking place primarily in boardrooms between geography students and administrators without much of a public campaign. Websites previously maintained by more substantial campaigns like Divest Manitoba and Sustainable SFU are no longer online, but can sometimes be accessed via the Internet Archive's Wayback Machine. Both to find potential research participants and to be transparent about the existence and purpose of my research project I have consistently made information about it available through online forums frequented by CFFD activists, such as Facebook groups and Slack channels used to share information and coordinate between campaigns.

I continued to monitor social media on CFFD campaigns throughout the research and writing up process, until I mostly cut off social media monitoring to prioritize manuscript completion at the end of 2020. In addition to helping keep track of which campaigns were active, this provided some mechanisms to observe the behaviours of Canadian CFFD campaigns, both their 'performances' and their public self-justifications. A detailed review of public social media traffic in fall 2019 found activity from campaigns at UBC, UVic, McGill, Mount Allison, U of T (Leap Manifesto campaign), Guelph, Queen's, Waterloo, SFU, Concordia, McMaster, Dalhousie, Trent, and UWinnipeg. An effort in July 2020 to connect active divestment campaigns in Canada attracted participants from U of T (Leap Manifesto campaign), Western, Fanshawe College, the

University of Windsor, Brock, Niagara College, McMaster, Mohawk College, Guelph, Queen's, Waterloo, McGill, Lakehead, and Carleton. In 2020, UVic uploaded a high-resolution photo of their first meeting of the term, with 25 people fully or partially visible in frame, and at least five more in reflections.⁴⁹

1.2 Position in the social movement literature

Even before conducting interviews, I structured my analysis of the CFFD movement using conceptual categories from the social movement and particularly the contentious politics literatures. My semi-structured interview questions were selected and sequenced based on these concepts. I asked about the origins and objectives of their campaign to better understand their perspective on the political opportunity structure; asked a series of questions about internal campaign dynamics, allyship, and decision making to get a sense of the mobilizing structures they employed; asked about their use of tactics to catalog their activist repertoires; and asked about their perspective on root causes, climate justice, and allyship to understand their framing

⁴⁵I received about 250 alerts for “university” and “fossil fuel divestment” between March 2017 and July 2020 and about 150 alerts for “campus” and “fossil fuel divestment.” Many of these included as many as a dozen new websites which Google had found containing the terms, albeit referring to campaigns around the world and not only in Canada.

⁴⁶Maina-Okori et al. made use of a similar search process. Maina-Okori, Murray, and McKenzie, “[Climate Change and the Fossil Fuel Divestment in Canadian Higher Education: The Mobilities of Actions, Actors, and Tactics \(journal pre-proof\)](#)”, p. 12.

⁴⁷On the use of Facebook for snowball sampling, see: Tomas Dosek, “Snowball Sampling and Facebook: How Social Media Can Help Access Hard-to-Reach Populations”. In: *PS: Political Science & Politics* (2021), pp. 1–5. url: <https://www.cambridge.org/core/journals/ps-political-science-and-politics/article/snowball-sampling-and-facebook-how-social-media-can-help-access-hardto-reach-populations/0B52326E9D59AB1C2C1002B8F110853F> (visited on 10/16/2021).

⁴⁸Potentially important campaigns may be absent from media coverage on the CFFD divestment movement. There was little public discussion of the Diocese of Nova Scotia and Prince Edward Island’s decision to divest the endowment of the Atlantic School of Theology. At the University of Toronto’s Massey College a committee was formed and a report written, all without any public notice or notice to community members at large that divestment was being considered.

⁴⁹This is relevant from a participant protection standpoint given the rise of automatic facial recognition technology. By the time of their March 2022 occupation, for example, Divest McGill had begun obscuring the faces of participants in their social media content.

of the issue. When I coded interview content in NVivo, my tags were broken down into these categories. These conceptual categories from the scholarly literature provided a mechanism to analyze the dynamics of the CFFD movement.

Wiktorowicz has provided an account of the evolution of social movement theory in political science.⁵⁰ The first generation, represented by McAdam’s 1982 *Freedom Summer*, was based on a model where structural strains which cannot be accommodated in an existing political system lead to psychological discomfort which propels some people to engage in collective action.⁵¹ Social movements can therefore be seen as a mechanism for alleviating psychological discomfort. This perspective was subsequently criticized for seeing too inexorable a link from structural strain to movement contention. Strain is ubiquitous in all societies, but does not universally produce social movements. Furthermore, relatively affluent and stable societies with a strong civil society sector produce movements more than more strained societies. A second generation of theory focused on resource mobilization and the importance of mobilizing structures.⁵² Wiktorowicz highlighted pathways toward and away from formalization, as mature social groups with resources evolve toward “social movement organizations” (SMOs) characterized by bureaucracy and institutionalization. At

the same time, informal organization remained important, especially for recruitment. Social movement communities, as opposed to SMOs, exhibit “fluid boundaries, flexible leadership structures, and malleable divisions of labour” — pointing toward the relevance of the garbage can model of organizational choice described by Michael Cohen, James March, and Johan Olsen in 1972 to informal social movements.^{53,54} Wiktorowicz noted how Piven and Cloward considered informal approaches preferable, since bureaucratized movements can become more focused on the survival of their organizations than the achievement of their aims.^{55,56} By the 1980s, Wiktorowicz described a new focus on ideational factors and the development of a collective identity via framing:

As signifying agents engaged in the social construction of meaning, movements must articulate and disseminate frameworks of understanding that resonate with potential participants and broader publics to elicit collective action.⁵⁷

This shifts the emphasis on why people should participate in social movements — not as an automatic response to strain or a rational response to selective incentives, but as a result of storytelling which mentally reframes the nature of a problem and the mechanism for addressing it. Snow and Benford described three core framing tasks which move from diagnosing a problem to developing solutions and then a rationale to motivate support for collective action.^{58,59} They noted that motivational frames are needed even when participants agree about the causes of and solution to a problem, as well as that the frame must resonate with potential movement participants. Wiktorowicz highlighted the contest over framing as a core activist concern, since social movements “are embedded in a field of multiple actors that often vie for framing hegemony.”⁶⁰

⁵⁰Wiktorowicz, *Islamic Activism: A Social Movement Theory Approach*, p. 6–18.

⁵¹Wiktorowicz, *Islamic Activism: A Social Movement Theory Approach*, p. 6.

⁵²Wiktorowicz, *Islamic Activism: A Social Movement Theory Approach*, p. 9.

⁵³Wiktorowicz, *Islamic Activism: A Social Movement Theory Approach*, p. 12.

⁵⁴Michael D. Cohen, James G. March, and Johan P. Olsen. “A Garbage Can Model of Organizational Choice”. In: *Administrative Science Quarterly* (1972), pp. 1–25. url: <https://www.jstor.org/stable/2392088> (visited on 04/04/2020).

⁵⁵Wiktorowicz, *Islamic Activism: A Social Movement Theory Approach*, p. 12.

⁵⁶Frances Fox Piven and Richard Cloward. *Poor People's Movements: Why They Succeed, How They Fail*. New York: Vintage, 1978.

⁵⁷Wiktorowicz, *Islamic Activism: A Social Movement Theory Approach*, p. 15.

⁵⁸Wiktorowicz, *Islamic Activism: A Social Movement Theory Approach*, p. 15–6.

⁵⁹David A. Snow and Robert D. Benford. “Ideology, Frame Resonance, and Participant Mobilization”. In: *From Structure to Action: Comparing Movement Participation Across Cultures, International Social Movement Research*. Ed. by Bert Klandermans, Hanspeter Kriesi, and Sidney Tarrow. Greenwich, Connecticut: JAI Press, 1988, pp. 197–218.

⁶⁰Wiktorowicz, *Islamic Activism: A Social Movement Theory Approach*, p. 17.

In *Paths to a Green World*, Peter Dauvergne and Jennifer Clapp provided a typology of the environmental movement as of 2011 which highlighted the internal complexity among environmentalists. They identified a movement divided into distinctive worldviews, which can be distinguished in how they diagnose the origins of environmental problems, the policy approaches they favour to remedy them, and the issues beyond the environment which they take to be linked. Clapp and Dauvergne contrast market liberals with institutionalists, bioenvironmentalists, and social greens.⁶¹ In particular, elements of their social green category are perceptible in the CJ worldview: skepticism about globalization and capitalism, a preference for the local, and strong willingness to link environmental with economic and justice issues. None of these four categories perfectly match with worldviews in the CFFD movement, but they do help to show the roots of CJ and CO₂-

e thinking and the important threads and characteristics that have carried through from earlier instances of environmental activism, particularly how a focus on justice and intersectionality has been both championed and criticized within the movement for decades. Clapp and Dauvergne’s typology also considers tensions and contradictions between the four views. Market liberals see growth as inherently desirable, if not as the actual mechanism for improved environmental conditions (rich people can afford to care about greenery), while social greens and bioenvironmentalists tend to support an antiglobalization agenda that deprioritizes or does not seek GDP growth as a major objective.⁶² There is also considerable debate about a question central to the deliberation of climate activists: whether incremental changes can solve environmental problems, or just amount to “bailing a few buckets of water as the *Titanic* sinks.”⁶³

As described by Wiktorowicz, as social movement scholarship has evolved it has developed an increased focus on divisions within movements and the contest over framing. This approach is productive in the CFFD case, where longstanding disagreements about incremental versus radical action and the contest over framing have been notable features of the movement. In aggregate the CFFD movement has been a constructive enterprise with some agreement and some disagreement. This makes it a useful case study for evaluating and contributing to social movement theory.

1.3 Brief summary of the CFFD literature

Since about 2014 a succession of dissertations and scholarly articles have analyzed the campus fossil fuel divestment movement, both in Canada and other jurisdictions where campaigns were initiated.

In Canada, Joe Curnow conducted an intensive study of the CFFD campaign at the University of Toronto organized by Toronto350.org and later UofT350.org (also called Fossil Free U of T). This included getting permission from the campaign to film most of their planning meetings in a room with multiple high definition cameras covering the space, documenting the main discussion being held, side-discussions, and other behaviours by participants.⁶⁴ In a news article, Curnow commented on the forms of learning which the detailed study of the first U of T campaign revealed, in which organizers “embraced an identity as environmentalists committed to climate justice,” learned how to plan and organize actions in a more equitable way, and began questioning objectivity as “a Euro-Western construct” and pursuing knowledge through relation-

⁶¹Jennifer Clapp and Peter Dauvergne. *Paths to a Green World: The Political Economy of the Global Environment*. Cambridge: MIT Press, 2011, p. 3-14.

⁶²Clapp and Dauvergne, *Paths to a Green World: The Political Economy of the Global Environment*, p. 245.

⁶³Clapp and Dauvergne, *Paths to a Green World: The Political Economy of the Global Environment*, p. 256 (italics in original).

⁶⁴This added up to “15,000 minutes of video data collected from 3–4 angles.” Joe Curnow et al. *All the Rage: Emotional Configurations of Anger as Feminist Politicization*. 2020. url: <https://repository.isls.org/bitstream/1/6780/1/82-89.pdf> (visited on 08/01/2020), p. 84.

ships and experiences as endorsed in feminist and Indigenous philosophies.⁶⁵ With Allyson Gross, Curnow published a book chapter in 2016 describing the history of the CFFD movement and internal deliberations about emphasizing solidarity and climate justice.⁶⁶ In another book chapter in 2016, Curnow and Jody Chan discussed how gendered positioning produces “experts” within CFFD campaigns and argued that campaign

participants are deemed experts “not through learning or achieving mastery of the core competencies of the community of practice” but “by performing dominant forms of masculinity, which are affirmed by other members of the community and recognized as authoritative”^{67,68,69} In a paper in the proceedings of the International Conference of the Learning Sciences Curnow et al. “examined how emotion, and particularly snarky rage, shaped the process of politicization” in the first U of T campaign, using analysis of video from Women’s Caucus meetings initiated by the lead researcher.^{70,71} As Aaron Saad noted, CFFD organizers “examined privilege and power *within* the movement by considering matters like who speaks, who is spoken over, and who stays silent in meetings.”⁷² In 2017, Curnow and Chan commented on the “lamentable lack of academic research on how hegemonic masculinity shapes environmentalism and how it interacts with embedded racism, colonialism, and sexism to construct an exclusionary climate”, documenting micro-level practices within the first U of T divestment campaign including exclusive talk and establishing expertise.⁷³

Fiona del Rio’s 2017 thesis examined how the strategies of climate change activists were informed by the four values of “crisis mitigation, social change, collective organizing and individual agency”, and concluded that “climate activism can be thought of as a movement in terms of core values which are negotiated in and through the strategies activists employ.”⁷⁴ Daniel Charrois’ 2018 thesis examined divestment decisions at 22 Canadian post-secondary institutions, with decisions categorized as “full, partial, or rejected.”⁷⁵ Emilia Belliveau’s master’s thesis used campaigns at the University of British Columbia, the University of Toronto, and Dalhousie University as case studies.⁷⁶

Naomi Mumbi Maina-Okori, Jaylene Murray, and Marcia McKenzie wrote the first comprehensive analysis

⁶⁵Joe Curnow. *Fridaysforfuture: When Youth Push the Environmental Movement Towards Climate Justice*. 2019. url: <https://theconversation.com/fridaysforfuture-when-youth-push-the-environmental-movement-towards-climate-justice-115694> (visited on 09/18/2019).

⁶⁶Curnow and Gross, “[Injustice Is Not an Investment: Student Activism, Climate Justice, and the Fossil Fuel Divestment Campaign](#)”.

⁶⁷Joe Curnow and Jody Chan. “Becoming an ‘Expert’: Gendered Positioning, Praise, and Participation in an Activist Community”. In: *Transforming Learning, Empowering Learners: The International Conference of the Learning Sciences 2016*. Ed. by Chee-Kit Looi et al. Singapore: International Society of the Learning Sciences, 2016.

⁶⁸See also: Janet K. Swim, Ashley J. Gillis, and Kaitlynn J. Hamaty. “Gender Bending and Gender Conformity: The Social Consequences of Engaging in Feminine and Masculine Pro-Environmental Behaviors”. In: *Sex Roles* (2019), pp. 1–23. url: <https://link.springer.com/article/10.1007/s11199-019-01061-9> (visited on 12/26/2019).

⁶⁹Merelman noted that “large numbers are impressed by the appearance of absolute certainty in politics and are willing to grant legitimacy to the self-confident.” Merelman, “[The Dramaturgy of Politics](#)”, p. 223.

⁷⁰Curnow et al., *All the Rage: Emotional Configurations of Anger as Feminist Politicization*.

⁷¹On emotion in social justice organizing, see also: Joe Curnow and Tanner Vea. “Emotional Configurations of Politicization in Social Justice Movements”. In: *Information and Learning Sciences* (2020). url: <https://www.emerald.com/insight/content/doi/10.1108/ILS-01-2020-0017/full/html> (visited on 12/28/2021), p. 731, 744–5.

⁷²Aaron Saad. “The Fossil Fuel Divestment Movement”. In: *Local Activism for Global Climate Justice: The Great Lakes Watershed*. Ed. by Patricia E. Perkins. New York: Routledge, 2019, (emphasis in original).

⁷³Jody Chan and Joe Curnow. “Taking Up Space: Men, Masculinity, and the Student Climate Movement”. In: *RCC Perspectives* 4 (2017), pp. 77–86. url: <http://www.jstor.org/stable/26241458>.

⁷⁴Fiona Del Rio. “In a World Where Climate Change is Everything... Conceptualizing Climate Change Activism and Exploring the People’s Climate Movement”. MA thesis. McMaster University, 2017. url: <https://macsphere.mcmaster.ca/handle/11375/22508> (visited on 12/16/2018), p. iv, 51.

⁷⁵Daniel Charrois. “Predicting the Fossil Fuel Divestment Decisions of Canadian Post-secondary Educational Institutions”. MA thesis. Ottawa: University of Ottawa, 2018. url: <https://ruor.uottawa.ca/handle/10393/37951> (visited on 08/21/2018), p. 13.

⁷⁶Emilia Belliveau. “Climate Justice in the Fossil Fuel Divestment Movement: Critical Reflections on Youth Environmental Organizing in Canada”. MA thesis. University of Victoria, 2018. url: https://dspace.library.uvic.ca/bitstream/handle/1828/10052/Belliveau_Emiliana_MA_2018.pdf (visited on 11/18/2020), p. 28.

of 38 active CFFD campaigns in Canada.^{77,78} Based on critical policy studies and the policy mobilities framework, they highlighted diffusion of messaging and tactics between campaigns and the role of proliferator organizations.⁷⁹ They explained that a “‘policy mobilities’ framing requires methodological attention to the role of actors and networks, as well as tactics or tools, in the uptake and movement of policy initiatives within and across sites.”⁸⁰ Rowe, Dempsey, and Gibbs have also produced a high-level analysis of the CFFD movement from a Canadian perspective, emphasizing the importance of the enemy naming strategy.⁸¹

Significant research has also been undertaken on the CFFD movement as a whole. For instance, Todd Schifeling and Andrew Hoffman’s analyzed the CFFD movement as an effort by 350.org to exploit radical flank effects.⁸² Yiping Zhang examined the moral and financial arguments for divestment; Noam Bergman studied the effect of the movement on public discourse; Chelsie Hunt and Olaf Weber looked at the movement’s financial impact and influence on portfolio carbon intensity; Auke Plantinga and Bert Scholtens studied global stock market returns at the industry level; and Tim Pfefferle studied the history and strategies of the FFD movement.^{83,84,85,86,87}

Research on American campaigns includes work by Lila Singer-Berk, Jessica Grady-Benson, Brinda

⁷⁷Pre-published version: Maina-Okori, Murray, and McKenzie, “Climate Change and the Fossil Fuel Divestment in Canadian Higher Education: The Mobilities of Actions, Actors, and Tactics (journal pre-proof)”.

⁷⁸Published version: Naomi Mumbi Maina, Jaylene Murray, and Marcia McKenzie. “Climate Change and the Fossil Fuel Divestment Movement in Canadian Higher Education: the Mobilities of Actions, Actors, and Tactics”. In: *Journal of Cleaner Production* 253 (2020), p. 119874. url: <https://www.sciencedirect.com/science/article/pii/S0959652619347444> (visited on 11/13/2021).

⁷⁹Maina-Okori, Murray, and McKenzie, “Climate Change and the Fossil Fuel Divestment in Canadian Higher Education: The Mobilities of Actions, Actors, and Tactics (journal pre-proof)”, p. 1, 4.

⁸⁰Maina-Okori, Murray, and McKenzie, “Climate Change and the Fossil Fuel Divestment in Canadian Higher Education: The Mobilities of Actions, Actors, and Tactics (journal pre-proof)”, p. 10.

⁸¹James Rowe, Jessica Dempsey, and Peter Gibbs. *The Power of Fossil Fuel Divestment (and its Secret)*. 2016. url: https://www.academia.edu/14081780/The_Power_of_Fossil_Fuel_Divestment_And_its_Secret (visited on 08/22/2018).

⁸²Todd Schifeling and Andrew J. Hoffman. “Bill McKibben’s Influence on US Climate Change Discourse: Shifting Field-level Debates Through Radical Flank Effects”. In: *Organization & Environment* (2017). url: <https://journals.sagepub.com/doi/abs/10.1177/1086026617744278> (visited on 06/21/2019).

⁸³Yiping Zhang. “A New Perspective for the Rationality of Fossil Fuel Divestment — The Interaction between the Shifting of Capital Flow and Stranded Assets”. MA thesis. Waterloo: Waterloo, 2020. url: <https://uwspace.uwaterloo.ca/bitstream/handle/10012/15942/Zhang%20Yiping.pdf> (visited on 06/20/2020).

⁸⁴Noam Bergman. “Impacts of the Fossil Fuel Divestment Movement: Effects on Finance, Policy and Public Discourse”. In: *Sustainability* 10.7 (2018), p. 2529. url: <https://www.mdpi.com/2071-1050/10/7/2529> (visited on 05/27/2020).

⁸⁵Chelsie Hunt and Olaf Weber. “Fossil Fuel Divestment Strategies: Financial and Carbon-related Consequences”. In: *Organization & Environment* 32.1 (2019), pp. 41–61. url: <https://journals.sagepub.com/doi/full/10.1177/1086026618773985> (visited on 05/27/2020).

⁸⁶Auke Plantinga and Bert Scholtens. “The Financial Impact of Fossil Fuel Divestment”. In: *Climate Policy* (2020), pp. 1–13. url: <https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1806020> (visited on 08/21/2020).

⁸⁷Tim Pfefferle. “Between Morals and Markets — Fossil Fuel Divestment, Business, and the State”. MA thesis. Oxford: University of Oxford, 2016. url: https://www.academia.edu/31177213/Between_Morals_and_Markets_Fossil_Fuel_Divestment_Business_and_the_State (visited on 07/11/2020).

Sarathy, Theo LeQuesne, Robin Xu, Christopher Beer, Noel Healy, and Jessica Debski.^{88,89,90,91,92,93,94,95} Work on UK campaigns includes Xaviera Ringerling and Nierika Hamaekers, while Linnenlueke et al. examined the campaign at the Australian National University.^{96,97,98}

1.3.1 Positionality in the CFFD literature

Many existing accounts highlight the personal involvement of the authors in the CFFD movement. Ringerling commented that: “as I was a participant of the movement myself this affected my approach to the study.”⁹⁹ Del Rio described how her thesis was “based on my ethnographic fieldwork with the Toronto People’s Climate Movement as well as my own experiences as an activist living and working in Toronto.”^{100,101} Belliveau discussed the “role of the researcher” and her involvement in Divest Dalhousie.¹⁰² Aidid described how her master’s thesis let her “create a study that could weave in my activism” and how she developed her research project as “an insider to the movement” and a “scholar-activist.” She noted that research in the field is “commonly authored by participants in the movement” and described a goal of “creating research that can be applied outside the pages of a thesis and the gates of academia.” She also described how iden-

⁸⁸Lila Singer-Berk. *Campuses of the Future: The Interplay of Fossil Fuel Divestment and Sustainability Efforts at Colleges and Universities*. 2014. url: https://www.oxy.edu/sites/default/files/assets/UEP/Comps/2012/2012/Singer-Berk_Lila_Campuses%20of%20the%20Future.pdf (visited on 03/13/2017).

⁸⁹Jessica Grady-Benson. “Fossil Fuel Divestment: The Power and Promise of a Student Movement for Climate Justice”. B.A. Thesis. Claremont, California: Pitzer College, 2014. url: <https://core.ac.uk/download/pdf/70979158.pdf> (visited on 01/11/2020).

⁹⁰Jessica Grady-Benson and Brinda Sarathy. “Fossil Fuel Divestment in US Higher Education: Student-led Organising for Climate Justice”. In: *Local Environment* 21.6 (2016), pp. 661–681. url: <https://www.tandfonline.com/doi/abs/10.1080/13549839.2015.1009825?journalCode=cloe20> (visited on 01/11/2020).

⁹¹Eve Bratman et al. “Justice is the Goal: Divestment as Climate Change Resistance”. In: *Journal of Environmental Studies and Sciences* 6.4 (2016), pp. 677–690. url: <https://link.springer.com/article/10.1007/s13412-016-0377-6> (visited on 03/13/2017).

⁹²Theo LeQuesne. “Revolutionary Talk: Communicating Climate Justice”. MA thesis. University of California, Santa Barbara, 2016. url: <https://escholarship.org/uc/item/24997v1> (visited on 07/10/2017).

⁹³Robin Xu. “Looking Beyond Fossil Fuel Divestment: Combating Climate Change in Higher Education”. In: *The Contribution of Social Sciences to Sustainable Development at Universities*. Ed. by Leal Filho and Michaela Zint. Springer, 2016, pp. 39–54.

⁹⁴Christopher Todd Beer. “Rationale of Early Adopters of Fossil Fuel Divestment”. In: *International Journal of Sustainability in Higher Education* (2016). url: <https://www.emerald.com/insight/content/doi/10.1108/IJSHE-02-2015-0035/full/html> (visited on 03/12/2020).

⁹⁵Noel Healy and Jessica Debski. “Fossil Fuel Divestment: Implications for the Future of Sustainability Discourse and Action Within Higher Education”. In: *Local Environment* 22.6 (2017), pp. 699–724. url: https://www.researchgate.net/publication/311487406_Fossil_fuel_divestment_implications_for_the_future_of_sustainability_discourse_and_action_within_higher_education (visited on 12/30/2019).

⁹⁶Xaviera Ringerling. “Transformative Reformism: a Study of the UK University Fossil Fuel Divestment Movement’s Potential for Significant Change”. MA thesis. University College London, 2015. url: https://www.academia.edu/22146800/Transformative_reformism_A_study_of_the_UK_University_Fossil_Fuel_Divestment_Movements_potential_for_significant_change (visited on 01/11/2020).

⁹⁷Nierika Hamaekers. “Why Some Divestment Campaigns Achieve Divestment While Others Do Not: The Influence of Leadership, Organization, Institutions, Culture and Resources”. Master’s Thesis. Rotterdam, Netherlands: Rotterdam School of Management: Erasmus University, 2015. url: <https://thesis.eur.nl/pub/32244> (visited on 03/06/2017).

⁹⁸Martina K. Linnenluecke et al. “Divestment from Fossil Fuel Companies: Confluence Between Policy and Strategic Viewpoints”. In: *Australian Journal of Management* 40.3 (2015), pp. 478–487. url: <https://journals.sagepub.com/doi/abs/10.1177/0312896215569794?journalCode=auma> (visited on 12/31/2019).

⁹⁹Ringerling, “Transformative Reformism: a Study of the UK University Fossil Fuel Divestment Movement’s Potential for Significant Change”, p. 20.

¹⁰⁰Del Rio, “In a World Where Climate Change is Everything... Conceptualizing Climate Change Activism and Exploring the People’s Climate Movement”, p. iv.

¹⁰¹In chapter 3 she discusses as important data sources: “my ethnographic fieldwork with climate activists in Toronto during the fall of 2016 as well as my personal experience as part of a campaign for fossil fuel divestment at the University of Toronto.” Del Rio, “In a World Where Climate Change is Everything... Conceptualizing Climate Change Activism and Exploring the People’s Climate Movement”, p. 52.

¹⁰²Emilia Belliveau. “Climate Justice in the Fossil Fuel Divestment Movement: Critical Reflections on Youth Environmental Organizing in Canada”. MA thesis. Dalhousie University, 2018. url: <https://dspace.library.uvic.ca/handle/1828/10052>

tifying herself as a fellow activist helped establish trust and rapport with interview participants. Perhaps most distinctly and creatively, Aidid opened her thesis with a poem called “I Believe in Climate Justice” and the closing couplet “I believe in climate justice / and I believe you should too.”¹⁰³ Curnow described her approach as “militant ethnography” which “extends the commitments of community based research and situates researchers within the social movements they participate in.”^{104,105,106} Existing accounts are also notable for their generally strong normative stances in favour of the intersectional CJ framing.¹⁰⁷ While such scholarly analyses certainly contribute rich and important information to understanding individual campaigns and the effects of involvement in them on student organizers, it is desirable to supplement them with analyses based on a larger number of cases.

1.4 Contribution

This dissertation provides a well-substantiated anatomy of why the CFFD movement emerged, why it took the form it did, and its strengths and weaknesses as a response to climate change. The explanations can chiefly be found in the conflict between the CJ and CO₂-e framings, each of which has strengths and limitations detailed in chapter 5. This builds upon a literature in political science about social movements. As with Hadden’s work in the multilateral context, this dissertation is concerned with the dynamics of coherence and conflict in the climate activist movement and with the division between approaches to climate change that view it primarily through a scientific lens and approaches that view it primarily through a justice lens. The fact that the same basic division between approaches can be found in the context of campaigns at Canadian universities organized by activists who had much more in common than those studied by Hadden confirms that differences in framing can be of vital importance within social movements but also shows that such differences cannot always be explained by the focus on networks that did so much to explain the case that Hadden studied. Even within a movement organized around a “campaign in a box” by relatively similar participants, the deep contention that Hadden identified in Copenhagen was still present. Through close examination of the CFFD case, we will see how this contention arises chiefly from an ideological contest over how to frame climate change. The dynamics and consequences of that contest will be crucial for the impact CFFD has in the broader world, as well as within the politics of climate change activism. Finally, the dissertation also aims to make a positive contribution to thinking about how best to address the problem of climate change. Organizing rooted in the CJ framing has achieved important accomplishments by seriously raising the possibility of not using most of the world’s remaining fossil fuels, as well as by developing activists committed to keep working on climate change. However, the CJ messaging does not have the cross-societal

¹⁰³Shadiya A. Aidid. “From Divestment to Climate Justice: Perspectives from University Fossil Fuel Divestment Campaigns”. MA thesis. Lakehead University, 2022. url: <https://thesis.lakeheadu.ca/handle/2453/4957> (visited on 06/25/2022), p. iv, 5, 25, 44-5, 46, 61, 1.

¹⁰⁴Joe Curnow. “Politicization in Practice: Learning the Politics of Racialization, Patriarchy, and Settler Colonialism in the Youth Climate Movement”. PhD thesis. Toronto: University of Toronto, 2017. url: <https://tspace.library.utoronto.ca/handle/1807/98754> (visited on 08/23/2018), p. 36–8.

¹⁰⁵For more on Curnow’s use of militant ethnography, see: Curnow and Veal, “[Emotional Configurations of Politicization in Social Justice Movements](#)”, p. 734–5.

¹⁰⁶For another example of militant ethnography, see Lindsey Hand’s thesis on how “six educators use their agency to disrupt

settler colonialism in their classrooms by creating anti-colonial, land-based learning activities.” Lindsey Hand. “Classrooms as Sites of Resistance and Rebuilding: Constraints and Affordances of Washington Teachers Using the Since Time Immemorial Native Education Curriculum”. Master of Education. University of Washington, 2020. url: https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/45950/Hand_washington_02500_21706.pdf (visited on 08/28/2020), p. 3.

¹⁰⁷Bergman argued: “The main limitation of this research is the favourable attitude of most research into Divestment. This limited perspective risks overestimating the movement’s impacts and assigning causality to changes that were part of larger processes.” Bergman, “[Impacts of the Fossil Fuel Divestment Movement: Effects on Finance, Policy and Public Discourse](#)”, p. 14.

Chapter 1. Research question and issue context

appeal to establish and sustain a regime protecting climatic stability. So, I argue that other analyses which share the determination to avoid catastrophic climate change have something important to contribute to the movement to address climate change, and there is evidence that the CFFD movement has helped spur the formation of non-progressive non-intersectional coalitions in favour of a rapid transition away from fossil fuels.

Chapter 2

Political opportunity

Why did the CFFD movement emerge? In other words, why did significant groups of students at many different Canadian universities become very concerned about climate change and what led many of these students to express that concern by trying to persuade their universities to divest from companies in the fossil fuel industry?

One way of answering these questions is to explore the political opportunity structure which gave birth to the CFFD movement. There were some background conditions and social developments that made the problem of climate change seem particularly urgent to the students who participated in the CFFD movement and led these students to think that they could address this problem in an important way by demanding that their universities change their investment policies and practices.

The CFFD movement and its focus on private actors can be seen as an attempt to get around the structural barriers to climate change action, which include individual psychology, institutions ill-adapted to address long-term problems, and the huge investment in fossil fuel capital stock. These barriers are relevant in the university context as well, including the influence of *status quo* economic elites, and activist perceptions on their nature and potential to overcome them influenced CFFD strategy.¹

This chapter describes three central phenomena that help to explain the emergence of the CFFD move-

ment: the increased political salience of climate change, and specifically the idea of stranded assets and the carbon bubble; the role of 350.org as a vanguard organization and divestment proliferator; and the particular opportunities for movement-building and norm shifting through universities. 350.org and other divestment proliferators adopted the divestment strategy out of their perception of the political opportunity structure which they faced, and created a movement that is at least superficially unified in objectives and messaging, while not tied together by social or institutional linkages. This viral distribution of a campaign concept and strategy reflects an attempt to escape the ever-worsening outcomes of domestic and international climate change politics, through the mechanism of the new forms of transnational organization made possible by internet communication.² Public and elite concerns about climate change have been rising as unmistakable global effects are observed, and yet the structural barriers to climate change action have produced a political opportunity structure full of dead ends, with neither domestic democratic politics nor multinational diplomacy being capable of reorienting the world away from fossil fuel dependence, leaving climate activists

¹For a detailed summary, see: Ilnyckyj, *Structural Barriers to Avoiding Catastrophic Climate Change*.

²The CFFD movement is best understood as transnational, so activities and statements from outside Canada are relevant for understanding what happened here. For evidence of the similarity of campaigns in Canada, the US, the UK, and elsewhere see: [International campus fossil fuel divestment efforts](#) p. 238

searching elsewhere for political space to mobilize people and shift norms.³ Within this context, 350.org made its quick and unexpected appearance and then chose to make fossil fuel divestment a major focus of its efforts — with universities providing a perfect target because of their societal influence and susceptibility to activist persuasion.

2.1 The increased salience of climate change

CFFD campaigns at Canadian universities coincided with, and were fuelled by, the growing salience of climate change as a political issue. By salience, I mean essentially the perception that climate change is important and relevant, and particularly the willingness to prioritize action on climate change over other political objectives. Salience is observable in public, elite, and media discourse: in the focus on climate change as a factor which will profoundly affect the future that people will live in. At the most general level, this is reflected in the sheer level of communication about the subject. It is also reflected by the collection of actors and institutions purporting to take the problem seriously, from international multilateral institutions like the UN and World Bank to specific media outlets to armed forces and intelligence services. At the most abstract, it concerns how climate change affects our shared visions of the future, as manifested culturally in forms like the speculative fiction people create and consume and manifested in policy discussions by the visions of a desirable future that inform long-term planning decisions. While it can be readily and extensively demonstrated that the degree of concern about climate change has become immense in some segments of the population, the inescapable reality of ever-higher global CO₂ levels and continued investment in new fossil fuel production shows how concern has not effectively translated into public policy. The effort to end that disjuncture can be seen in the work climate activist organizations have done to try to motivate the public to make political choices based on climate change promises, as well as in efforts to create change through novel

strategies and institutions outside of government.

This growing concern can be substantiated with many lines of evidence. This includes the seriousness of warnings issued by the Intergovernmental Panel on Climate Change (IPCC) and global scientific community; journalistic coverage; prominence in electoral campaigns; legislative discussion and action; corporate messaging; and public opinion.^{4.5.6.7} More and more citizens — and especially young people — see climate change as a danger to their societies and themselves. When set alongside the insufficient effort that conventional institutions have been dedicating to addressing the problem, this gap between the perceived need for action and the unwillingness or inability of the political system to provide it creates a political opportunity structure in which new strategies could be successful, including efforts to lobby private actors like

⁴Lakenen described interview subjects being disappointed by the static nature of the UNFCCC negotiations, driving them toward action at the local level since they “felt that their efforts were obstructed or insignificant at national or international levels.” Railii Lakanen. “‘A Battle for the Soul of the Climate Movement’: The Expansion of the Intersectional Climate Justice Frame Among Young Activists in Canada”. PhD thesis. Toronto: University of Toronto, 2019. url: https://tspace.library.utoronto.ca/bitstream/1807/95883/1/Lakanen_Railii_201906_PhD_thesis.pdf (visited on 04/22/2022), p. 126, 142, 148.

⁴Hadden described how climate change was not a high-profile issue prior to the 1980s and 90s, and that much of the activism in the early 90s was about putting the issue on the international agenda. Participation by civil society groups in UNFCCC COPs steadily rose from about 200 groups in 1995 to over 1,300 at Copenhagen. Hadden, *Networks in Contention: The Divisive Politics of Climate Change*, p. 17–8.

⁵Similarly, in the 1980s the issue of second-hand smoke operated through the mechanisms of media attention, publicized scientific results, and NGO advocacy to drive greater tobacco regulation. Ronald J. Troyer and Gerald E. Markle. *Cigarettes: The Battle Over Smoking*. New Brunswick, N.J.: Rutgers University Press, 1983.

⁶See also: Constance A. Nathanson. “Social Movements as Catalysts for Policy Change: The Case of Smoking and Guns”. In: *Journal of Health Politics, Policy and Law* 24.3 (1999), pp. 421–488.

⁷Donley T. Studlar. *Tobacco Control: Comparative Politics in the United States and Canada*. Toronto: University of Toronto Press, 2002.

universities.⁸ The increased salience of climate change is crucial for understanding the political opportunity structure presented to the CFFD movement. It was the basis for the argument that universities had to renounce their past practices; it established the context in which reporting about the movement was written; and it was powerfully personally motivational to CFFD organizers who have now been told for decades that the stability and security of their own futures depends on humanity’s success in curbing the worst potential impacts of climate change.

Two time periods are relevant for considering the importance of the salience of climate change to the CFFD movement. There is the degree to which it had risen as a subject of public concern before and around the time when the CFFD movement was initiated in 2012 and then there is the degree salience continued to rise as the movement was ongoing. Material from the first period provides grounds for thinking that initiating the CFFD movement was a fruitful undertaking, while the continued increase in salience while the movement was ongoing helps explain why campaigns persisted and why some Canadian universities eventually committed to divest. Across time periods, it is also important to consider the intergenerational breakdown of concern about climate change and support for mitigation policies. The concentration of support among young people helps explain the appeal of universities as activist targets — both because young people are concentrated and hold influence there, and because other avenues for action through domestic politics and multilateral negotiations are seen as blocked after decades of failure.⁹ The leaders of the CFFD movement have grown up during a time when the ecological threats to humanity are increasingly recognized and lamented, but where the normal processes of politics have not created solutions in response. This opens the door for contentious

forms of political action, and for a new focus on influential actors outside politics.¹⁰ That includes universities which play an important and privileged role in the public discourse, as well as the financial sector which must choose between persisting with fossil fuel investments or seeking a new energy basis for the economy.

Among the lines of evidence for the increased and increasing salience of climate change, I believe the climate science is overwhelmingly the most important and the most necessary to describe in detail here as a foundation for my analytical and normative arguments. Just as without 350.org there would be no unified CFFD movement, without these scientific assessments there would be no climate change politics at all — just distributed bafflement about changing weather conditions around the world. The other lines of evidence discussed here are derivative from the science, since journalists, politicians, and the general public would not have made their own contributions to the salience of climate change without it.¹¹ Hadden noted the interdependent effect of several mechanisms raising the salience of climate change, including media attention, growing scientific certainty, and “the simple reality that the effects of climate change were becoming more apparent and threatening to citizens all over the world.”¹² This illustrates the crucial role of climate science and public awareness about it, since that is where journalists got their information and how citizens made sense of the new conditions they were experiencing. It is also important to describe the scientific evidence

⁸Bergman concluded that divestment “offers a novel form of non-state governance that can play a significant role in social steering and catalyzing effective climate change mitigation.” Bergman, [“Impacts of the Fossil Fuel Divestment Movement: Effects on Finance, Policy and Public Discourse”](#), p. 15.

⁹On the ineffectiveness of the UNFCCC COP process and multilateral climate negotiations generally, see: Fiona Harvey. *Thirty Years of Climate Summits: Where Have They Got Us?* 2022. url: <https://www.theguardian.com/environment/2022/jun/11/cop-climate-change-conference-30-years-highlights-lowlights> (visited on 06/16/2022).

¹⁰Aidid noted that climate organizing was perceived as contentious by prospective recruits to CFFD campaigns who saw climate organizing as “heavily reliant on protests and demonstrations.” Aidid, [“From Divestment to Climate Justice: Perspectives from University Fossil Fuel Divestment Campaigns”](#), p. 75.

¹¹In a speech at the Munk School in October 2022, Environment and Climate Change Canada Deputy Minister Christine Hogan described her time working as a junior policy analyst during the Rio summit and establishment of the UNFCCC and IPCC as “watching science put global environmental issues squarely on the agenda of governments.”

¹²Hadden, [“Networks in Contention: The Divisive Politics of Climate Change”](#), p. 19.

Chapter 2. Political opportunity

in detail because political and normative conclusions depend on it. By providing a detailed account here, I can substantiate which sources those claims derive from.

The global scientific community has been sounding the alarm about climate change in increasingly strident terms for decades. In 1979, the US National Academy of Sciences first released a report on climate change.^{13,14,15,16} They estimated that the climate would warm by 2.0–3.5 °C each time the atmospheric concentration of CO₂ doubled beyond the pre-industrial level of about 280 ppm, with greater warming close to the poles.^{17,18,19,20,21}

In 1988, the World Meteorological Association and the United Nations Environment Programme established the IPCC to produce periodic reports on climate change science. The IPCC’s most significant and substantial publications are a series of assessment reports, released in 1990, 1996, 2001, 2007, and 2014. In 2007, the Nobel Peace Prize was awarded to the IPCC and Al Gore.²² Between 2021 and 2022, they also published the three reports comprising the sixth assessment report (AR6).^{23,24,25,26,27,28,29} Each new

¹³National Research Council. *Carbon Dioxide and Climate: A Scientific Assessment*. 1979. url: <https://www.nap.edu/catalog/12181/carbon-dioxide-and-climate-a-scientific-assessment> (visited on 03/09/2020).

¹⁴Mark Jaccard. *The Citizen's Guide to Climate Success: Overcoming Myths that Hinder Progress*. Cambridge: Cambridge University Press, 2020, p. 45.

¹⁵Naomi Oreskes and Eric M. Conway. "Challenging Knowledge: How Climate Science Became a Victim of the Cold War". In: *Agnostology: The Making and Unmaking of Ignorance*. Ed. by Robert N. Proctor and Londa Schiebinger. Stanford: Stanford University Press, 2008, p. 58.

¹⁶Sometimes called the Charney report, as it was written by a NAS task force under Jule Charney. Daniel Yergin links the emergence of climate activism in the US to this time period, with figures like Rafe Pomerance and Gus Speth. Daniel Yergin. *The Quest: Energy, Security, and the Remaking of the Modern World*. New York: Penguin Press, 2011, p. 449–51.

¹⁷National Research Council. *Carbon Dioxide and Climate: A Scientific Assessment*, p. 1.

¹⁸Samset et al. used an equilibrium climate sensitivity of 3 °C – meaning 3 °C of warming per doubling of the atmospheric concentration of CO₂ above pre-industrial levels. B.H. Samset, J.S. Fuglested, and M.T. Lund. "Delayed Emergence of a Global Temperature Response After Emission Mitigation". In: *Nature Communications* 11.1 (2020), pp. 1–10. url: <https://www.nature.com/articles/s41467-020-17001-1.pdf> (visited on 07/15/2020), p. 4.

¹⁹Research published in July 2020 found a 2/3 chance that climate sensitivity is between 2.6–3.9 °C. S. Sherwood et al. "An Assessment of Earth's Climate Sensitivity Using Multiple Lines of Evidence". In: *Reviews of Geophysics* (2020). url: <https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/2019RG000678> (visited on 07/30/2020).

²⁰Paul Voosen. *After 40 Years, Researchers Finally See Earth's Climate Destiny More Clearly*. 2020. url: <https://www.sciencemag.org/news/2020/07/after-40-years-researchers-finally-see-earths-climate-destiny-more-clearly> (visited on 07/30/2020).

²¹This logarithmic dependence of the climate on greenhouse gas concentrations (which must double from pre-industrial levels of about 280 ppm to 540 ppm to add the first estimated 3 °C and double again for each successive 3 °C) means that a Venus-like runaway warming scenario is probably impossible on Earth until the output from the sun is much greater billions of years from now, but also means that the earliest emissions have the greatest climatic impact. Robert L. Jaffe and Washington Taylor. *The Physics of Energy*. Cambridge: Cambridge University Press, 2018, p. 728.

²²The Nobel Foundation. *The Nobel Peace Prize 2007*. 2007. url: <https://www.nobelprize.org/prizes/peace/2007/summary/> (visited on 07/21/2022).

²³Intergovernmental Panel on Climate Change. *Climate Change 2021: The Physical Science Basis: Summary for Policymakers*. 2021. url: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf (visited on 04/16/2022).

²⁴Intergovernmental Panel on Climate Change. *Climate Change 2022: Impacts, Adaptation and Vulnerability: Summary for Policymakers*. 2022. url: https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf (visited on 04/16/2022).

²⁵Intergovernmental Panel on Climate Change. *Climate Change 2022: Mitigation of Climate Change: Summary for Policymakers*. 2022. url: https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf (visited on 04/16/2022).

²⁶For a journalistic summaries, see: Matt McGrath. *Climate Change: IPCC Scientists Say it's 'now or never' to Limit Warming*. 2022. url: <https://www.bbc.com/news/science-environment-60984663> (visited on 04/16/2022).

²⁷Zoya Teirstein. *Scientists Identify the Missing Ingredient for Climate Action: Political Will: The IPCC's Latest Report Finally Recognizes the Social Barriers to Climate Action*. 2022. url: <https://grist.org/politics/scientists-identify-the-missing-ingredient-for-climate-action-political-will/> (visited on 04/16/2022).

²⁸Lina Tran and Joseph Winters. 'We are at a crossroads': *New IPCC report says it's Fossil Fuels or Our Future*. 2022. url: <https://grist.org/science/we-are-at-a-crossroads-new-ipcc-report-says-its-fossil-fuels-or-our-future/> (visited on 04/16/2022).

²⁹The Economist. *The Latest IPCC Report Argues That Stabilising the Climate Will Require Fast Action*. 2022. url: <https://www.economist.com/science-and-technology/2022/04/09/the-latest-ipcc-report-argues-that-stabilising-the-climate-will-require-fast-action> (visited on 06/30/2022).

IPCC report has expressed greater alarm at the potential consequences of unchecked climate change. The conclusions of the IPCC are remarkable given the involvement of governments in the process and the need for consensus on the content of the most widely read and influential documents. This allowed states like Canada, Russia, Australia, and Saudi Arabia — with governments that seek to support the fossil fuel industry — to soften their language, omit especially frightening projections, and restrict the scope of their calls for action.^{30,31,32,33} Indirectly, this demonstrates how fossil-dependent governments perceive the risk to their traditional industries arising from climate science, which in turn demonstrates at least the possibility that concern arising from scientific understanding will feed into policy change. As with the efforts of fossil fuel corporations to distract from and disrupt any policy changes that would upset their business models, pro-fossil governments have tried to shift global mitigation efforts away from policies that would challenge their

industries. This is reflected in the outcomes of multilateral negotiations. Remarkably, the Paris Agreement never mentions fossil fuels — the cause of the problem it is meant to solve.^{34,35,36}

The global scientific consensus on the causes and probable consequences of GHG accumulation in the atmosphere is remarkable for the range of independent lines of evidence and support, including what paleoclimatology reveals about past atmospheric composition, temperature, and sea levels; what a growing network of sensors across the surface of the Earth, in the oceans, and in orbit has been revealing about how the energy balance between Earth and space is changing; and what can be projected using climate models built using our understanding of the planet as a thermodynamic system and tested against paleoclimatic data and recent historical atmospheric and temperature data for refinement.³⁷ In a 2009 statement, the national scientific academies of the G8 states along with those of Brazil, China, South Africa, and India said:

The IPCC 2007 Fourth Assessment of climate change science concluded that large reductions in the emissions of greenhouse gases, principally CO₂, are needed soon to slow the increase of atmospheric concentrations, and avoid reaching unacceptable levels. However, climate change is happening even faster than previously estimated; global CO₂ emissions since 2000 have been higher than even the highest predictions, Arctic sea ice has been melting at rates much faster than predicted, and the rise in the sea level has become more rapid. Feedbacks in the climate system might lead to much more rapid climate changes. The need for urgent action to address

³⁰Scholarship on the politics of the IPCC includes: Hannah R. Hughes, “Practices of Power and Knowledge in the Intergovernmental Panel on Climate Change (IPCC)”. PhD thesis. Aberystwyth, Wales: Aberystwyth University, Sept. 2012. url: https://pure.aber.ac.uk/portal/files/10520425/ipcc_thesis.pdf (visited on 08/03/2022).

³¹Hannah Hughes. “Bourdieu and the IPCC’s Symbolic Power”. In: *Global Environmental Politics* 15.4 (2015), pp. 85–104. url: <https://direct.mit.edu/glep/article-abstract/15/4/85/14833/Bourdieu-and-the-IPCC-s-Symbolic-Power> (visited on 08/03/2022).

³²Kari de Pryck. “Expertise under Controversy: The Case of the Intergovernmental Panel on Climate Change (IPCC)”. PhD thesis. Paris: Institut d’études politiques de Paris (Sciences Po), 2018. url: <https://tel.archives-ouvertes.fr/tel-03419348/document> (visited on 08/03/2022).

³³Kari De Pryck. “Intergovernmental Expert Consensus in the Making: the Case of the Summary for Policy Makers of the IPCC 2014 Synthesis Report”. In: *Global Environmental Politics* 21.1 (2021), pp. 108–129. url: <https://direct.mit.edu/glep/article-abstract/21/1/108/95085/Intergovernmental-Expert-Consensus-in-the-Making> (visited on 08/03/2022).

³⁴Parties to the United Nations Framework Convention on Climate Change. *Paris Agreement*. 2015. url: https://treaties.un.org/doc/Treaties/2016/02/20160215%2006-03%20PM/Ch_XXVII-7-d.pdf (visited on 01/18/2020).

³⁵See also: Alex Rafalowicz. *This is Why we Need a Fossil Fuel Treaty*. 2021. url: <https://www.weforum.org/agenda/2021/08/this-is-why-we-need-a-fossil-fuel-treaty/> (visited on 09/05/2021).

³⁶Agreed at COP-26 in 2021, the Glasgow Climate Pact “calls upon Parties to” “accelerate 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.” Parties to the Paris Agreement. *Decisions Adopted by the Conference of the Parties Serving as the Meeting of the Parties to the Paris Agreement*. 2021. url: https://unfccc.int/sites/default/files/resource/cma2021_10_add1_adv.pdf (visited on 08/03/2022), p. 5.

³⁷Paleoclimatology allows for the estimation of past climatic conditions going back hundreds of thousands or millions of years using evidence including ice core samples from places like Antarctica and layers of underwater sediment. In addition to being able to directly analyze things like gas bubbles in ice, the ratios between isotopes within these materials can be used as proxies for temperature and the amount of ice on Earth. Jaffe and Taylor, *The Physics of Energy*, p. 716–20.

climate change is now indisputable. For example, limiting global warming to 2 °C would require a very rapid worldwide implementation of all currently available low carbon technologies.^{38,39}

A lack of agreement about ‘the science’ is apparently not an impediment to global action on climate change, though presenting a misleading view of absent scientific consensus has been a core climate denier strat-

In addition to their six assessment reports to date, the IPCC released two documents in 2018 which speak powerfully to the level of policy and behavioural change necessary to stabilize the Earth's climate. Following the aspiration in the Paris Agreement of “keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels” and “pursu[ing] efforts to limit the temperature increase even further to 1.5 degrees Celsius” the IPCC produced a special report on the 1.5 °C target.^{46,47,48} It explained the magnitude of global action necessary to constrain warming below that level:

In model pathways with no or limited overshoot of 1.5 °C, global net anthropogenic CO₂ emissions decline by about 45% from 2010 levels by 2030 (40–60% interquartile range), reaching net zero around 2050 (2045–2055 interquartile range). For limiting global warming to below 2 °C CO₂ emissions are projected to decline by about 25% by 2030 in most pathways (10–30% interquartile

³⁸Academia Brasileira de Ciencias, Brazil; Royal Society of Canada, Canada; Chinese Academy of Sciences, China, Academie des Sciences, France; Deutsche Akademie der Naturforscher Leopoldina, Germany; Indian National Science Academy, India; Accademia Nazionale dei Lincei, Italy; Science Council of Japan, Japan; Academia Mexicana de Ciencias, Mexico; Russian Academy of Sciences, Russia; Academy of Science of South Africa, South Africa; Royal Society, United Kingdom; National Academy of Sciences, United States of America. *G8+5 Academies' Joint Statement: Climate Change and the Transformation of Energy Technologies for a Low Carbon Future*. 2009. url: <https://web.archive.org/web/20090617040744/https://www.nationalacademies.org/includes/G8+5energy-climate09.pdf> (visited on 05/14/2022).

³⁹See also: National Research Council. *Advancing the Science of Climate Change*. 2010. url: <https://www.nap.edu/resource/12782/Science-Report-Brief-final.pdf> (visited on 12/29/2019).

⁴⁰Ignorance is normally thought of as something original and accidental which describes a state prior to the acquisition of knowledge. As Proctor points out, however, agnogenesis or the deliberate production of ignorance is a phenomenon with public policy relevance, with the tobacco industry, climate change denial, and the “doubt is our product” strategy from a 1969 Brown & Williamson Tobacco company memo serving as central examples. Jon Christensen. “Smoking Out Objectivity: Journalistic Gears in the Agnogenesis Machine”. In: *Agnotology: The Making and Unmaking of Ignorance*. Ed. by Robert N. Proctor and Londa Schiebinger. Stanford: Stanford University Press, 2008, p. 266–7.

⁴¹Robert N. Proctor. “Agnotology: A Missing Term to Describe the Cultural Production of Ignorance (and Its Study)”. In: *Agnotology: The Making and Unmaking of Ignorance*. Ed. by Robert N. Proctor and Londa Schiebinger. Stanford: Stanford University Press, 2008, p. 1.

⁴²Brulle et al. found that in the US between 2002 and 2010: “Promulgation of scientific information to the public on climate change has a minimal effect. The implication would seem to be that information-based science advocacy has had only a minor effect on public concern, while political mobilization by elites and advocacy groups is critical in influencing climate change concern.” Robert J. Brulle, Jason Carmichael, and J. Craig Jenkins. “Shifting Public Opinion on Climate Change: An Empirical Assessment of Factors Influencing Concern over Climate Change in the US, 2002–2010”. In: *Climatic Change* 114.2 (2012), pp. 169–188. url: <https://link.springer.com/article/10.1007/s10584-012-0403-y> (visited on 01/10/2020).

⁴³Lakanen cited Young and Coutinho on how the referencing of different climate targets during the Harper government created “policy noise” for the “strategic production of ignorance.” Nathan Young and Aline Coutinho. “Government, Anti-reflexivity, and the Construction of Public Ignorance About Climate Change: Australia and Canada Compared”. In: *Global Environmental Politics* 13.2 (2013), pp. 89–108. url: <https://direct.mit.edu/glep/article-abstract/13/2/89/14623/Government-Anti-Reflexivity-and-the-Construction> (visited on 04/25/2022).

⁴⁴Lakanen. “‘A Battle for the Soul of the Climate Movement’: The Expansion of the Intersectional Climate Justice Frame Among Young Activists in Canada”, p. 104.

⁴⁵Another famous example is Republican party media advisor Frank Luntz's 2003 memo which said: “Voters believe that there is no consensus about global warming. Should the public come to believe that the scientific issues are settled, their views about global warming will change accordingly. Therefore, you need to make the lack of scientific certainty a primary issue in the debate.” Oreskes and Conway. “Challenging Knowledge: How Climate Science Became a Victim of the Cold War”, p. 74 (emphasis in Oreskes and Conway's text).

⁴⁶United Nations Framework Convention on Climate Change Secretariat. *Paris Agreement: Essential Elements*. 2015. url: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> (visited on 12/26/2019).

⁴⁷Intergovernmental Panel on Climate Change. *Global Warming of 1.5 °C*. 2018. url: https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_High_Res.pdf (visited on 12/26/2019).

⁴⁸See also: Nicole Mortillaro. *Earth Set to Warm 3.2 C by 2100 Unless Efforts to Cut Emissions are Tripled, New UN Report Finds*. 2019. url: <https://www.cbc.ca/news/technology/un-emissions-report-1.5373154> (visited on 01/04/2020).

range) and reach net zero around 2070 (2065–2080 interquartile range).^{49,50,51,52,53}

The Paris Agreement's temperature targets do not align with the commitments states made to reduce their emissions; indeed, even if every voluntary national target was met, temperatures would be expected to rise about 3.5 °C by 2100.⁵⁴ The IPCC report argued that meeting its temperature objectives would “require rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems” which are “unprecedented in terms of scale, but not necessarily in terms of speed, and imply deep emissions reductions in all sectors, a wide portfolio of mitigation options and a significant upscaling of investments in those options.”^{55,56} Crucially, a global drop by 45% by 2030 and to zero by 2050 effectively requires much faster reductions in states like Canada which have the highest historical and per capita emissions.

The IPCC's second special report from 2018 documented the vast incompatibility between 2030 targets countries adopted through the United Nations Framework Convention on Climate Change (UNFCCC) and their actual fossil fuel use.^{57,58,59,60} It noted that achieving the 1.5–2.0 °C temperature targets requires going beyond existing nationally determined contributions (NDCs – governments' self-chosen reduction targets) and that “[g]lobal greenhouse gas emissions show no signs of peaking.”⁶¹ It further stated:

Countries need to strengthen the ambition of NDCs and scale up and increase effectiveness of domestic policy to achieve the temperature goals of the Paris Agreement. To bridge the 2030 emissions gap and ensure long-term decarbonization consistent with the Paris Agreement goals, countries must enhance their mitigation ambition.⁶²

⁴⁹The reference to “overshoot” concerns the possibility that emissions may be removed from the atmosphere in the future through approaches like reforestation or carbon capture and storage (CCS). Intergovernmental Panel on Climate Change, *Global Warming of 1.5 °C*, p. 12.

⁵⁰Rogelj et al. found that “in the set of scenarios with a ‘likely’ (greater than 66%) chance of staying below 2°C, emissions peak between 2010 and 2020 and fall to a median level of 44Gt of CO₂ equivalent in 2020 (compared with estimated median emissions across the scenario set of 48Gt of CO₂ equivalent in 2010).” Joeri Rogelj et al. “Emission Pathways Consistent With a 2 °C Global Temperature Limit”. In: *Nature Climate Change* 1.8 (2011), p. 413. url: <https://www.nature.com/articles/nclimate1258> (visited on 12/28/2019).

⁵¹Tong et al. concluded that building any new fossil fuel infrastructure is incompatible with the 1.5 °C target. Dan Tong et al. “Committed Emissions from Existing Energy Infrastructure Jeopardize 1.5 °C Climate Target”. In: *Nature* 572.7769 (2019), pp. 373–377. url: <https://www.nature.com/articles/s41586-019-1364-3> (visited on 05/05/2020).

⁵²Leah C. Stokes. *Short Circuiting Policy: Interest Groups and the Battle over Clean Energy and Climate Policy in the American States*. New York: Oxford University Press, 2020, p. 12.

⁵³For an earlier analysis see: Malte Meinshausen et al. “Greenhouse-gas Emission Targets for Limiting Global Warming to 2 °C”. In: *Nature* 458.7242 (2009), pp. 1158–1162. url: <https://www.nature.com/articles/nature08017> (visited on 02/15/2020).

⁵⁴Jaccard, *The Citizen's Guide to Climate Success: Overcoming Myths that Hinder Progress*, p. 66.

⁵⁵Intergovernmental Panel on Climate Change, *Global Warming of 1.5 °C*, p. 15.

⁵⁶Every year of delay increases the peak rate at which emissions in the future must decline. See: [Emission cuts far more rapid than those in the past are needed to avoid warming over 1.5 °C p. 40](#)

⁵⁷The ‘emissions gap’ idea was not new. See: Kornelis Blok et al. “Bridging the Greenhouse-gas Emissions Gap”. In: *Nature Climate Change* 2.7 (2012), p. 471. url: <https://www.nature.com/articles/nclimate1602> (visited on 12/27/2019).

⁵⁸Litfin identified how this concern about a gap goes back to Canada's submission at the first UNFCCC COP in 1995, which described Canada's commitment to stabilize GHG emissions at 1990 levels by 2000 and Environment Canada projections that they would actually rise to 13% above 1990 levels. Karen T. Litfin. “Advocacy Coalitions Along the Domestic-Foreign Frontier: Globalization and Canadian Climate Change Policy”. In: *Policy Studies Journal* 28.1 (2000), pp. 236–252. url: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1541-0072.2000.tb02026.x> (visited on 01/11/2020), p. 245.

⁵⁹Also, under Liberal and Conservative governments, Environment Canada employees called analyses of the disjuncture between Canada's projected emissions and its Kyoto Protocol and subsequent emission reduction targets “gapology.” Political leaders have been much more willing to pledge distant emissions reductions targets somewhat compatible with safe limits estimated by scientists than to actually implement policies capable of meeting them. This process continues, with ever-fewer years before each target and thus higher costs and greater political resistance: Marieke Walsh. *Canada on Track to Substantially Miss 2030 Emissions Reduction Targets, Government Data Shows*. 2019. url: <https://www.theblobandmail.com/politics/canada-on-track-to-substantially-miss-2030-emissions-reduction-targets/> (visited on 12/26/2019).

⁶⁰Douglas Macdonald. *Carbon Province, Hydro Province: The Challenge of Canadian Energy and Climate Federalism*. Toronto: University of Toronto Press, 2020, p. 216.

⁶¹Intergovernmental Panel on Climate Change. *Emissions Gap Report 2018*. 2018. url: http://wedocs.unep.org/bitstream/handle/20.500.11822/26895/EGR2018_FullReport_EN.pdf (visited on 12/26/2019), p. xiv, xv.

⁶²Intergovernmental Panel on Climate Change, *Emissions Gap Report 2018*, p. xiii.

In order to stay within the projected 1.5 °C carbon budget, emissions between 2020 and 2030 would need to fall globally by 7.6% per year – far beyond what has ever happened in an advanced industrial society.^{63,64,65,66} The IPCC’s conclusions that pledged actions are inadequate corresponds with the conclusions of Rogelj et al. who assessed intended NDCs under the Paris Agreement and found they “still imply a median warming of 2.6–3.1 degrees Celsius by 2100.”⁶⁷ Despite how many governments claim to have ‘accepted the science’ of the IPCC, this mitigation ambition is not evident. Indeed, even some of the apparent success of countries like Germany and Japan in constraining GHG pollution reflects how production of goods and services which their citizens consume has been shifted to other jurisdictions with increasing emissions, or represents the use of carbon offsetting mechanisms which may not have decreased emissions by the amount which states have been given credit for.^{68,69,70,71}

Climate scientists and the IPCC employ global climate models (GCMs) to project the future impacts of climate change which must include assumptions about future human activity, which constitute the greatest source of uncertainty about future temperature change.⁷² This is an important point: the chief uncertainty about how much climate change humanity will experience arises from what trajectory we will follow in terms of fossil fuel use, not uncertainty about how much warming a given level of pollution would produce.

The projected consequences of greatly exceeding a 2 °C carbon budget are severe. In 2015, Ricarda Winkelmann et al. found that that: “Consistent with recent observations and simulations, the West Antarctic Ice Sheet becomes unstable with 600 to 800 GtC of additional carbon emissions.”^{73,74} Describing the expected consequences of burning all the Earth’s fossil fuels on Antarctica, Winkelmann says “To put it bluntly: if we burn it all, we melt it all” — echoing McKibben’s claims in the “Terrifying New Math” article which helped

⁶³United Nations Climate Change. *Cut Global Emissions by 7.6 Percent Every Year for Next Decade to Meet 1.5 °C Paris Target – UN Report*. 2019. url: <https://unfccc.int/news/cut-global-emissions-by-76-percent-every-year-for-next-decade-to-meet-15degc-paris-target-un-report> (visited on 02/04/2020).

⁶⁴George Monbiot. *Let’s Abandon Climate Targets, and Do Something Completely Different*. 2020. url: <https://www.theguardian.com/commentisfree/2020/jan/29/climate-targets-committee-on-climate-change-report> (visited on 02/04/2020).

⁶⁵The emissions of the USSR / Russia peaked in 1990 at 2.53 Gt of CO₂ and fell to 1.96 Gt in 1992, 1.64 Gt in 1994, and 1.48 Gt in 1997 before beginning to rise again. That amounts to a 41% drop in emissions over 7 years and an annual reduction rate of 5.9%. Hannah Ritchie and Max Roser. *Russia: CO₂ Country Profile*. 2020. url: <https://ourworldindata.org/co2-country/russia> (visited on 10/12/2022).

⁶⁶If global emissions had peaked in 2000, it would have been possible to maintain a 50% chance of staying below 1.5 °C of warming by cutting global emissions at a rate of 4% per year until they reached zero. By delaying the peak to 2019 and beyond, the reduction rate would now need to be 18% per year for the entire world, sustained until emissions are zero. See: [Emission cuts far more rapid than those in the past are needed to avoid warming over 1.5 °C p. 40](#)

⁶⁷Joeri Rogelj et al. “Paris Agreement Climate Proposals Need a Boost to Keep Warming Well Below 2 °C”. in: *Nature* 534.7609 (2016), pp. 631–639. url: <https://www.nature.com/articles/nature18307> (visited on 02/04/2020).

⁶⁸On emissions embedded in trade flows see: Nadim Ahmad. *A Framework for Estimating Carbon Dioxide Emissions Embodied in International Trade of Goods*. 2004. url: https://www.oecd-ilibrary.org/environment/measuring-sustainable-development/a-framework-for-estimating-carbon-dioxide-emissions-embodied-in-international-trade-of-goods_9789264020139-11-en (visited on 09/05/2021).

⁶⁹Kit Stolz. *Made for the USA? On Who is Accountable for Chinese Greenhouse-gas Emissions*. 2007. url: <https://web.archive.org/web/20080516174218/http://gristmill.grist.org/story/2007/11/15/102332/75> (visited on 09/05/2021).

⁷⁰Jaccard discusses the limitations of offsets, including the self-serving biases of those who sell and verify them. There is a risk that poor quality offsets will be one of the shadow solutions Gardiner warns about, particularly because of their abstract nature. As Mark Schapiro describes them “the offset market is based on the lack of delivery of an invisible substance to no one.” Jaccard, *The Citizen’s Guide to Climate Success: Overcoming Myths that Hinder Progress*, p. 172–5.

⁷¹Mark Schapiro. *Conning the Climate: Inside the Carbon-trading Shell Game*. 2010. url: <http://citizensclimatelobby.org/files/Conning-the-Climate.pdf> (visited on 08/01/2020), p. 32.

⁷²Jaffe and Taylor, *The Physics of Energy*, p. 703–4, 728.

⁷³Ricarda Winkelmann et al. “Combustion of Available Fossil Fuel Resources Sufficient to Eliminate the Antarctic ice Sheet”. In: *Science Advances* 1.8 (2015). url: <https://advances.sciencemag.org/content/1/8/e1500589> (visited on 01/01/2020), p. 1, 2.

⁷⁴Shue discusses a global carbon budget of a similar approximate size, discussing “the trillionth ton” and a 1,000 GtC level of cumulative emissions estimated to correspond to about 2 °C of warming. Henry Shue. *Climate Justice: Vulnerability and Protection*. Oxford: Oxford University Press, 2014, p. 307.

launch the CFFD movement.⁷⁵ Bamber et al. calculated that melting the west Antarctic ice sheet would add 3.3 m to global sea level.^{76,77,78,79} Melting the entire Greenland ice sheet would add 7 m to global sea levels.⁸⁰ The IPCC projected that with warming of 1.5 to 2.5 °C, 20-30% of all species will be at increased risk of extinction, rising to over 40% of species at over 3.5 °C – representing a profound and irrevocable loss to the common heritage of humankind inherited by our descendants.^{81,82,83,84} The IPCC report calculated that “[w]arming is likely to exceed 2 °C for RCP6.0 and RCP8.5 (high confidence)” and describe that under the RCP8.5 scenario it is “more unlikely than likely” that temperature change by 2100 will be kept below 4 °C.^{85,86,87,88,89} A 2014 report from the World Bank Group projected the consequences associated with a 4 °C temperature increase, and concluded that:

climatic conditions, heat and other weather extremes considered highly unusual or unprecedented today would become the new climate normal—a world of increased risks and instability. The consequences for development would be severe as crop yields decline, water resources change, diseases move into new ranges, and sea levels rise. The task of promoting human development, of ending poverty, increasing global prosperity, and reducing global inequality will be very challenging in a 2 °C world, but in a 4 °C world there is serious doubt whether this can be achieved at all.^{90,91}

⁷⁵Carbon Brief. *Keep Coal, Gas and Oil in the Ground to Save Antarctic Ice Sheet, Study Warns*. 2015. url: <https://www.carbonbrief.org/keep-coal-gas-and-oil-in-the-ground-to-save-antarctic-ice-sheet-study-warns> (visited on 01/02/2020).

⁷⁶Jonathan L. Bamber et al. “Reassessment of the Potential Sea-level Rise from a Collapse of the West Antarctic ice Sheet”. In: *Science* 324.5929 (2009), pp. 901–903. url: <https://science.sciencemag.org/content/sci/324/5929/901.full.pdf> (visited on 01/01/2020).

⁷⁷A 2016 update from the Scientific Committee on Antarctic Research (SCAR) found that a 2 °C temperature rise in the Southern Ocean would create a substantial risk of the collapse of the West Antarctic ice sheet over the next 1,000 years, with 1–3 m of sea level rise by 2300. Jaffe and Taylor, *The Physics of Energy*, p. 733.

⁷⁸Peter C. Convey et al. *Antarctic Climate Change and the Environment*. Cambridge: Cambridge University Press, 2009. url: <https://www.scar.org/library/scar-publications/occasional-publications/3508-antarctic-climate-change-and-the-environment-1/file/> (visited on 08/10/2020).

⁷⁹Scientific Committee on Antarctic Research (SCAR). *Antarctic Climate Change and the Environment – 2016 Update*. 2016. url: <https://www.scar.org/antarctic-treaty/actm-papers/atcm-xxxix-and-cep-xix-2016/2750-atcm39-1p035/file/> (visited on 08/10/2020).

⁸⁰Jaffe and Taylor, *The Physics of Energy*, p. 734.

⁸¹Jaffe and Taylor, *The Physics of Energy*, p. 735.

⁸²S. Solomon et al. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press, 2007. url: https://www.ipcc.ch/site/assets/uploads/2018/05/ar4_wg1_full_report-1.pdf (visited on 08/10/2020).

⁸³Similarly, scientists have warned that without drastic action to curb GHG pollution almost all the world’s coral reefs will die by mid-century. Tim McClanahan et al. *Forecasting Climate Sanctuaries for Securing the Future of Coral Reefs*. 2022. url: https://c532f75abb9e1c021b8c-e46e473f8aad72cf2a8ea564b4e6a76.ssl.cf5.rackcdn.com/2022/04/11/2ei8gai5sx_Final_50_Reefs_Science_Whitepaper.pdf (visited on 04/18/2022).

⁸⁴Alexandra Mae Jones. *Earth’s Coral Reefs Will be Gone in 30 Years Without Intervention: Experts*. 2022. url: <https://www.ctvnews.ca/mobile/climate-and-environment/earth-s-coral-reefs-will-be-gone-in-30-years-without-intervention-experts-1.5865154> (visited on 04/18/2022).

⁸⁵Intergovernmental Panel on Climate Change. *Climate Change 2014 Synthesis Report*. 2014. url: https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf (visited on 01/02/2020), p. 10, 22.

⁸⁶In their 4th assessment report in 2014, the IPCC modeled a Representative Concentration Pathway (RCP) RCP8.5 scenario in which global emissions level off by 2100 but do not substantially decline. Intergovernmental Panel on Climate Change, *Climate Change 2014 Synthesis Report*, p. 8–9.

⁸⁷See also: Jaffe and Taylor, *The Physics of Energy*, p. 726.

⁸⁸Zeke Hausfather. *Explainer: The High-emissions ‘RCP8.5’ Global Warming Scenario*. 2019. url: <https://www.carbonbrief.org/explainer-the-high-emissions-rcp8-5-global-warming-scenario> (visited on 01/01/2020).

⁸⁹G.P. Wayne. *Now Available: A Guide to the IPCC’s New RCP Emissions Pathways*. 2013. url: <https://www.>

[theguardian.com/environment/climate-consensus-97-per-cent/2013/aug/30/climate-change-rcp-handly-summary](https://www.theguardian.com/environment/climate-consensus-97-per-cent/2013/aug/30/climate-change-rcp-handly-summary) (visited on 01/01/2020).

⁹⁰World Bank Group. *4 ° Turn Down the Heat: Confronting the New Climate Normal*. 2014. url: <http://documents.worldbank.org/curated/en/317301468242098870/pdf/927040v20WP000ull0Report000English.pdf> (visited on 01/01/2020), p. xvii.

⁹¹This is compatible with my argument that action to stabilize the climate should be prioritized in part because avoiding catastrophic disruption is a precondition for other political projects.

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The report cited several assessments that continued inaction on climate change mitigation would lead to a world 4 °C hotter or more, including the International Energy Agency’s (IEA) World Energy Outlook in 2012 and an assessment by the Climate Action Tracker. In a sample of 114 energy-economic model scenarios based on “the absence of further substantial policy action... climate-model projections reach a warming of 4.0–5.2 °C above pre-industrial levels by 2100.”⁹² Other recent scientific work raises the possibility that, due to self-reinforcing feedbacks, the sensitivity of the climate to a doubling of CO₂ may be well beyond the 3 °C estimate often taken as typical, implying a smaller global carbon budget for any particular stabilization temperature and more risk of self-reinforcing feedback effects (akin to holding a microphone too close to an amplified speaker that it is connected to) that take the Earth’s temperature out of human control.^{93,94,95,96,97,98,99,100,101,102} Anderson wrote in 2012 that:

It is fair to say, based on many (and ongoing) discussions with climate change colleagues, that there is a widespread view that a 4 °C future is incompatible with any reasonable characterisation of an organised, equitable and civilised global community. A 4 °C future is also beyond what many people think we can reasonably adapt to. Besides the global society, such a future will also be devastating for many if not the majority of ecosystems.^{103,104}

On the basis of a paleoclimatic study of the Mid-Piacenzian Warm Period, Elwyn de la Vega et al. concluded that “at present rates of human emissions, there will be more CO₂ in Earth’s atmosphere by 2025 than at

⁹²World Bank Group, *4 ° Turn Down the Heat: Confronting the New Climate Normal*, p. 5.

⁹³K.D. Williams, A.J. Hewitt, and A. Bodas-Salcedo. “Use of Short-Range Forecasts to Evaluate Fast Physics Processes Relevant for Climate Sensitivity”. In: *Journal of Advances in Modeling Earth Systems* 12.4 (2020). url: <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2019MS001986> (visited on 06/20/2020).

⁹⁴Tim Palmer. *Short-term Tests Validate Long-term Estimates of Climate Change*. 2020. url: <https://www.nature.com/articles/d41586-020-01484-5> (visited on 06/20/2020).

⁹⁵Jonathan Watts. *Climate Worst-case Scenarios May Not Go Far Enough, Cloud Data Shows*. 2020. url: <https://www.theguardian.com/environment/2020/jun/13/climate-worst-case-scenarios-clouds-scientists-global-heating> (visited on 06/20/2020).

⁹⁶Alan Frank raises the possibility that feedback loops in the climate system could produce “delayed collapse” — “Push a planet too hard, and it won’t return to where it began.” Others have compared stressing the climate with GHGs to rocking a vending machine back and forth: when it’s only tilted a little it rocks back into the normal orientation if released, but tipped too far it will fall into a new equilibrium on its side instead and will never return to the old arrangement on its own. Adam Frank. *How Do Aliens Solve Climate Change?* 2020. url: <https://www.theatlantic.com/science/archive/2018/05/how-do-aliens-solve-climate-change/561479/> (visited on 10/21/2020).

⁹⁷As an example of a self-reinforcing feedback, as peat in the Arctic gets hotter and drier it becomes more susceptible to fires which add CO₂ to the atmosphere. CBC Radio. *Peat Fires, Like Those Raging in Siberia, Will Become More Common in Canada*. 2020. url: <https://www.cbc.ca/radio/whatonearth/peat-fires-like-those-raging-in-siberia-will-become-more-common-in-canada-1.5670662> (visited on 08/02/2020).

⁹⁸Maddie Stone. *Arctic Fires Released More Carbon in Two Months Than Scandinavia Will All Year*. 2020. url: <https://grist.org/climate/arctic-fires-released-more-carbon-in-two-months-than-scandinavia-will-all-year/> (visited on 08/13/2020).

⁹⁹On the danger melting permafrost will significantly worsen anthropogenic warming, see: Jannik Martens et al. “Remobilization of Dormant Carbon from Siberian-Arctic Permafrost During Three Past Warming Events”. In: *Science Advances* 6.42 (2020). url: <https://advances.sciencemag.org/content/6/42/eabb6546.abstract> (visited on 10/20/2020).

¹⁰⁰Chelsea Harvey. *If Past Is a Guide, Arctic Could Be Verging on Permafrost Collapse*. 2020. url: <https://www.>

[scientificamerican.com/article/if-past-is-a-guide-arctic-could-be-versing-on-permafrost-collapse/](https://www.scientificamerican.com/article/if-past-is-a-guide-arctic-could-be-versing-on-permafrost-collapse/) (visited on 10/20/2020).

¹⁰¹The Moscow Times. *Slight Arctic Warming Could Trigger Abrupt Permafrost Collapse — Study*. 2020. url: <https://www.themoscowtimes.com/2020/10/20/slight-arctic-warming-could-trigger-abrupt-permafrost-collapse-study-a71805> (visited on 10/20/2020).

¹⁰²Other worrisome feedbacks include rainforests drying out and turning to grassland and forest fires releasing carbon from biomass into the atmosphere.

¹⁰³Kevin Anderson. “Climate Change Going Beyond Dangerous — Brutal Numbers and Tenuous Hope”. In: *Development Dialogue* 61.1 (2012), p. 16. url: <https://pdfs.semanticscholar.org/af23/7a0deead53d1cfb1c88c7924ea2ff3727488.pdf> (visited on 01/01/2020), p. 29.

¹⁰⁴Or, as James Gustave Speth put it: “How serious is the threat to the environment? Here is one measure of the problem: all we have to do to destroy the planet’s climate and biota and leave a ruined world for our children and grandchildren is to keep doing exactly what we are doing today, with no growth in the human population or the world economy.” James Gustave Speth. *The Bridge at the Edge of the World: Capitalism, the Environment, and Crossing from Crisis to Sustainability*. New Haven: Yale University Press, 2009, p. x.

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any time in at least the last 3.3 million years,” replicating the conditions in the Pliocene Epoch 2.6 to 5.3 million years ago when temperatures were about 3 °C warmer than at present and sea levels were 20 metres higher.^{105,106}

Taken together, these sources substantiate the claim that climate change could be an existential threat to human civilization, particularly when knock-on effects of migration and conflict are considered.^{107,108} Such unconstrained climate change would surely cause grave and extensive damage to the common heritage of humanity (or the “cultural heritage of all mankind” as referenced in the 1954 Convention for the Protection of Cultural Property in the Event of Armed Conflict; 1970 Declaration of Principles Governing the Seabed and Ocean Floor; and 1982 United Nations Convention on the Law of the Sea).¹⁰⁹ Human settlements have always been built on oceanfront and navigable rivers, so dramatic changes to sea level, precipitation, snow and glacier levels, and river flow threaten to damage a heritage which has been accumulating since the first permanent human communities.¹¹⁰

The 2021–22 AR6 report of the IPCC only added to the reasons for concern, level of scientific confidence in climate change risks, and need for major policy and infrastructure changes to prevent severe or catastrophic outcomes. The physical science report explained: “Global warming of 1.5 °C and 2 °C will be exceeded during the 21st century unless deep reductions in CO₂ and other greenhouse gas emissions occur in the coming decades” and that “limiting human-induced global warming to a specific level requires limiting cumulative CO₂ emissions, reaching at least net zero CO₂ emissions, along with strong reductions in other greenhouse gas emissions.”¹¹¹ The impacts and adaptation report stated: “Approximately 3.3 to 3.6 billion people live in contexts that are highly vulnerable to climate change (high confidence)”, that “[c]limate change impacts and risks are becoming increasingly complex and more difficult to manage”, and that “[e]vidence of observed impacts, projected risks, levels and trends in vulnerability, and adaptation limits, demonstrate that worldwide climate resilient development action is more urgent than previously assessed in AR5.”¹¹² The mitigation report stated: “Total net anthropogenic GHG emissions have continued to rise during the period 2010–2019”, that “[t]here has been a consistent expansion of policies and laws addressing mitigation since AR5.”¹¹³ It also stated that existing and planned fossil fuel infrastructure will be sufficient to breach the 1.5 °C limit:

¹⁰⁵Elwyn de la Vega et al. “Atmospheric CO₂ during the Mid-Piacenzian Warm Period and the M2 glaciation”. In: *Scientific Reports* (2020). url: <https://www.nature.com/articles/s41598-020-67154-8> (visited on 07/12/2020).

¹⁰⁶Jonathan Watts. *CO₂ in Earth’s Atmosphere Nearing Levels of 15m Years Ago*. 2020. url: <https://www.theguardian.com>.

[com/environment/2020/jul/09/co2-in-earths-atmosphere-nearing-levels-of-15m-years-ago](https://www.un.org/development/desa/indigenouspeoples/declaration-on-the-rights-of-indigenous-peoples.html) (visited on 07/12/2020).

¹⁰⁷As Jacobs noted, the degree to which governments invest in sustainable technologies and livable environments “will largely determine how nasty and brutish the distributive battles of tomorrow will be.” Alan M. Jacobs. *Governing for the Long Term: Democracy and the Politics of Investment*. Cambridge: Cambridge University Press, 2011, p. 268.

¹⁰⁸Richard Rhodes, Pulitzer prize winning historian of nuclear weapon programs around the world, wrote in 2018 that climate change “looms over civilization with much the same gloom of doomsday menace as did fear of nuclear annihilation in the long years of the Cold War.” Richard Rhodes. *Energy: A Human History*. New York: Simon & Schuster, 2018, p. xiii.

¹⁰⁹The United Nations Declaration on the Rights of Indigenous Peoples also references “the diversity and richness of civilizations and cultures, which constitute the common heritage of humankind.” United Nations General Assembly. *United Nations Declaration on the Rights of Indigenous Peoples*. 2007. url: <https://www.un.org/development/desa/indigenouspeoples/declaration-on-the-rights-of-indigenous-peoples.html> (visited on 01/18/2020).

¹¹⁰Projected consequences of extreme unmitigated climate change begin to resemble those which Harry Truman warned in his farewell address would arise from nuclear war: it could “demolish the great cities of the world, wipe out the cultural achievements of the past—and destroy the very structure of a civilization that has been slowly and painfully built up through hundreds of generations.” Richard Rhodes. *Arsenals of Folly: The Making of the Nuclear Arms Race*. New York: Vintage Books, 2008, p. 79.

¹¹¹Intergovernmental Panel on Climate Change, *Climate Change 2021: The Physical Science Basis: Summary for Policymakers*, p. 14, 27.

¹¹²Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability: Summary for Policymakers*, p. 14, 20, 31.

¹¹³Intergovernmental Panel on Climate Change, *Climate Change 2022: Mitigation of Climate Change: Summary for Policymakers*, p. 5, 15.

Projected cumulative future CO₂ emissions over the lifetime of existing and currently planned fossil fuel infrastructure without additional abatement exceed the total cumulative net CO₂ emissions in pathways that limit warming to 1.5 °C (>50%) with no or limited overshoot.^{114,115}

The report highlighted the inadequacy of existing policies: “Without a strengthening of policies beyond those that are implemented by the end of 2020, GHG emissions are projected to rise beyond 2025, leading to a median global warming of 3.2 [2.2 to 3.5] °C by 2100” and that: “[a]ll global modelled pathways that limit warming to 1.5°C (>50%) with no or limited overshoot, and those that limit warming to 2°C (>67%) involve rapid and deep and in most cases immediate GHG emission reductions in all sectors.”¹¹⁶ The AR6 also affirmed the carbon bubble and stranded assets argument popularized by McKibben’s “Terrifying New Math” article:

Limiting global warming to 2 °C or below will leave a substantial amount of fossil fuels unburned and could strand considerable fossil fuel infrastructure (high confidence)... The combined global discounted value of the unburned fossil fuels and stranded fossil fuel infrastructure has been projected to be around 1–4 trillion dollars from 2015 to 2050 to limit global warming to approximately 2 °C, and it will be higher if global warming is limited to approximately 1.5 °C (medium confidence).¹¹⁷

Other sources corroborate the IPCC’s conclusions and demonstrate the strength of the underlying science. In November 2019, the secretary general of the World Meteorological Association noted that: “the last time the Earth experienced a comparable concentration of CO₂ was 3–5 million years ago. Back then, the temperature was 2–3 °C warmer, sea level was 10–20 meters higher than now.”^{118,119,120} Xu et al. projected that: “depending on scenarios of population growth and warming, over the coming 50 y[ears], 1 to 3 billion people are projected to be left outside the climate conditions that have served humanity well over the past 6,000 y[ears].”^{121,122} A 2020 survey of 106 experts predicted a likely sea level rise of

“0.30–0.65m by 2100, and 0.54–2.15m by 2300, relative to 1986–2005” and under the RCP8.5 scenario a rise of “0.63–1.32m by 2100, and 1.67–5.61m by 2300.”^{123,124} Hausfather et al. found that the projections for

¹¹⁴Intergovernmental Panel on Climate Change, *Climate Change 2022: Mitigation of Climate Change: Summary for Policy-makers*, p. 20.

¹¹⁵This underscored how the Canadian government’s view that it can continue to develop fossil fuel resources while making a fair contribution to climate change mitigation is unjustified.

¹¹⁶Intergovernmental Panel on Climate Change, *Climate Change 2022: Mitigation of Climate Change: Summary for Policy-makers*, p. 22, 33.

¹¹⁷Intergovernmental Panel on Climate Change, *Climate Change 2022: Mitigation of Climate Change: Summary for Policy-makers*, p. 37–8.

¹¹⁸World Meteorological Association. *Greenhouse Gas Concentrations in Atmosphere Reach Yet Another High*. 2019. url: <https://public.wmo.int/en/media/press-release/greenhouse-gas-concentrations-atmosphere-reach-yet-another-high> (visited on 05/08/2020).

¹¹⁹World Meteorological Association. *WMO Greenhouse Gas Bulletin (GHG Bulletin) — No. 15: The State of Greenhouse Gases in the Atmosphere Based on Global Observations through 2018*. 2019. url: https://library.wmo.int/index.php?lvl=notice_display&id=21620 (visited on 05/08/2020).

¹²⁰Al Jazeera News. *Climate Change: The State of our Atmosphere*. 2019. url: <https://www.aljazeera.com/news/2020/03/climate-change-state-atmosphere-200311123221535.html> (visited on 05/08/2020).

¹²¹Chi Xu et al. “Future of the Human Climate Niche”. In: *Proceedings of the National Academy of Sciences* (2020). url: <https://www.pnas.org/content/early/2020/04/28/1910114117> (visited on 05/08/2020).

¹²²Jonathan Watts. *One Billion People Will Live in Insufferable Heat Within 50 Years — Study*. 2020. url: <https://www.theguardian.com/environment/2020/may/05/one-billion-people-will-live-in-insufferable-heat-within-50-years-study> (visited on 05/08/2020).

¹²³Benjamin P. Horton et al. “Estimating Global Mean Sea-level Rise and its Uncertainties by 2100 and 2300 from an Expert Survey”. In: *Climate and Atmospheric Science* (2020). url: <https://www.nature.com/articles/s41612-020-0121-5> (visited on 05/08/2020).

¹²⁴Jonathan Watts. *Sea Levels Could Rise More Than a Metre by 2100, Experts Say*. 2020. url: <https://www.theguardian.com/environment/2020/may/08/sea-levels-could-rise-more-than-a-metre-by-2100-experts-say> (visited on 05/08/2020).

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increased surface temperatures from climate models accurately correspond with observed data.^{125,126} The scientific literature also demonstrates the threat of climate change to non-human nature. Trisos, Merow, and Pigot conclude that climate change projections imply “a potentially catastrophic loss of global biodiversity is on the horizon.”^{127,128} Under an RCP 8.5 scenario, they expect abrupt disruption of tropical oceans as most species are shifted into climatic conditions beyond their realized niche, with similar effects in tropical forests and higher latitudes by 2050.

The possibility of harmful tipping points within the climate system also affects the ethics and politics of climate change, since they add to the risk of catastrophic or runaway climate change scenarios.^{129,130,131,132,133,134} Much climate change policy is made as though only deliberate anthropogenic emissions harm the climate and that a global carbon budget only needs to consider those. Unfortunately, there are powerful natural forces which the IPCC warns may be set off by a certain level of human-caused warming and then continue to cause further warming even if human emissions cease. For example, losing the reflectiveness of Arctic summer ice causes that part of the world to retain more heat and cause more warming. There are also vast stores of carbon dioxide and methane in ecosystems like tropical rainforests and boreal forests, the Arctic permafrost, and subsea methane clathrate deposits.^{135,136,137,138,139,140,141,142} These threatened

¹²⁵Alan Buis. *Study Confirms Climate Models are Getting Future Warming Projections Right*. 2020. url: <https://climate.nasa.gov/news/2943/study-confirms-climate-models-are-getting-future-warming-projections-right.amp> (visited on 01/28/2020).

¹²⁶Zeke Hausfather et al. “Evaluating the Performance of Past Climate Model Projections”. In: *Geophysical Research Letters* 47.1 (2020). url: <https://agupubs.onlinelibrary.wiley.com/doi/pdfdirect/10.1029/2019GL085378> (visited on 04/16/2022).

¹²⁷Christopher H. Trisos, Cory Merow, and Alex L. Pigot. “The Projected Timing of Abrupt Ecological Disruption from

Climate Change”. In: *Nature* (2020), pp. 1–6. url: <https://www.nature.com/articles/s41586-020-2189-9> (visited on 04/11/2020).

¹²⁸See also: Toronto350.org. *The Fossil Fuel Industry and the Case for Divestment: Update*. Toronto: Asquith Press, 2015. url: <http://www.uof Facultydivest.com/files/fossil-fuel-divest-new.pdf> (visited on 01/30/2017), p. 47–50.

¹²⁹See: Timothy M. Lenton et al. “Climate Tipping Points — Too Risky to Bet Against”. In: *Nature* (2019). url: <https://www.nature.com/articles/d41586-019-03595-0> (visited on 01/18/2020).

¹³⁰Anthony D. Barnosky et al. “Approaching a State Shift in Earth’s Biosphere”. In: *Nature* 486.7401 (2012), p. 52. url: <https://www.nature.com/articles/nature11018> (visited on 12/28/2019).

¹³¹Timothy M. Lenton et al. “Tipping Elements in the Earth’s Climate System”. In: *Proceedings of the National Academy of Sciences* 105.6 (2008), pp. 1786–1793. url: <https://www.pnas.org/content/105/6/1786> (visited on 01/01/2020).

¹³²Toronto350.org. *The Fossil Fuel Industry and the Case for Divestment: Update*, p. 54–6.

¹³³Catriona McKinnon. *Climate Change and Future Justice: Precaution, Compensation, and Triage*. New York: Routledge, 2012, p. 47–50.

¹³⁴Jaffe and Taylor, *The Physics of Energy*, p. 701–2.

¹³⁵The IPCC’s special 1.5 °C report stated: “Potential additional carbon release from future permafrost thawing and methane release from wetlands would reduce budgets by up to 100 GtCO₂ over the course of this century and more thereafter (medium confidence).” Intergovernmental Panel on Climate Change. *Global Warming of 1.5 °C*, p. 12, 221.

¹³⁶See also: Juan C. Rocha et al. “Cascading Regime Shifts Within and Across Scales”. In: *Science* 362.6421 (2018), pp. 1379–1383. issn: 0036-8075. doi: [10.1126/science.aat7850](https://doi.org/10.1126/science.aat7850). url: <https://science.sciencemag.org/content/362/6421/1379> (visited on 12/01/2019).

¹³⁷Jonathan Watts. *Risks of ‘Domino Effect’ of Tipping Points Greater Than Thought, Study Says*. 2018. url: <https://www.theguardian.com/environment/2018/dec/20/risks-of-domino-effect-of-tipping-points-greater-than-thought-study-says> (visited on 12/01/2019).

¹³⁸Fiona Harvey. *Australian Bushfires Will Cause Jump in CO₂ in Atmosphere, say Scientists*. 2020. url: <https://www.theguardian.com/environment/2020/jan/24/australian-bushfires-will-cause-jump-in-co2-in-atmosphere-say-scientists> (visited on 01/28/2020).

¹³⁹The Economist. *The Brazilian Amazon has Been a Net Carbon Emitter Since 2016*. 2022. url: <https://www.economist.com/interactive/graphic-detail/2022/05/21/the-brazilian-amazon-has-been-a-net-carbon-emitter-since-2016> (visited on 05/30/2022).

¹⁴⁰On the risk of climate change converting tropical forests into grasslands, releasing large amounts of CO₂, see: Arie Staal et al. “Hysteresis of Tropical Forests in the 21st Century”. In: *Nature Communications* (2020). url: <https://www.nature.com/articles/s41467-020-18728-7> (visited on 10/06/2020).

¹⁴¹Fiona Harvey. *Amazon Near Tipping Point of Switching from Rainforest to Savannah — Study*. 2020. url: <https://www.theguardian.com/environment/2020/oct/05/amazon-near-tipping-point-of-switching-from-rainforest-to-savannah-study> (visited on 10/06/2020).

¹⁴²Lynas concluded that: “Society may be lulled into a false sense of security by smooth projections of global change. Our synthesis of present knowledge suggests that a variety of tipping elements could reach their critical point within this century

carbon sinks are relevant insofar as they highlight the urgency of climate change mitigation, since delayed action carries a greater risk of crossing tipping points. They also affect the politics of emissions reductions, with countries jostling to get credit for carbon sinks like forests within their territory, and thus to secure the right to more GHG emissions, but not yet giving thought to whether they may later need to buy credits for unintended emissions from their territory.^{143,144,145,146} These self-reinforcing feedbacks also raise the risk that humanity will choose to gamble on geoengineering — deliberate manipulation of the climate system intended to counteract GHG-driven warming — after delaying too long on mitigation and starting to see atmospheric GHG concentrations exploding beyond human control.¹⁴⁷ Geoengineering would impose its own unknown risks on humanity and non-human nature.¹⁴⁸

Even a concise summary of economic analyses of the potential costs of climate change and the economics of mitigation would take us far afield from the short summary needed here. It is sufficient therefore to mention the 2006 Stern Review on the Economics of Climate Change, which emphasized that: “The benefits of strong, early action on climate change outweigh the costs.”^{149,150,151} In the Canadian context, it is also worth mentioning that former Bank of Canada and Bank of England governor Mark Carney argued in 2021: “We have both too many hydrocarbons, enormous stranded assets, whether it’s in coal, three-quarters of

coal, half of gas, roughly the same of oil, we have too many fossil fuels.”^{152,153,154,155} Such statements

under anthropogenic climate change. The greatest threats are tipping the Arctic sea-ice and the Greenland ice sheet, and at least five other elements could surprise us by exhibiting a nearby tipping point.” Lenton et al., “[Tipping Elements in the Earth’s Climate System](#)”, p. 1792.

¹⁴³Articles in the Canadian media often argue that our forests should be counted against our emissions when determining our obligation to cut GHG pollution, despite the non-comparability of a stock of carbon embodied in biomass and an annual flow of carbon from fossil fuel burning. Also, nobody believes that countries should be responsible for emissions induced by warming itself: another gap between emissions as we count them and as they exist in the physical world. See: Jennifer Skene and Michael Polanyi. *Missing the Forest: How Carbon Loopholes for Logging Hinder Canada’s Climate Leadership*. 2021. url: <https://naturecanada.ca/wp-content/uploads/2021/10/Missing-the-Forest.pdf> (visited on 06/16/2022).

¹⁴⁴Cloe Logan. *New Report Shows Emissions from Canada’s Forestry Sector are Vastly Underreported*. 2021. url: <https://www.nationalobserver.com/2021/11/01/news/new-report-shows-emissions-canadas-forestry-sector-are-vastly-underreported> (visited on 06/16/2022).

¹⁴⁵Natasha Bulowski. *Canada’s Climate Goals are Built on Flawed Forest Carbon Accounting, Enviro Groups Say*. 2022. url: <https://www.nationalobserver.com/2022/04/22/news/canadas-climate-goals-are-built-flawed-forest-carbon-accounting> (visited on 06/16/2022).

¹⁴⁶Bob Weber. *Canadian Government Masking Carbon Emissions from Forestry: Report*. 2022. url: <https://globalnews.ca/news/9206501/canada-forest-carbon-emissions-report/> (visited on 10/27/2022).

¹⁴⁷Jaccard argued that “we have dithered for so long that geoengineering options are now unavoidably in the climate toolbox.” Jaccard, *The Citizen’s Guide to Climate Success: Overcoming Myths that Hinder Progress*, p. 255-6.

¹⁴⁸See: Stephen M. Gardiner. “Is ‘Arming the Future’ with Geoengineering Really the Lesser Evil? Some Doubts About the Ethics of Intentionally Manipulating the Climate System”. In: *Climate Ethics: Essential Readings*. Ed. by Rajendra Kumar Pachauri et al. Oxford: Oxford University Press, 2010.

¹⁴⁹Nicholas Stern. *Stern Review: The Economics of Climate Change: Executive Summary*. 2006. url: https://webarchive.nationalarchives.gov.uk/ukgwa/20100407172955mp_/http://www.hm-treasury.gov.uk/d/Executive_Summary.pdf (visited on 04/17/2022), p. 1.

¹⁵⁰Nicholas Stern. *The Economics of Climate Change: The Stern Review*. Cambridge University Press, 2007. url: http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/sternreview_index.htm (visited on 01/23/2017).

¹⁵¹Lempfers argued: “For nearly two decades, the dominant frame in climate policy debates was the steep cost of climate action. That started to change with the 2006 Stern Review which tallied the global cost of inaction.” Nathan C. Lempfers. “Beyond the Carbon Curse: a Study of the Governance Foundations of Climate Change Politics in Australia, Canada and Norway”. PhD thesis. Toronto: University of Toronto, 2019. url: <https://tspace.library.utoronto.ca/handle/1807/101303> (visited on 08/15/2020), p. 302.

¹⁵²Sam Meredith. *UN’s Mark Carney says ‘Enormous’ Stranded Assets Show the Need for a Rapid Energy Transition*. 2021. url: <https://www.cbc.com/2021/10/21/climate-stranded-assets-show-the-need-for-rapid-energy-transition-carney-says.html> (visited on 04/17/2022).

¹⁵³See also: Jessica Shankleman. *Mark Carney: Most Fossil Fuel Reserves can’t be Burned*. 2014. url: <https://www.theguardian.com/environment/2014/oct/13/mark-carney-fossil-fuel-reserves-burned-carbon-bubble> (visited on 04/17/2022).

¹⁵⁴Pilita Clark. *Mark Carney Warns Investors Face ‘Huge’ Climate Change Losses*. 2015. url: <https://www.ft.com/content/622de3da-66e6-11e5-97d0-1456a776a4f5> (visited on 04/17/2022).

¹⁵⁵Rand quoted Carney calling climate change “a defining issue for financial stability” and affirming that the vast majority of fossil fuel reserves are stranded. Rand argued: “Until Carney spoke up, talk about the carbon bubble was the prerogative of

coming from authoritative figures associated with sober financial analysis rather than appeals to justice have been important validation for university administrations concerned about fiduciary duty. The salience of expressions of concern about climate change from conventional financial actors is revisited in the conclusions, where non-progressive coalitions for climate change action are discussed.

A comprehensive review of media coverage would far exceed the necessary scope for this summary, but there are nonetheless clear indications that in the period before and during the CFFD movement journalists have devoted enormous attention to climate change’s causes and consequences, as well as the efforts of governments to respond and their adequacy. Xinsheng Liu, Arnold Vedlitz, and Letitia Alston described two roles played by the media in relation to climate change: influencing its salience as a public policy issue, and influencing how the public and policy makers think about the issue, including about possible solutions.¹⁵⁶

Maxwell Boykoff found that worldwide coverage of climate change in 50 newspapers was five times larger in 2009 than in 2000.^{157,158} Andreas Schmidt, Ana Ivanova, and Mike Schäfer found that from a relatively low level in the 1990s, issue attention “expanded, sometimes dramatically, in all countries in the course of the following years.”¹⁵⁹

In their examination of the *Toronto Star* and *Globe and Mail* between 1988 and 2007, Katrina Ahchong and Rachel Dodds found that the salience of climate change increased throughout the twenty year period, with swells at times of international talks and agreements, and concluded: “Climate change is an issue of growing concern, and the increasing presence of it in the news media is evidence of this fact.”¹⁶⁰ Mark Stoddart, Randolph Haluza-DeLay and David Tindall’s analysis of the *Globe and Mail* and *National Post* between 1997 and 2010 found that coverage rose from 0.2% of articles in 1999 to more than 2% of articles in the peak year of 2007 when the IPCC released their 4th assessment report. They argued: “national news media in many parts of the world have integrated climate change into normal news routines since the adoption of the Kyoto Protocol.”¹⁶¹ George Hoberg analyzed the rising salience of climate change in the context of proposed export pipelines for the bitumen sands. Between 2013 and 2016 he found that climate change went from the least to the most mentioned frame of analysis in articles about the proposed Energy East pipeline. Hoberg argued: “This shift can be credited in large part to a change in emphasis in environmental discourse resulting from the increased role played by 350.org, an international group focused on climate.”¹⁶²

Google’s Ngram Viewer allows for the frequency of words in a corpus of millions of books to be tracked

NGOs and the odd ethical investment fund. With Carney, the risk of stranded assets went mainstream.” Tom Rand. *The Case for Climate Capitalism: Economic Solutions for a Planet in Crisis*. Toronto: ECW Press, 2020, p. 43–4.

¹⁵⁶Xinsheng Liu, Arnold Vedlitz, and Letitia Alston. “Regional News Portrayals of Global Warming and Climate Change”. In: *Environmental Science & Policy* 11.5 (2008), pp. 379–393. url: <https://www.sciencedirect.com/science/article/pii/S1462901108000038> (visited on 04/17/2022).

¹⁵⁷Maxwell T. Boykoff. *Who Speaks for the Climate?: Making Sense of Media Reporting on Climate Change*. Cambridge: Cambridge University Press, 2011, p. 20.

¹⁵⁸See also: Maxwell T. Boykoff and J. Timmons Roberts. *Media Coverage of Climate Change: Current Trends, Strengths, Weaknesses*. 2007. url: https://www.researchgate.net/profile/Max-Boykoff-2/publication/228637999_Media_coverage_of_climate_change_Current_trends_strengths_weaknesses/links/02e7e528bf129aba0b000000/Media-coverage-of-climate-change-Current-trends-strengths-weaknesses.pdf (visited on 07/21/2022).

¹⁵⁹Andreas Schmidt, Ana Ivanova, and Mike S. Schäfer. “Media Attention for Climate Change Around the World: A Comparative Analysis of Newspaper Coverage in 27 Countries”. In: *Global Environmental Change* 23.5 (2013), pp. 1233–1248. url: <https://www.sciencedirect.com/science/article/pii/S095937801300126X> (visited on 04/17/2022).

¹⁶⁰Katrina Ahchong and Rachel Dodds. “Anthropogenic Climate Change Coverage in two Canadian Newspapers, the *Toronto Star* and the *Globe and Mail*, from 1988 To 2007”. In: *Environmental Science & Policy* 15.1 (2012), pp. 48–59. url: https://www.academia.edu/77464786/Anthropogenic_climate_change_coverage_in_two_Canadian_newspapers_the_Toronto_Star_and_the_Globe_and_Mail_from_1988_to_2007 (visited on 08/02/2022).

¹⁶¹Mark C.J. Stoddart, Randolph Haluza-DeLay, and David B. Tindall. “Canadian News Media Coverage of Climate Change: Historical Trajectories, Dominant Frames, and International Comparisons”. In: *Society & Natural Resources* 29.2 (2016), pp. 218–232. url: <https://www.tandfonline.com/doi/pdf/10.1080/08941920.2015.1054569> (visited on 06/25/2021).

¹⁶²George Hoberg. *The Resistance Dilemma: Place-Based Movements and the Climate Crisis*. Cambridge: The MIT Press, 2021, p. 175–6.

Figure 2.1: Google Ngrams for “climate change” and “global warming” 1980–2019

across time.^{163,164} Between 1980 and 2019 (the last year available for analysis at the time of writing) it showed a drastic increase in coverage, also documenting the shift from chiefly describing the problem as “global warming” to “climate change.”

While hard to quantify, the cultural emphasis on climate change has also perceptibly increased. Al Gore’s “Inconvenient Truth” documentary in 2006 earned \$24 million in the US and nearly \$50 million globally.¹⁶⁵ In April 2022, a Canadian Newsstream search for “Greta Thunberg” yielded 3,250 articles — and she was named *Time*’s person of the year in 2019.¹⁶⁶ There have been appeals from popes, celebrities, and United Nations secretaries general.

In addition to the content of their coverage, some news sources have made public editorial changes in response to their understanding of the climate change problem, perhaps most prominently *The Guardian* in the UK. In 2021, they announced the Covering Climate Now partnership with the *Columbia Journalism Review* and *The Nation*.^{167,168} In 2019, the *Toronto Star* published “Undeniable: Canada’s Changing Climate” — a series of stories about climate change impacts across the country.¹⁶⁹ It included a handbook on “What we can do Now” which described a poll of 1,812 Canadian voters in 2019, which found that 36% strongly agreed that climate change was a serious problem for Canada, 28% somewhat agreed, and only 10% somewhat and 15% strongly disagreed.¹⁷⁰ It cited Steve Easterbrook on the importance of talking about the issue; discussed national carbon footprints on a total and *per capita* basis; listed areas for personal action, including in investment; and described issues to consider when choosing among political candidates.

¹⁶³Jean-Baptiste Michel et al. “Quantitative Analysis of Culture Using Millions of Digitized Books”. In: *Science* 331.6014 (2011), pp. 176–182. url: <https://www.science.org/doi/10.1126/science.1199644> (visited on 04/17/2022).

¹⁶⁴Ben Zimmer. *Google’s Ngram Viewer Goes Wild*. 2013. url: <https://www.theatlantic.com/technology/archive/2013/10/googles-ngram-viewer-goes-wild/280601/> (visited on 04/17/2022).

¹⁶⁵Lakanen identified the period of 2006–2016 as an era where “concern over climate change and large-scale environmental issues became widespread in North America,” partly because of Gore’s film. Lakanen, ““A Battle for the Soul of the Climate Movement”: The Expansion of the Intersectional Climate Justice Frame Among Young Activists in Canada”, p. 23.

¹⁶⁶Frank Jordans. *Thunberg ‘a bit surprised’ to be Time Person of the Year*. 2019. url: <https://abcnews.go.com/Business/wireStory/climate-activist-greta-thunberg-time-person-year-67655105> (visited on 04/17/2022).

¹⁶⁷The Guardian. *The Climate Emergency is Here. The Media Needs to Act Like It*. 2021. url: <https://www.theguardian.com/environment/2021/apr/12/covering-climate-now-guardian-climate-emergency> (visited on 04/17/2022).

¹⁶⁸Covering Climate Now. *Statement on the Climate Emergency*. 2022. url: <https://coveringclimatenow.org/projects/covering-climate-now-statement-on-the-climate-emergency/> (visited on 04/17/2022).

¹⁶⁹Toronto Star. *Undeniable: Canada’s Changing Climate*. 2019. url: <https://projects.thestar.com/climate-change-canada/> (visited on 07/12/2020).

¹⁷⁰Megan Ogilvie. *What We Can Do Now*. 2019. url: <https://projects.thestar.com/climate-change-canada/what-you-can-do/> (visited on 07/12/2020).

culmination of journalistic concern about how the problem has been reported.

When the issue of stratospheric ozone depletion by chlorofluorocarbons (CFCs) was being debated in the UK in 1988, the head of Britain's environment ministry, Crispin Tickell, appealed to prime minister Margaret Thatcher on the basis of her training as a chemist at Oxford. This was followed by a sharp turning point in her government's policy.¹⁷¹ In her 1988 speech to the Royal Society, Thatcher described the fear that "we are creating a global heat trap which could lead to climatic instability" adding that "the annual increase in atmospheric carbon dioxide alone is of the order of three billion tonnes" and "half the carbon emitted since the Industrial Revolution remains in the atmosphere."¹⁷² Thatcher also expressed early concern about climate change. The same year, Canadian Conservative prime minister Brian Mulroney hosted a world climate change conference in Toronto.^{173,174} In an address to the UN General Assembly, Mulroney said: "The world is facing an environmental crisis of unparalleled magnitude" and identified climate change along with ozone depletion and toxic waste as "cause for legitimate concern both here and around the world."^{175,176}

In the lead up to the 1993 election, the federal Liberal party platform proposed new measures for sustainable development.^{177,178} Climate change and energy policies were an important part of electoral platforms and competition over the next three decades. One of the central issues in the 2008 federal election was the "Green Shift" plan proposed by the Liberal party under Stéphane Dion.^{179,180,181,182} Heather Smith summarized Canadian federal climate change policy under the Mulroney, Chrétien, Martin, and Harper governments.^{183,184} Nathan Lemphers extended this into the Justin Trudeau government and the Pan-Canadian Framework on Clean Growth and Climate Change in 2018.¹⁸⁵ By the time of the 2019 Canadian federal elec-

¹⁷¹Karen T. Litfin. *Ozone Discourses: Science and Politics in Global Environmental Cooperation*. New York: Columbia University Press, 1994, p. 126.

¹⁷²Margaret Thatcher. *Speech to the Royal Society*. 1988. url: <https://www.margarethatcher.org/document/107346> (visited on 04/17/2022).

¹⁷³CBC Radio. *When the Environment was not a Partisan Issue*. 2019. url: <https://www.cbc.ca/radio/sunday/the-sunday-edition-for-september-29-2019-1.5299577/when-the-environment-was-not-a-partisan-issue-1.5299597> (visited on 06/09/2022).

¹⁷⁴As of 2019, Mulroney was urging Canadian leaders to take more substantial action on climate change. Brian Platt. *Brian Mulroney Urges Canadian Politicians to Take Action on Climate Change, Despite Political Risk*. 2019. url: <https://nationalpost.com/news/politics/brian-mulroney-urges-canadian-politicians-to-take-action-on-climate-change-despite-political-risk> (visited on 06/09/2022).

¹⁷⁵Jamie Bradburn. 'A crisis of unparalleled magnitude': How Environmental Concerns did – and Didn't – Shape the 1988 Election. 2021. url: <https://www.tvo.org/article/a-crisis-of-unparalleled-magnitude-how-environmental-concerns-did-and-didnt-shape-the-1988-election> (visited on 06/09/2022).

¹⁷⁶C-SPAN. *Prime Minister Brian Mulroney Announces a Centre for Sustainable Development*. 1988. url: <https://www.c-span.org/video/?c4685787/user-clip-prime-minister-brian-mulroney-announces-centre-sustainable-development> (visited on 06/09/2022).

¹⁷⁷Liberal Party of Canada. *Securing Our Future Together*. 1993. url: <https://web.archive.org/web/19980423142109/http://liberal.ca/download/plan-e.pdf> (visited on 05/06/2022), p. 52.

¹⁷⁸Glen Toner and James Meadowcroft. "Institutionalizing Sustainable Development: The Role of Governmental Institutions". In: *Innovation, Science, Environment: Special Edition: Charting Sustainable Development in Canada, 1987–2007*. Ed. by Glen Toner and James Meadowcroft. Montreal: McGill-Queen's University Press, 2009.

¹⁷⁹See: CTV News. *Dion Introduces 'green shift' Carbon Tax Plan*. 2008. url: <https://www.ctvnews.ca/dion-introduces-green-shift-carbon-tax-plan-1.303506> (visited on 08/02/2022).

¹⁸⁰CBC News. *Carbon Tax Plan 'good for the wallet,' Dion Pledges*. 2008. url: <https://www.cbc.ca/news/canada/carbon->