Renewed Power to the People? The Political Ecology of Canadian Energy Transitions

by

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We acknowledge with respect the Lekwungen peoples on whose traditional territory the university stands and the Songhees, Esquimalt and W̱SÁNEĆ peoples whose historical relationships with the land continue to this day.

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Abstract

Amidst the rising tides of inequality and climate change, movements are developing which aim to unify social justice and environmental agendas. Proponents of energy democracy recognize that renewable energy transitions have the potential to foster more equitable social relations. However, literature indicates that renewable energy can also worsen social relations, and may fail to hinder, or could actively contribute to, ecological degradation. Therefore, research is needed that examines how the contexts in which renewables are implemented lead to divergent socio-ecological outcomes. This project compares strategies of renewable energy implementation in Canada, as embedded within socio-environmental projects ranging from fossil capitalism to eco-socialism. The framing of renewable energy, climate change, and political-economic issues in the strategies of actors within these projects are analyzed. Canadian governments, fossil fuel and renewable energy corporations were found to undertake renewables implementation within a clean growth framework, which maintains capitalist hegemony while responding to pressure to take action on climate change. Renewables are also used by governments and fossil capital firms to justify the continued growth of fossil fuel industries. The renewables industry is more ambitious in its transition strategy but does not contest fossil fuel production and exports. Renewable energy co-operatives offer a form of energy transitioning that challenges the undemocratic nature of corporate power but appears limited in its ability to influence multi-scalar change. Meanwhile, Leap, the Pact for a Green New Deal, and Iron and Earth exhibit an emergent push for just, democratic, and sustainable alternatives to fossil capitalism and clean growth. Energy democracy is central to Leap's strategy, which suggests paths toward addressing the limitations of renewable energy co-operatives while supporting other forms of democratic renewable energy systems.

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Introduction

Climate catastrophe and rampant social inequality are two of the most pressing problems of contemporary times. The latest report by the International Governmental Panel on Climate Change (IPCC 2018) estimates that staying within 1.5°C of warming above preindustrial levels will require a 45 percent reduction in carbon dioxide emissions by 2030, and net-zero emissions by 2050. If not prevented, this warming is expected to lead to unprecedented destabilization of both the Earth System and human civilization as we know it. However, at around 1°C of warming, we are already seeing major environmental effects, including record-breaking heat waves and forest fires, yearly category five hurricanes, drowning Pacific islands, and major droughts and floods. These effects are already having major social consequences. For example, Weizman (2015) links wars in North Africa and the Middle-East – regions that have long been hotbeds of internal conflict and Western intervention – to catastrophic droughts and crop failures. Mapping Western drone strikes in the region, he finds that many of these attacks are on or extremely close to the 200mm aridity line – 200mm being the minimum amount of yearly rainfall required to grow cereal crops en masse without irrigation. Migrants fleeing this war-torn and resource-depleted region are then faced with rising tides of reactionary right-wing populism in the Global North – the latter responding not only to immigration but also to economic polarization.

Alongside international and racial inequalities, a yawning divide continues to grow between rich and poor. In Canada, for example, the richest two individuals own as much wealth as the poorest 30 percent (The Canadian Press 2017), and worldwide, the richest eight own as much as the poorest 50 percent (Hardoon 2017). Oxfam (2019) states that, worldwide, “the number of billionaires has doubled since the [2008] financial crisis and their fortunes grow by

$2.5 bn [USD] a day, yet the super-rich and corporations are paying lower taxes than they have in decades" (p.2). In 2018, a historic record was broken in the US, when the 400 richest families for the first time paid a lower tax rate than the poorest 50 percent of households (Saez and Zucman 2019).

Not only are climate change and social inequalities increasing simultaneously, they are interrelated. As it stands, there exists a state of injustice wherein those who have contributed to climate change the least – the Global South – will, and already do, suffer its effects the most. Meanwhile, those who have contributed the most – the Global North – will experience the least consequences. But more fundamentally, the coincidence of climate change and economic polarization suggests that each stems from a common cause: capitalism – the endless drive for accumulation and economic growth. Cohesive movements and theoretical orientations are required to address climate change and inequality, grounded in a recognition of the interconnectedness of these issues. Further, attempts to address these issues must advance an alternative paradigm, or counter-hegemony. This counter-hegemony would recognize the mutual embeddedness of society and the rest of nature, and conceive of societal systems not as necessarily hierarchical, but as thriving when organized democratically and aiming to bring about and maintain social justice and ecological sustainability. Within contemporary movements to address climate change and inequality, calls for energy democracy, a green new deal, eco-socialism, and climate justice recognize these propositions, and seek to orient themselves and their goals accordingly. In contrast, projects such as climate capitalism and clean growth attempt to address climate change without questioning the hegemonic socio-environmental relations of capitalism. Related to this, obstruction and co-optation by fossil fuel interests is a serious

impediment to successful renewable energy transitioning and climate change mitigation of any form, especially that which could address social inequality.

A major aspect of mitigating climate change involves moving from a fossil-fuel based economy to one dependent on non-carbon energy sources. Some proponents tout nuclear power as a potential solution, but for the most part, renewable energies are seen as the primary avenue to emissions reductions. However, the world is experiencing significant top-down political paralysis when it comes to making the shift from fossil fuels to renewables. Although many governments have declared a climate emergency in response to mounting public pressure, moving from lip service to concrete changes is proving extremely difficult.

Therefore, research is needed regarding how to effectively advance climate change mitigation and renewable energy transitioning, especially in countries like Canada, which stands out among the Global North as a ‘climate laggard’ (Carroll 2020). However, given that the current crisis faced by humanity is not only ecological, but social as well, this must be combined with research that examines the social ramifications of a renewable energy shift. More clarity is needed regarding how different outcomes of renewable energy implementation may come about, to advance climate change mitigation and broader ecological regeneration, and to combine energy transitions with movements for equality, democratisation, and justice. Thus, this research project explores different strategies of renewable energy implementation and climate change mitigation in Canada, highlighting their socio-ecological ramifications. These strategies are analyzed in the context of fossil capitalism, alongside clean growth and eco-socialist projects.

The Political Ecology of Energy Transitions: Competing Strategic Projects

The persistence of capitalism goes a long way in explaining the fact that global greenhouse gas emissions continue to grow every year, despite efforts to mitigate climate change. Fossil capital theorists (e.g. Altvater 2007; Huber 2008, 2011; Malm 2012, 2016; Mitchell 2011) highlight the seemingly inextricable relationship between capitalism and fossil fuels, wherein the latter have thus far been fundamental to the endless growth and exploitation dynamics of the former. The use of an extremely dense, and seemingly inexhaustible, energy source has acted, since the 19th century, as a fuel that can keep up with the voracious appetite of an economic system that demands ever-increasing profits and never-ending capital accumulation (Altvater 2007; Malm 2016). More broadly, treadmill of production theory posits that this loop of infinite growth and accumulation is contingent upon ever-increasing resource extraction and pollution, since the production of commodities is dependent upon raw resource extraction, while capital gains are dependent upon the externalization of the true costs of production. This externalization includes the ecological and social harms created by the wastes generated throughout the commodity chain (Schnaiberg 1980). Historically and in contemporary times, fossil fuels have acted metaphorically and literally as the fuel and lubrication in the engine that drives the machinations of capitalism, facilitating the role of physical constructions in keeping pace with the capitalist mindset and social relations. A seemingly infinite energy reserve of fossil fuels has allowed for raw resources to be extracted, processed, and consumed at rates that attempt to match the infinite growth cycle, and in doing so, fossil fuels have become commodities themselves, and are subject to the same treadmill of production dynamics. Hence, climate change continues to accelerate, racing to catch up with the pace of capital accumulation.

Further, changes in energy regimes to coal and then to oil have been implemented to facilitate social exploitation. Originally, capitalists began to use coal not because it allowed for efficiency gains, but because it afforded greater ability to exploit labor, alongside more autonomy for individual capitalists (Malm 2016). Malm explains that the previously dominant energy source, water mills, were dependent upon strong river flows, and had to be placed in very specific locales, which were often far from population centres. To attract laborers to manufacturing hubs then, aspiring capitalists often had to expend vast fortunes to create at least somewhat hospitable towns and homesteads, which ate into profits. Further, water mills required skill and dexterity to weave the wool and textiles that were the primary commodity at the time of the industrial revolution in England. This meant that laborers were not so easy to replace, allowing them leverage and striking capabilities over business owners. This drove up wages and working and living conditions. Moreover, manufacturing via water mills meant that production was subject to river flows, which were also influenced by manufacturing and domestic centres upstream. Capitalists who used water mills were thus reliant upon natural forces as well as cooperation with other manufacturers and towns along the same river.

Malm argues that capitalists began to employ coal-powered steam engines to address these factors. Coal and other fossil fuels are compact and highly portable sources of energy. Since a steam engine could be placed anywhere, manufacturers moved to population centres instead of spending money to attract people to remote locates. This also allowed for a constant reserve pool of laborers. These laborers did not need to possess nearly as much skill to fuel a coal-powered steam engine as to weave in sync with a watermill. Thus, these latter two factors

drove down wages and working conditions.[1] The portability of steam-engines, and their ability to run anytime, as long as coal supplies were continuous, also solved the problem of fluctuating river flows, decreasing manufacturers' dependence upon natural forces and their need to co-ordinate with the activities of towns and other manufacturers.

The work of Mitchell (2011) is complementary to Malm's analysis. He argues that the sheer number of laborers it took to operate coal mines, along with the relative lack of supervision from superiors when working in the mine, made it easier to sabotage operations and assisted the development of strong labor unions. Meanwhile, coal-powered steam trains, the main mode of transportation at the time for moving both coal and industrial goods, meant that transportation was fixed in specific, centralized routes. Subordinate classes therefore had some ability to sabotage these routes to gain concessions. The initial development of democratic politics arose in part through workers' exercise of these powers.

Much like Malm's history of the shift from water to coal power, Mitchell describes the move from coal to oil as resulting in part from capitalists wishing to stymie the increasing power of working classes. Here, the liquid nature of oil meant that, once reserves were tapped, far fewer workers were required to extract and transport it, relative to coal, and workers in oil industries required fewer skills and were easier to supervise since they were not underground. As well, oil's increased storage capacity gave rise to mobile combustion engines, leading to the eventual widespread use of both the car, and of transport trucks to ship goods. The latter meant that shipping routes became much less centralized, further decreasing the already degraded opportunities for disruption. Once the shipping container was invented in the 20th century,

[1] Malm (2012) also uses the former to explain the massive emissions growth in China in the late 20th and early 21st centuries, as capital flocked from core countries such as the US to a semi-peripheral country with vast labor pools and somewhat established infrastructure in order to manufacture products for global markets.

globalization became a prominent force, and the aforementioned effect was exacerbated. Further, the increased mobility of corporations stripped power from populations the world over.

Huber (2013) details social relations expressed in the modern oil regime. He argues that part of the power of oil arises from its pervasiveness in all aspects of our lives, including its use for industry, transportation, medication, and packaging, while almost every product we consume has a carbon footprint. Huber too ties the value of freedom – most prevalent in the United States, but also in Canada and increasingly around the world – to the use of personal automobiles, fuelled by oil. Moreover, he connects to car use the rise of suburban neighborhoods, nuclear families, entrepreneurialism, and a sense of the household as one's sovereign domain. For cars allow for large amounts of urban sprawl while still keeping destinations accessible from the suburbs – at least for those who can afford them. Importantly, Huber points out that this sense of household sovereignty and entrepreneurialism, which is connected to the independence that cars afford, acts to stymie the desire for citizens to participate in political affairs. That is, apart from trying to maintain (often neoliberal) policies that reproduce this individualistic way of life.

Such understandings of the integration of fossil fuels in contemporary society are crucial to a critical analysis of strategies of transitioning from fossil fuels to renewables. Since energy regimes are multi-scalar, they implicate a wide variety of groups and people, from corporations and executives, down to communities and individuals (Carroll 2020). This serves to complexify the claim that capitalists are the primary driver of climate change. However, Huber (2008, 2013), Mitchell (2011), and Malm (2012, 2016) stress that elites take the greatest responsibility. Historically, elite interests have shifted the dominant energy sources of societies – from water, to coal, and then oil – primarily as a means of furthering their own interests. These decisions were made undemocratically, by profit-driven investors and executives within the institutional

framework of capitalism. The ability for elites to influence decision-making stems primarily from their increased ownership of, and access to, capital. This depends in turn upon their ownership and control of 'the economic surplus', the value created by laborers and appropriated by capitalists, who own the means of production (Carroll and Sapinski 2018: 7). According to Carroll and Sapinski (2018), this relationship

> places corporate owners, directors and top executives in a dominant position in economic decision-making, including over the flow of resources to new initiatives, which shapes the future. Such control includes major economic decisions about what, when where and how to produce. And this control relegates workers, communities and governments to a position of unilateral dependence. (P. 3-4)

The foregoing discussion highlights two significant points. First, there is a dialectical relationship between energy and power. Historically, coal regimes were enacted to increase the profit and power of dominant classes, thus beginning the era of fossil capitalism. Pushing back against rising power disparities, laborers used the structures of the coal regime to their advantage, opening space for many of the liberties seen today in capitalist societies. In response, fossil capitalists again shifted the regime – from coal to oil – as a means of consolidating power.

Second, sustainable relations between society and the rest of nature have thus far been unattainable within a capitalist framework. This is due to the infinite growth and treadmill of production dynamics of capitalism, and capitalism's historical dependence upon fossil fuel consumption.

In the context of climate change and mounting pressures to transition to from fossil fuels to renewables, these points are paramount. For we live in a time of unprecedented crisis. The dual threats of climate change and a rapidly widening inequality gap are two of many pressing concerns today – or of the 'multiple crisis', as Brand (2016) calls it. The crisis is ultimately civilizational, raising a profound uncertainty as to whether stable socio-ecological relations, and even humanity and most life on Earth, will persist in the near future.

Critically, renewable energies present an opportunity to address the dual crises of capitalism. Alongside drastically reducing greenhouse gas emissions, a transition from fossil fuels to renewables presents an opportunity to democratize energy systems, and potentially social relations more broadly. Emerging 'energy democracy' movements and literatures emphasize these potentials and seek to advance them. However, other researchers stress that energy democracy is not necessarily contingent with renewable energy transitioning, and that renewable energy can worsen social relations.

The following discussion highlights these variegated potentials of renewable energy in a broad sense, beginning with an outline of energy democracy.

Towards Energy Democracy? Political-Economic Dimensions of Renewable Energy Systems

Energy democracy is both a socio-environmental project and a way of organizing energy systems. As a project, energy democracy politicizes the energy transition debate (Angel 2016). Its proponents seek to "advanc[e] renewable energy transitions by resisting the fossil-fuel-dominant energy agenda while reclaiming and democratically restructuring energy regimes" (Burke and Stephens 2017: 35). Energy democracy is founded upon the valuation and exercise of collective ownership or control over energy systems (Burke and Stephens 2017; Candeias 2013; Szulecki 2018; van Veelen and van der Horst 2018). It often emphasizes prosumerism (Burke and Stephens 2017; van Veelen and van der Horst 2018), the consumption of resources by those who produce them. Due to the dispersed nature of renewable energy sources relative to concentrated fossil fuels, as well as the capital-intensive nature of the latter, energy democracy and prosumerism have much more potential in renewable, rather than fossil-fuelled, energy

systems (Burke and Stephens 2017, 2018; Gui and MacGill 2018; Rifkin 2011; Szulecki 2018; van Veelen and van der Horst 2018).

Angel (2016) describes co-operatives, re-municipalization, and central state ownership as three key forms of democratically organized energy systems. These forms contrast with the corporatized nature of energy production in the current energy regime that is fossil capitalism. Co-operatives are run democratically by their members, for each person who has payed the membership fee has an equal vote in the management of the co-op, regardless of how much money they invest after joining. Meanwhile, re-municipalization and state-ownership entail a return from the mass privatization of energy systems which occurred throughout the neoliberal era.

Proponents of energy democracy recognize that efforts to transition from fossil fuels to renewables based on climate change and social justice concerns create the potential for and/or may require significant socio-economic restructuring, due to possible changes in power distribution that may result from a more widely distributed means of production (Burke and Stephens 2017, 2018; Gui and MacGill 2018; Huber 2013; Malm 2016; Mitchell 2011; Rifkin 2011; Szulecki 2018; van Veelen and van der Horst 2018). This potential is critical. For, in bringing about more sustainable energy systems, people reliant upon renewable energies instead of fossil fuels could produce their own energy and leverage bottom-up systems of power – in both senses of the term. Theoretically, once a person, household, or community has their own source of energy, and it has been paid for, produced, and installed, they control their own means of energy production. Further, democratised systems at a larger scale, such as industrialized renewable energy projects, or power grids, would give stakeholders a say in management

processes, alongside creating a more equitable distribution of that energy and any wealth it creates.

Accordingly, renewable energy transitioning creates an opportunity to take back one point of leverage that the capitalist class – the owners of the means of production – have over the proletariat. Here, movements for social justice and equality coincide with movements to mitigate climate change and bring about broader socio-ecological sustainability (Carroll 2020). Carroll (2020) posits that energy democracy can serve as a "bundle of non-reformist reforms" (a concept coined by Gorz 1967), "steps toward system change, [that] avoid co-optation by disturbing the capitalist status quo in ways that build popular power… [and] open space for democratization and decolonization of economic, political and cultural life" (18). Crucially, however, the potential for energy democracy to facilitate such a shift is dependent upon its "develop[ment] in concert with other non-reformist reforms in the workplace, and in cultural production… incorporating, within an expansive historical bloc, those struggling for economic, climate and gender justice and against racism and ongoing colonization" (19). Hence, energy democracy could serve as one crucial element in a complex of movements and initiatives comprising a transition away from the hegemony of capitalism, and relations of control and domination more broadly.

Though examples of democratically organized energy systems (such as renewable energy co-operatives) have tended thus far to take place at the local or community level, it is therefore crucial to exercise energy democracy within larger-scale systems and to integrate such instances within broader movements for social justice and environmental sustainability (Angel 2016). Implementing energy democracy across multiple scales, and in tandem with broader movements, is necessary insofar as the hegemonic relations of domination that comprise and intersect with

capitalism are inherently expansive. This affords isolated instances of systems that emphasize democracy, justice, and/or sustainability little ability to resist expansions of these systems of dominance. Thus, integrated movements, and networks of groups and actors are needed in order to construct a counter-hegemonic alternative to the currently existing relations of dominance. This counter-hegemony would need to emphasize ‘power-to’ instead of ‘power-over’ (Carroll 2006). The resultant system is best described as a multi-scalar project of democratic eco-socialism (Carroll 2020).

All said, renewable energies appear to be more beneficial than fossil fuels, both socially and environmentally. However, renewables are not a panacea. Their effects can be Janus-faced, with the potential to increase or decrease existing social inequalities. In much the same way that renewables can serve to produce and be produced by projects emphasizing social justice and sustainability, they can also be integrated within capitalist hegemony. Indeed, mainstream proponents for climate change mitigation and renewables “[strip] questions of energy transition of their political content”, reducing the energy debate to questions of science, technology, economics, and elite management (Angel 2016: 7). Correspondingly, the widely lauded Paris Agreement of 2015 was an international response to climate change that was strongly influenced by the business sector and fails to question economic growth and current social relations (Spash 2016). As will be discussed in the following section, this response can be encapsulated as a project of climate capitalism, or clean growth. Within such a framework, the emancipatory potential of renewables is avoided, and energy transition instead becomes a perpetuation of unsustainable and unequal capitalist relations.

In relation to this, renewables can *worsen* inequalities and unsustainability because of their properties. This includes the dispersed nature of energy sources (such as sunlight or wind)

(Abramsky 2010), and the vast amounts of minerals that will needed to be mined in order to produce renewable energy technologies on a large enough scale to replace the amount of energy that is currently produced by fossil fuels. Moreover, the benefits and costs of renewable energy systems are not, and will not be, distributed equally within the capitalist system. For example, within the world-system of globalized capitalism, most mineral extraction for solar-panels and wind-turbines tends to take place in Global South countries, while countries in the Global North have more renewable energy policies and installed capacity. Meanwhile, mineral extraction tends to inflict more harm upon ecosystems, communities, and people in the Global South (Shakespear 2018). Further, renewable energy transitioning has significant implications for rural-urban relations, and for Indigenous-Settler relations, since many Indigenous communities live in remote and/or rural areas, where solar and wind potential tends to be greatest (Abramsky 2010). Additionally, in countries such as Canada, many mineral resources are located on Indigenous territories. Therefore, properties of renewable energy could lead to worsening cases of land-grabs and dispossession (Abramsky 2010). Klein (2019) uses the concept of 'green colonialism' in this context, based upon cases of Indigenous dispossession that occurred throughout the creation of national parks in North America.

In sum, transitions from fossil fuels to renewables present a fork in the road that is energy and power dialectics.[2] The above discussion presents the two paths in a broad sense: energy democracy leads to democratisation and equality; while implementation of renewables within the capitalist system could lead to further, and perhaps worsening, inequality. As well, the former presents more potential to mitigate climate change and advance broader socio-ecological

[2] Though of course, the path taken could vary from place to place, and between instances of renewable energy production.

sustainability. Here, energy democracy projects could act as critical nodes in a counter-hegemony that presents a democratic eco-socialist alternative to globalized neoliberal capitalism. Owing to the negative potential that transitions from renewable energy present for social justice and equality, it is all the more critical that such transitions, and energy democracy, be integrated within a broader counter-hegemonic project.

Therefore, it is imperative that research be undertaken that seeks to understand forms of both energy democracy and capitalist responses to climate change, to prioritize strategies that lead towards the former and away from the latter. To this end, my central claim in this project is that *renewable energy transitions will produce different political-economic and ecological outcomes depending on the social relations that the transitions activate or reproduce*. In this project, I examine these potentials by focusing on the goals, strategies, and framings employed by a range of actors to contextualize and operationalize renewable energy in Canada. Further, I focus on the broader socio-environmental projects that support and/or are supported by these different framings and uses of renewable energy, highlighting in particular relationships between energy democracy and eco-socialist, fossil capitalist, and clean growth projects.

In order to understand how renewables and energy democracy may or may not be tied in with these projects, the latter are outlined in more detail below. This is foregrounded by a brief discussion of political ecology, the predominant theoretical and analytical framework employed in this study.

Political Ecology

According to Adkin (2016), political ecology is "a theoretical framework for making sense of the political, economic, and environmental conditions in which we find ourselves" (p.6). Political ecology can also be described as an "approach rooted in political economy and cultural studies and critically branching out to understand relationships between society and the natural world" (Bell, Penz and Fawcett 1998:1).

Understandings of culture, discourse, and ontologies are key components of the political ecology framework (Adkin 2016; Keil, Bell, Penz, and Fawcett 1998). As Hajer (1995) states: "developments in environmental politics critically depend upon the specific social construction of environmental problems" (p.2). The ways that cultures, societies, and actors conceive of and frame themselves, the environment, social and socio-environmental relations, and the problems they seek to address, are key to understanding proposed solutions to the problems as well as the outcomes of the strategies employed.

I use this political ecology framework to conceptualize the competing socio-environmental projects discussed below, all of which are grounded to greater or lesser extent in energy movements and efforts to address climate change. Making sense of the way in which affiliates and proponents of these competing projects conceptualize and frame political-economic relations, climate change, and energy (including renewables and fossil fuels) assists in understanding the differing strategies and outcomes of these socio-environmental projects. These projects include fossil capitalism, clean growth/green capitalism/climate capitalism, green new deal, and democratic eco-socialism. The following sub-section will discuss these socio-environmental projects in more detail through a political ecology lens, with a focus on the ways in which they do or may utilize renewable energy. The following subsection also serves as a

normative and analytical framework, from which we can distinguish projects that are more or less likely to foster transitions from fossil fuels to renewables, and to address the dual crises of climate change and inequality.

Socio-Environmental Theories and Projects

Candeias (2013) outlines four ‘competing strategic projects’ of green transformation: ‘neoliberal authoritarianism’, ‘green capitalism’, ‘a green new deal’, and ‘green socialism’. The first represents a doubling down of the existing neoliberal and fossil-capitalist system, and as such will not be discussed in detail here. However, the latter three, respectively, comprise increasingly fundamental transformations of capitalism in response to climate change and broader ecological issues. Additionally, green new deal and green socialist projects seek to advance social justice and democratization. Combining Candeis’ work with that of Ulrich Brand is useful for understanding the latter three projects.

Brand, Görg, and Wissen (2020) utilize a framework that combines Polanyian and regulation theories to develop a theory of capitalist crisis and transformation. They posit that the capitalist system cannot reproduce itself on its own, “and thus needs extra-economic institutions to contain its self-destructive tendencies” (165). Here, new modes of extra-economic regulation are periodically required in order to usher in new regimes of accumulation during times of crisis. Using this framework, they distinguish between three types of transformation. Two are transformations *of* capitalism, while the third involves transformation *beyond* capitalism.

First, ‘incremental transformations’ involve minor alterations to the capitalist system, where the existing mode of development stays the same. In contrast, the second type of

transformation leads to a new mode of development, or phase, of capitalism. This involves "a more profound restructuring of the capitalist mode of production, the modes of living, technologies, forms of the state, dominant understandings of a good – or at least functioning – society" (165-166). These transformations take place during 'great crises' of capitalism. Here,

> fierce struggles over hegemony take place… and anti- and post-capitalist proposals and forces might even gain relevance. They are however contained or transformed into moments of modernization so that the basic structures of capitalism, although under new institutional conditions and based on a transformed regime of accumulation, remain intact. (P. 166)

The above authors, alongside Candeias (2013), draw upon Gramsci (1971) in their formulations. They explain that such transformations take place via 'passive revolutions' – where historical blocs are not fundamentally altered but are restructured from above. These passive revolutions are often combined with another process outlined by Gramsci: 'trasformismo'. Through this process, forces that oppose the dominant powers may be integrated into the reformed structures, their "leading groups and intellectuals becom[ing] part of the power bloc" (Candeias 2013: 6). An example of this second type of transformation is the transition to Fordism and the development of the welfare state during the New Deal period in the 1930s (Brand, Görg, and Wissen 2020). Here, intensive increases in factory-produced goods were combined with wage increases for laborers alongside expansions in social support systems. This brought about a culture of mass-consumption, thus aiding capital accumulation, alongside co-opting potentially oppositional forces that arose in part out of the Great Depression. A second example is the transition to post-Fordism and neoliberalism in the 1970s, due to a crisis in capital accumulation. This involved a transformation from a "welfare state into a workfare state", and a "weakening of workers' power and… strengthening of capital, particularly of financial capital" (Brand, Görg, and Wissen 2020: 166).

Green capitalism, also known as climate capitalism (Sapinski 2015), or clean growth (Lee 2020), exemplifies this second type of transformation (Brand, Görg, and Wissen 2020; Candeias 2013).[3] This project entails the development of a 'new critical orthodoxy' (Brand, Görg, and Wissen 2020). For its rationale and objectives "[admit] the urgency of far-reaching problems and a deep ecological crisis [while] building on the existing institutions and dominant capitalist dynamics as a means and framework for solving the problems and overcoming the crisis phenomena" (163-164). In other words, proponents of green capitalism acknowledge that humanity's unsustainable relationship with nature is a problem, especially regarding the threats imposed by climate change. However, growth and overconsumption are not seen as fundamental drivers of the problem. They are instead posed as solutions – so long as the right regulations are imposed, to curb the excesses of capitalism, and to internalize the social and environmental costs that it has thus far failed to account for. In this, there is a failure to question the open-market and competitive aspects of neoliberal economics that has led to increasing levels of nature commodification.

Accordingly, clean growth prioritizes market-based strategies – such as carbon taxes and cap-and-trade schemes – as well as pro-fossil-fuel technological 'fixes' – such as energy efficiency and carbon sequestration (Candeias 2013; Graham 2019; Lee 2020; Klein 2014; Sapinski 2015, 2016). The Paris Agreement of 2015 follows this framework (Spash 2016), leaning largely upon carbon capture and storage (CCS) technologies that do not yet exist in order to offset continued growth in carbon emissions (Anderson 2015). Similarly in Canada, this

[3] In this project, 'green capitalism' is used to refer to the capitalist system that responds to the broad ecological crisis, and not just climate change. Meanwhile, 'clean growth' is my preferred term for climate capitalism, since it is the label most often used by Canadian governments and business.

strategy leaves significant renewable energy transitioning as something to be approached in the long-term, once sufficient profits have been extracted from expanded fossil fuel production (Graham 2019; Lee 2020). Meanwhile, transitions to natural gas are promoted as a short to medium term response to climate change, primarily to replace coal-fired power plants (Wilt 2018). When renewables *are* part of a clean growth strategy, it is often in the form of large-scale solar or wind farms with monopolized energy grids (Candeias 2013).

Clean growth strategies are problematic on two fronts. First, studies suggest that, within a capitalist infinite-growth dynamic, reducing the greenhouse gas emissions intensity of fossil fuels does not lead to an overall decline in emissions (York 2010),[4] and that, even when renewables are brought into such a system, they do not replace fossil fuels but simply add to the energy mix in addition to the latter (York 2012). These studies are supported by two facts. In 2019, new global renewable energy capacity as a proportion of total new energy capacity was at its highest level ever – at three quarters of new electricity generation capacity (Carrington 2020). Yet global greenhouse gas emissions continued to increase in 2019 – albeit at lower rates than previous years (Plumer 2019). As Rees (2019) states:

> The 2019 Energy Information Administration *International Energy Outlook* reference case projects global energy consumption to increase 45 per cent by 2050. On the plus side, renewables are projected to grow by more than 150 per cent, but… the overall increase in demand for energy is expected to be greater than the total contribution from all renewable sources combined.

[4] In the context of energy production, emissions denote the amount of greenhouse gases released in production processes, while emissions intensity means the amount of greenhouse gases released per unit of energy produced. Therefore, emissions of an expanding industry can increase even as its emissions intensity lowers (Budgen and Trout 2020).

Another problem with the clean growth strategy is that a doubling down on the capitalist system as a solution to the climate crisis ignores, to varying degrees, issues of social inequality. This is what green new deal and eco-socialist projects seek to do address.

Like green capitalism, green new deal projects are another example of the second type of transformation of capitalism – albeit a more fundamental one than the green capitalism discussed above. For green new deal proponents seek to implement more just and equal social relations alongside climate change mitigation and broader ecological sustainability. Like Roosevelt's New Deal, this project aims to increase social welfare and provisioning programs, though with an explicitly justice-oriented approach, seeking to improve gender and raced-based inequalities that the New Deal overlooked. The green new deal first gained prominence in Europe in the midst of the 2007-2008 financial crisis. And, since a proposal led by US congresswoman Alexandria Ocasio-Cortez in 2018, it has gained traction in North America and around the world (The Green New Deal Group 2019). Though still an evolving project, common green new deal proposals include: ending fossil fuel subsidies and ramping up funding for renewable energy; democratizing energy systems; increasing the number and pay of low-carbon service jobs; retraining high carbon and fossil fuel sector employees in low carbon and renewable energy sectors; and providing extensive, free, and more efficient public transportation systems (Candeias 2013; Klein 2019).

An important aspect of a green new deal is the creation or expansion of a green sector, wherein renewable energy implementation is a central component – but this can also include expansions of public transportation systems, home retrofit services, and low-carbon services, such as healthcare, education, or child-care (Klein 2019). These exhibit some of the ways in which proponents aim to address social issues alongside environmental ones. Further, green new

deal projects often coincide with ‘just transition’ proposals, which aim to address and reduce inequalities, especially for marginalized groups. In Canada, for example, Indigenous peoples are emphasized in this respect. This comes alongside ensuring that those who would be worst affected by a green, or low/zero-carbon transition are accounted for (Klein 2019). One of the primary aims of just transition movements, especially in Canada, is to retrain oil and gas workers in the emerging green sectors and to provide financial and service supports throughout the transition (Jackson and Hussey 2019; Klein 2019; Lee and Klein 2020).

Next, Brand, Görg, and Wissen (2020) state that “the third type of [capitalist] transformation aims at a great transformation beyond the capitalist mode of production” (166). Drawing upon Polanyi (2001), they argue that the primary driver of the multiple crisis of capitalism is the commodification of nature, land, and labour power, and that the way to remedy such crises is to de-commodify nature and democratize societal-nature relations. They explain that this third type of transformation, and the resultant system, requires rules and norms designed to situate socio-economic logics within natural systems, so as to not overuse nature, though at the same time without commodifying nature.

Such a system has been called eco-socialism (e.g., see Lowy 2015; Brand 2016). However, *democratic* eco-socialism (Satgar 2018; Carroll 2020) is a more appropriate term, as it more effectively captures the expansions of popular participation in politics and economics that this project seeks to bring about.

Following from the above, it is unlikely that democratic eco-socialism could be implemented through state institutions and party politics alone, given the centralized power that is inherent in these particular institutional forms, as well as the symbiotic relationship between states and capital. This relationship reaches back to the birth of both states and capitalism

(Giddens 1981; Marx 1983) and continues to be seen in more contemporary instances, including the emergence of nation-states (Anderson 1991; Giddens 1981). With neoliberalism, we see a hollowing out of both state services and regulations, vastly decreased taxation of upper classes, increasing privatization of state and municipal services and the commons, and an increasingly revolving door between business and political office (Harvey 2005).

However, though state and capitalist interests are symbiotic, state structures are still contested terrain that may be open to movement towards (eco)socialism. For example, authors following the strategic-relational approach to cultural political economy (e.g. Angel 2017; Becker, Beveridge, and Röhring 2016; Jessop 2010; Maher 2017; Sum and Jessop 2013) see the state not as a neutral terrain but oriented towards preserving capitalist interests. Yet these authors argue that there are possibilities for exerting agency over or through the state to create outcomes beyond perpetuating capitalist interests. Indeed, Satgar (2018) touts the need to increase the role of popular social movements in holding states accountable to the needs and wellbeing of society, people, and nature. Here, "a new left instrument has to be considered that is not party centred or party-movement oriented", that moves beyond "electoral fixation", and instead employs a "movement-citizen-driven party form" (342). This requires a renewed sense of politics and empowerment from below, what Williams (2018) calls 'democratized democracy'. However, for such a strategy to be effective, these movements require both a renewed ecological awareness and understandings of capitalist crisis that incorporate this, bringing issues of climate change and ecological degradation into politics and understandings of society, economics, and power (Satgar 2018).

Similarly, Candeias (2013) explains that democratic eco-socialism would entail a socialization of investment; reclamation of the public sphere; a focus on and expansion of

reproductive economies; just transitioning; and true democratisation of states and economies. Many of these elements are reminiscent of green new deal proposals, as outlined above. However, the primary difference between eco-socialist and green new deal projects is that the latter entails "an eco-social economy of growth" (Candeias 2013: 22), and does not question consumerism or wage-labour. Meanwhile, democratic eco-socialism entails a "green-socialist reproductive economy" (Candeias 2013: 22), promoting what Magdoff and Foster (2010) describe as 'sustainable human development'. For democratic eco-socialist projects recognize and incorporate the human and societal drive for progression, yet do so in a framework that is needs-focused, basing societal structures on the needs and limits of both ecosystems and people. Hence, "[h]uman development would certainly not be hindered, and could even be considerably enhanced for the benefit of all, by an emphasis on sustainable human, rather than unsustainable economic, development" (Magdoff and Foster 2010). According to these principles, not only would democratic eco-socialist projects be more apt to bring about a full-fledged renewable energy transition, but energy democracy would thrive within such a society (Candeias 2013).

In sum, green capitalist projects seek to frame and address climate change as a new accumulation strategy – primarily via market-based and technological means, with limited regulations such as gentle carbon taxes. Green new deal projects are in part green capitalist as well, utilizing similar strategies to foster economic growth. However, the green new deal is much more than a greenwashed accumulation strategy, and, compared to green capitalism, appears to have greater potential to address climate change and the ecological crisis, by prioritizing an extensive renewable energy transition and a broad green sector, while cutting energy consumption and increasing social programs and supports. Indeed, green new deal projects exhibit elements of eco-socialism. There is a focus on addressing inequalities alongside the

ecological crisis, perhaps also while creating room for more democratic control and ownership over production systems, and to a more limited extent, governmental systems, via pressure from below (Carroll 2020). Meanwhile, democratic eco-socialist projects aim to fundamentally transform systems of production and ownership, and perhaps of state government and politics, explicitly prioritizing and advancing direct, or democratised, democracy and distributed power, while constructing economies to allow for ecological sustainability and regeneration. This would likely come about through de-commodifying nature and labor.

Crucial to this discussion is the role of energy democracy. As outlined above, this concept can be used to understand not only different types of renewable energy systems, but also the use and promotion of democratic renewable energy systems as part of broader socio-environmental projects. Here, when integrated at multiple-scales within comprehensive movements for social justice and equality, energy democracy has the potential to act as a leverage point against capitalists' near exclusive ownership of means of production, so as to facilitate the implementation of a counter-hegemonic democratic eco-socialist project, or of a more democratic, and less capitalist, green new deal project.

Meanwhile, the implementation of renewable energy within clean growth projects would perpetuate capitalist hegemony, albeit in a new form. Drawing upon Klein's concept of green colonialism, I posit that an opposing dynamic to energy democracy could be called 'renewed imperialism'. Renewed imperialism too refers to colonial processes carried out as part of an environmentalist agenda, but specifically through renewable energy projects. Further, imperialism would be a more appropriate term, since renewables can be used to facilitate relations of domination that extend beyond colonialism. For example, clean growth prioritizes profit over sustainability and social justice, allowing for the continued appropriation by

capitalists of wealth that is produced by subordinate classes, the latter being a process that is integral to capitalism, colonialism, and imperialism.

Along these lines, Candeias (2013), drawing upon Harvey (2003), argues that "green capitalism is characterized by the continuation and intensification of global processes of 'accumulation by dispossession'" (7). Harvey uses this concept primarily to describe policies of neoliberal capitalism, but he sees it as an extension of the concept of 'primitive accumulation' coined by Marx (1983). Here, the initial ownership of the means of production by the bourgeoisie, and part of the imbalance of power between the bourgeoisie and proletariat, came about by dispossession through force, violence, and coercion. As evidenced by Candeias' and Harvey's work, primitive accumulation is not a thing of the past, but an ongoing process. A major process that Harvey denotes as exhibiting accumulation by dispossession is financialization in the neoliberal era. This includes a rise in speculative trading and the trade and manipulation of stocks, interest rates, credits, and investments, which ultimately serves to erode investments of middle and working classes, while increasing their debts and bolstering accumulation for capitalist classes. Further examples include the privatization of public assets and services, as well as the commodification, enclosure, and/or depletion of environmental and ecological commons, such as land, air, water, and ecosystems (alongside the commodification and enclosure of other types of commons, such as intellectual and cultural).

Harvey describes accumulation by dispossession as fostering a 'new imperialism', which is closely tied to the revitalization of capital accumulation via neoliberalism. Drawing upon this, I denote 'renewed imperialism' as the use of renewable energy to preserve top-down power, including neoliberal capitalist hegemony and the emergent new form of capitalism known as green capitalism or clean growth.

Thus, I posit that the extent to which characteristics of energy democracy or renewed imperialism are contingent upon a given instance or program of renewable energy implementation will vary according to the actors that frame and operationalize renewables, and the projects, or socio-environmental relations, in which these actors are embedded and/or seek to bring about. Here, energy democracy will be found or emphasized more in eco-socialist projects, while renewed imperialism will be found or emphasized more in clean growth projects.

Gaps in Literature, Research Questions

As the dual crises of climate change and inequality have worsened, social movements and academic literatures seek to understand and address these issues. However, a crisis means uncertainty. Accordingly, these movements and literatures are variegated as to their goals, strategies, and the (potential) outcomes that they advocate or point towards. Some seek to address climate change alongside addressing inequality, while others focus simply on the former, as a technical challenge. Moreover, different socio-environmental projects emphasize renewable energy to a greater or lesser extent, and in different ways.

Much has been written about the socio-ecological outcomes of renewable energy implementation, framed in both positive and negative terms. However, there is not a substantive amount of empirical evidence explaining what leads to these outcomes. This can be addressed by looking at the contexts in which energy transitions are undertaken. This project does so by examining how a range of actors in Canada frame renewable energy and related phenomena, and the broader socio-environmental projects these actors are part of or seek to contribute to. Drawing upon the literature review above, these projects include fossil capitalism, clean growth, and eco-socialism.

Further, this project adds nuance to conceptions of this range of socio-environmental projects and the strategies they employ. In relation to this, if clean growth, which is gaining traction as a response to climate crisis, is not in fact an adequate solution to climate change or inequality, examples are needed of actual solutions to these problems and the models of renewable energy, framings, and strategies that they employ. The same goes for green new deal and eco-socialist projects, since they are promising paths towards both democratisation and ecological sustainability, but there is a lack of clarity as to how these projects would play out in

terms of pursuing these objectives, and how they could be sustained. As stated, energy democracy is an emergent movement that could act as a key driver in the latter aims. However, energy democracy in practice is not well researched, especially in Canada. As such, this project aims to contribute to understandings of energy democracy as part of broader projects for social justice and ecological sustainability, alongside outlining how energy democracy, and these aims are constrained by other projects, such as fossil capitalism and clean growth. Further, I flesh out renewed imperialism as an opposing dynamic to energy democracy, which contributes to capitalist hegemony and clean growth projects.

Following from the above, the research questions of this project are:

1. How do different actors (e.g. governments, corporations, industry associations, co-operatives, NGOs, and grassroots organizations) frame and operationalize renewable energy in Canada?
2. How are these actors and their use of renewable energy contextualized within different socio-environmental projects (e.g. fossil capitalism; neoliberal capitalism; clean growth/green capitalism; green new deal; eco-socialism, energy democracy; just transitioning)?
3. What potentials do the strategies and framings of these actors and projects present regarding the use of renewable energy for social justice, climate change mitigation, and broader socio-ecological sustainability? How might Canadian strategies be altered to work towards these goals more effectively?

Methods and Methodology

Political ecology presents a useful theoretical framework for analyzing how renewable energy is framed and utilized. Political ecology examines socio-environmental conditions and relations, the way that societies and actors conceptualize and frame these phenomena, and any problems and proposed solutions identified by actors. To get at these conceptions and frames, political ecologists employ discourse analysis to identify the entities, conditions, problems, and outcomes that actors see as important to discuss, those that are left out of the picture, and the way that these elements and the relations between them are represented (Adkin 2016).

Adkin (2016) explains that political ecology is "guided by an explicit normative framework… and seeks to conceptualize alternatives to anti-ecological, anti-democratic systems" (p.10). According to Robbins (2004), the political ecology framework utilizes

> empirical, research-based explorations to explain linkages in the condition and change of social/environmental systems, with explicit considerations of relations of power… As critique, political ecology seeks to expose flaws in dominant approaches to the environment favored by corporate, state, and international authorities, working to demonstrate the undesirable impacts of policies and market conditions, especially from the point of view of local people, marginal groups, and vulnerable populations. It works to 'denaturalize' certain social and environmental conditions, showing them to be the contingent outcomes of power, and not inevitable (P.12).

Political ecologists tend to subscribe to a 'critical realist' perspective (Adkin 2016). According to Neumann (2005), this entails "acknowledg[ing] the ontological independence of the biophysical world while at the same time recognizing that our understanding of the natural world is partial, situational, and contingent" (p.10-11). As discussed, these understandings of the world are to some extent socially constructed. This is important, since the way that knowledge and ideas are understood, constructed, and conveyed can be indicative of worldviews. Drawing upon this idea, Adkin (2016) states:

> Political conflict is organized around ontological categories like 'the economy,' 'markets,' 'society,' 'class,' 'gender,' 'race,' 'ecosystem,' or 'capitalism.' Political discourses jostle to establish hegemonic

> interpretations of such concepts as 'sustainable development,' 'human nature,' or 'democracy.' Seeking justification of their interpretations, actors appeal to different types of evidence or reasoning, which may be experiential, religious, cultural, or 'scientific' (P. 9).

Moreover, Adkin (2016) explains:

> Political ecology encompasses not only a structural or institutional level of analysis (political-economic) but also a sociological, actor-centred level of analysis, as well as ecological science and cultural studies. Further… the phenomena we study must be understood historically. In lieu of highly generalized explanations for phenomena… political ecologists look for specific historical conditions that have given rise to various practices (or outcomes) in different contexts (Neumann 2005, 6). Moreover, political ecology analyses typically take into account the ways in which different spatial scales (from the local to the global) are interconnected or nested within one another (P. 6).

Drawing upon the explanations above, some vital elements of a political ecology analysis can be identified. This includes analysis of socio-economic structures and socio-environmental conditions; the actors or institutions embedded within or affected by those structures or conditions; the way that those actors use discourse to frame and represent certain elements of reality; the knowledges, ideologies, and worldviews used to justify these framings or representations; and the historical trajectories and multiple-scales within which socio-environmental conditions, actors, their strategies, and the outcomes of those strategies are embedded. All of this is conducted with a critical eye towards how power relations are maintained, shifted, or created through these processes.

This political ecology framework was used in this project to analyze various models and contexts of renewable energy implementation in Canada. The first step of this project entailed a literature review of the political economy and ecology of Canadian fossil capitalism, climate change policy, and energy transitions. This served to highlight a range of socio-environmental projects in Canada, alongside identifying key actors within these projects that seek to, or have, implemented renewables.

Specifically, content analysis served to highlight the socio-environmental conditions under which the selected actors pursue or resist renewable energy transitioning, the outcomes

these actors wish to achieve, and the potential or realized outcomes of renewable energy implementation. Discourse analysis was used to examine the strategies and ideologies of the selected actors, by highlighting how they framed the conditions, actions, and goals, and outcomes, of renewable energy implementation, as well as how they framed other actors and the broader systems in which they are embedded (van den Hoonard 2015). To this end, discourse analysis served to examine and 'denaturalize' (Robbins 2004) the framings put forth by actors in Canada, pointing towards the ways that these actors frame and justify their strategies, which in turn aided in a critical examination of the outcomes that result from various strategies of renewables implementation. The latter provided an outline of the strategies that may be most necessary to bring about successful climate change mitigation and broader ecological sustainability, alongside social justice.

Out of the literature review, five groups of actors were identified. The first consisted of Canadian governments, including the federal government, and the provincial governments of British Columbia and Alberta. Documents were analyzed containing the most recent climate change policy frameworks for the federal government and for BC. Alberta's policy framework was analyzed more anecdotally, through websites, news stories, and the appendix of the Pan-Canadian Framework document, since no comprehensive document outlining the province's policies could be found. The second group consisted of Canadian fossil fuel corporations that had previously been found to invest in renewables from 2012-2016: Enbridge, Teck, Fortis, and Suncor. Their 2019 annual reports were analyzed. The third group consisted of Canada's renewable energy industry, represented by the Canadian Council of Renewable Electricity (CanCORE), a consortium of Canada's hydro, solar, wind, and tidal energy industry associations. ConCORE's vision document was analyzed, alongside a number of its email

submissions to Canadian government officials in 2018 regarding federal climate change policies. Fourth, the websites of several BC and Alberta renewable energy co-operatives were examined.[5] The BC co-ops include Peace Energy Co-operative, Vancouver Renewable Energy Co-operative, and Viridian Energy Co-operative. The Alberta co-ops include ACE Energy and Alberta Solar Co-op. Lastly, the websites of Iron and Earth, Leap, and the Pact for a Green New Deal were examined, alongside the 2015 Leap manifesto.[6]

Together, these groups represent a range of strategies that can be loosely encapsulated under the categories of fossil capitalism, clean growth, and eco-socialism, while the latter two groups also present forms and articulations of energy democracy. The actors in these groups present a range of strategies, frames, and uses of renewable energy, to allow for analysis of some of the various potential uses for and contexts of, and socio-environmental outcomes of energy transitioning. The following outlines my justifications for examining energy transitions in Canada.

[5] Unlike the other four groups, these co-ops were not identified within the literature review of energy transitions in Canada. Rather they were found via internet searches for renewable energy co-ops in BC and Alberta. I looked for these groups since Angel (2016) states that they are a form of energy democracy, and I included them in this project (rather than municipalized or state-owned energy democracy projects) since the websites of the co-ops provide easily accessible statements about visions, aims, strategies, etc.

[6] Notably, LEAP and The Pact stand out among these actors as visionary rather than institutionalized projects. However, I argue that these initiatives can still provide useful comparisons to the more concretized projects. First, projects that seek to transform hegemonic socio-environmental structures from within must be informed by counter-hegemonic vision(s) before becoming entrenched institutionally. Second, discourse analysis is well suited to comparing both institutionalized and more visionary projects, since both examine how actors understand, frame, and strategize, in lieu of, or in addition to examining realized strategies and their outcomes.

Analyzing Canadian Energy Transitions

Canada has a bad track record when it comes to carbon emissions. As of 2014, Canada has the third highest carbon dioxide emissions per capita among countries in the Global North – behind only Australia and the US (The World Bank Group 2019). High emissions in all three countries can be attributed in part to a prevalent car and consumer culture, alongside extensive urban sprawl and suburban neighbourhoods (Huber 2013). Extreme seasonal temperatures could be added to this list as well. However, a predominant factor for all three countries is the fossil fuel industry. In Canada, the focus has predominantly been on oil and gas. Canada has the third largest proven oil reserves in the world, 96 percent of which are constituted of bitumen – located primarily in Alberta (Natural Resources Canada 2020). The country is the world's 4th largest producer and exporter of oil, and the 4th largest producer and 5th largest exporter of natural gas (Natural Resources Canada 2019). Natural gas is also primarily found in Alberta, alongside Northeastern BC (CAPP 2019). Alberta and BC, respectively, are the two largest producers of fossil fuels in the country (Natural Resources Canada 2019), while Alberta is the highest greenhouse gas emitter by a wide margin (Government of Canada 2020). This is largely due to the vast amount of energy required to produce oil from bitumen.[7]

Accordingly, Canada's fossil fuel industry can be considered one of the world's greatest threats to mitigating climate change. In addition, Canada's fossil fuel industry is a threat to domestic economic and social stability. Dependence on fossil fuel revenues and jobs is a significant driver of economic volatility and boom and bust cycles in the oil provinces – especially Alberta – while contributing to low government accountability to citizens, as

[7] Energy returned on investment for tar sands oil ranges from around 2.9-5:1, compared to about 18:1 for regular crude (Nuwer 2013).

governments depend upon corporations rather than citizen taxpayers for their revenues (Carter and Zalik 2016). Further, even without renewable energy implementation sufficient to meet Paris Climate Agreements, pricing of renewable energy will continue to outcompete fossil fuels in coming years. Without a significant transition away from fossil fuels to renewables, this will spell vast amounts of stranded assets for Canada (Mercure et al. 2018). Additionally, research attests that renewables provide more jobs per unit of energy produced than do fossil fuels (Bischof-Niemz and Creamer 2019; Lee and Card 2012; Wei, Patadia, and Kammen 2010).

Further, Alberta nearly tops the list for global solar power potential, with Calgary and Edmonton, respectively, receiving on average 2,396 and 2,345 hours of sunlight per year (Gridworks Energy Group 2019). Germany, a world leader in solar energy production, receives drastically less sunlight than Alberta, ranging from 1504 hours per year in Cologne, to 1709 in Munich (Current Results 2019). Since Alberta houses significant untapped reserves of solar power, as well as vast fossil fuel-based economy, energy transitioning offers the potential for vastly improved socio-ecological sustainability in the province, as well as for Canada as a whole.

The above factors highlight an urgent need for research outlining how renewable energy transitions could be undertaken in Canada, what the socio-ecological outcomes could be, and how fossil fuel interests interact with and obstruct such efforts. In view of Canada’s size, as well as the locales of its oil and gas resources, this project examines renewable energy implementation primarily in Alberta and BC, alongside its relation to the fossil fuel industries based in these provinces. However, I also examine Canada on a national scale, since federal jurisdiction has an impact on energy policy within the provinces. Recent examples include the Trudeau government’s recent enactment of a nationwide carbon tax and its purchase and approval of the trans-mountain pipeline.

Power for Profit: Government, Industry, and Clean Growth in Canada

During the Harper era (2006-2015), Canada was notorious in the international community for its lack of commitment to climate change mitigation. This was punctuated in 2011, with Canada's withdrawal from the 1997 Kyoto Protocol. During his time as prime minister, Stephen Harper expended great efforts to grow Canada's fossil fuel industry, branding the country an "energy superpower" soon after his election in 2006 (Taber 2006). Since then, Canada's oil production has been expanding steadily, peaking at 2.91 million barrels per day in 2018. As of 2012, domestic oil and gas production makes up about 25 percent of Canada's carbon emissions (The Canadian Press 2014),[8] making the fossil fuel industry the greatest source of emissions in the country (Smith 2018).

This heavy focus on oil and gas extraction is evidence of a fossil capitalist regime in Canada. During the Harper era, governments and fossil fuel corporations largely obstructed efforts to take action on climate change (Daub, Blue, Rajewicz, and Yunker 2020). However, since the election of Justin Trudeau just prior to the COP21 Paris meetings in 2015, the strategy has shifted from fossil capitalism to clean growth. This new strategy constitutes a 'passive revolution', taking into account, rather than dismissing, the concerns of the climate change movement. However, this still amounts to continued expansion of oil and gas extraction and increasing emissions, albeit with a greater focus on reducing emissions *intensity*. Within this period, BC has been pursuing the growth of a liquid natural gas (LNG) industry, as part of the broader clean growth strategy in Canada.

[8] Though a recent study utilizing atmospheric measurements shows that emissions from the tar sands are 13-123 percent larger than reported in public data (Liggio et al. 2019).

This chapter focuses on the implementation of renewable energy as part of clean growth strategies in Canada. This includes an analysis of past and present climate change strategies of the federal, British Columbian, and Albertan, governments, followed by an examination of how renewables are used by four of Canada's largest fossil fuel corporations: Enbridge, Suncor, Teck, and Fortis. Lastly, the clean growth framework of Canada's renewables industry is analyzed, as represented by the national industry association, CanCORE.

Climate Change Policy Frameworks in Canada, Alberta, and British Columbia: 'Clean Growth' in Paris and Beyond

The transition from Harper to Trudeau marks a change from the traditional fossil capitalist regime and its climate obstructionism, to a green capitalist framework that instead acknowledges the reality of climate change alongside the need for a more substantive way of addressing the problem. However, this does not mean effectively mitigating climate change, so much as appearing to.

The federal government released the Pan-Canadian Framework on Clean Growth and Climate Change report[9] in December 2016 – about a year after Trudeau's election, and one month after the COP21 Paris climate agreement became effective. This document outlines "Canada's plan to address climate change and grow the economy" (p.1). At the forefront of the framework is a plan to price carbon pollution. Here, a nation-wide carbon tax functions primarily to "send a market signal that can foster innovation among Canadian businesses". This "in return, make[s] them more competitive", in part by "opening up access to new markets and reducing

[9] See http://publications.gc.ca/collections/collection_2017/eccc/En4-294-2016-eng.pdf

costs of deploying clean technologies" (p.42). The carbon pricing scheme is supported by "complementary climate actions", such as "tightening energy efficiency standards and codes for buildings and vehicles", and "investing in clean technology innovation, and jobs" that "will bring in new and in-demand Canadian technologies to expanding global markets" (p.2-3).

Significantly though, the plan does not entail a fundamental transition from oil and gas to renewables, except in the long term (Lee 2020). Rather, the report states that "industrial emissions are projected to grow between now and 2030 as demand grows for Canadian-produced goods at home and abroad". Instead of reducing absolute emissions from the oil and gas industry, "a low-carbon industrial sector will rely heavily on clean electricity and lower-carbon fuels, will make more efficient use of energy, and will seize opportunities unlocked by innovative technologies." (p.20). Meanwhile, Trudeau has stated that the longer-term transitioning from fossil fuels to renewables is to be funded in part via taxation of the growing oil and gas industry (Pineault 2016). As we will see below, renewable energy sources are part of some corporate and governmental clean growth strategies. In the Pan-Canadian framework, however, renewables, alongside natural gas, are framed primarily as a way to reduce emissions in the electricity sector, as part of efforts to phase out coal. Though natural gas is not mentioned extensively in this document, it will play a much more significant role than renewables in this regard (Lee 2020; Wilt 2018).

The term 'low-carbon' is often strategically employed by governments and corporations in Canada as code for plans to increase the use of fracked and liquified natural gas to lower emissions intensity (Gutstein 2019).[10] 'Clean energy' is often used in a similar way, to

[10] As opposed to a "zero carbon economy", which means an economy that emits no greenhouse gases and would be reliant upon renewable energy sources (Gutstein 2019).

greenwash ideas surrounding the impacts of coal and natural gas production (Lee 2020). In the above quotes from the Pan-Canadian Framework, we see that natural gas will be the primary means of adding electricity generation capacity amidst coal plant phase outs in Canada. In a similar vein, increasing demand for natural gas in Asia and other markets due to coal phase-outs is used as justification to expand Canadian LNG production (see LNG Canada 2019; also discussed below). What governments and corporations are not explicit about, however, is how ineffective a 'low-carbon' economy will be for meeting climate change targets. The Pan-Canadian Clean Growth Framework highlights the Paris Agreement targets of limiting global warming to 1.5-2°C, for which Canada's contribution is to be a 30 percent reduction in 2005 level emissions by 2030. Notably, this is the same target that the Harper government was using, which opposition Liberals at the time deemed to be insufficient (Gutstein 2018). Indeed, the 2017 UN Emissions Gap report[11] outlined that international Paris targets as a whole are insufficient to avert catastrophic climate change effects, while Canada's current framework will fail to meet even its 30 percent target by 2030. Though the federal report states that the clean growth framework will use a "science-based approach to inform Canada's future [emissions reductions] targets" (p.4), science is in fact not at the forefront of the framework. Instead, the "pathway to meeting Canada's 2030 target" (p.45) is supported by no references or sources of information (Gutstein 2018: 209).

'Net zero' is another term that can be used to describe emissions reductions plans that justify continued fossil fuel industry expansion (Balanyá 2020). Such strategies are dependent upon the prospective 'offset' of emissions through CCS or carbon sequestration (Bourke 2019). As noted above, this is central to the Paris Agreement, which allows for continued fossil fuel

[11] See https://wedocs.unep.org/bitstream/handle/20.500.11822/22070/EGR_2017.pdf?sequence=1&isAllowed=y

extraction in the short-to-medium term, with the expectation that there will be a massive uptake of CCS to compensate for emissions increases. However, such an undertaking is yet to be realized (Anderson 2015). Global fossil fuel majors are increasingly employing this net zero strategy and rhetoric. For example, BP and Shell have both opted for a target of net zero greenhouse gas emissions in their operations by 2050, through extensive CCS and sequestration (Balanyá 2020; Budgen and Trout 2020). The Canadian federal government has also recently taken up a net zero strategy. During the federal election campaign of Fall 2019, the Trudeau Liberals committed to the same target of net zero greenhouse gas emissions by 2050. In June 2020, Seamus O'Regan (Canada's Minister of Natural Resources) stated that CCS technologies, alongside hydrogen, geothermal, and modular nuclear reactors, could be used to achieve the 2050 goal of net zero (The Canadian Press 2020).

Appendix 2 of the Pan-Canadian Framework report highlights climate change policies that were being undertaken by the provinces and territories at the time. This includes Alberta's former Climate Leadership Plan (CLP), developed by the Notley NDP government. Featured in the CLP were plans to phase out coal, to generate 30 percent of Alberta's electricity with renewables by 2030, to reduce fugitive methane emissions from oil and gas production by 45 percent by 2025, and to introduce a rolling carbon levy on all emissions in the province, beginning at $20/tonne. For the federal government, Alberta's adoption of this price on carbon was crucial to its implementation of a nation-wide carbon tax, which also began at $20/tonne. However, for Alberta, the capstone of the CLP was the 100Mt/year cap on greenhouse gas emissions for the oil and gas industry. According to the Government of Alberta (2020a):

> The 100 Mt limit provides room for growth and development of our resource as a basis for a strong economy. Overall, Alberta's new approach will incent changes that see the number of produced barrels increase relative to associated emissions. The future production achievable within the annual 30Mt "room" in the limit will be higher than at any time in our past or present. And Alberta will be

> able to sell its product into global markets as one of the world's most progressive and forward-looking energy producers.

The 100Mt cap showcases the Notley government's accordance with the federal clean growth strategy. Notley's framework focused on reducing emissions intensity in oil and gas production, all the while continuing to expand the industry, thus leading to overall increases in emissions.

British Columbia too follows the federal clean growth strategy. BC's former Climate Leadership Plan is highlighted on page 53 of the Pan-Canadian framework document. Noted are the province's target of reducing greenhouse gas emissions to 80 percent below 2007 levels by 2050, and its revenue neutral carbon tax of $30/tonne. However, central to BC's CLP is "Clean LNG". Here, natural gas is presented as "a lower carbon fuel that will play a critical role in transitioning the world economy off of high carbon fuels such as coal". Critically, BC plans to "make the emerging LNG sector the cleanest in the world". As with Alberta, part of this involves reducing fugitive methane emissions by 45 percent by 2025. However, another key aspect is "electrifying upstream development of natural gas". Here, the Site C dam will be "a major part of B.C.'s clean energy future". Though the dam is presented as "creat[ing] enough electricity to power 450,000 homes", the primary use of electricity from the Site C dam will be for powering LNG production, as is discussed below. As I will show, the Site C dam is central to the province's even greater efforts, since 2016, to market its LNG products as the greenest in the world, as integral to the 'CleanBC' brand.

Following from the above, the CLPs of Alberta and British Columbia were climate capitalist frameworks, both aligned with the Pan-Canadian Clean Growth strategy. Developed in collaboration with the oil and gas industry, the overall aim of these three frameworks is to secure a social license to continue to extract fossil fuels, amidst mounting domestic and international pressure for Canada to take meaningful action on climate change (Daub, Blue, Rajewicz, and

Yunker 2020; Gutstein 2018; Lee 2020). In contrast to the Harper-era strategies of obstructing any action on climate change due the perception that environmental and economic concerns were conflictual, the clean growth strategy entails balancing economic and environmental concerns, with a strong focus on industry competitiveness (Daub, Blue, Rajewicz, and Yunker 2020). This involves framing efforts to take action on climate change as a "win-win" situation, offering opportunities to usher in new rounds of capital accumulation (Gutstein 2018). Central to this strategy is reducing the emissions intensity of fossil fuel production while continuing to expand the industry. Daub, Blue, Rajewicz, and Yunker (2020) call this 'new climate denial'. Here, climate change and the need to address it are accepted as fact, but the strategies employed to address climate change are not contingent with the emissions reductions that are needed to meet climate targets – or even any reductions at all. Thus, expanding rates of fossil fuel extraction while reducing the intensity of that extraction still leads to greater absolute emissions, but proponents are able to claim they are fighting climate change by reducing the relative amount that they *would have been* emitting. Notley's 100Mt/year cap on expansions of the oil and gas industry is perhaps the most telling example of this strategy.

The Pan-Canadian framework, developed in collaboration with the provincial strategies, focuses primarily upon market and technological 'fixes' to climate change. Here, the prices on carbon are central, as they promote technological innovation to reduce emissions intensity. The national carbon tax is designed to send signals to the market to innovate and to pollute less, while sending signals to the public that 'meaningful' action is being taken on climate change, thus allowing for more expansions of the industry. Accordingly, one year after the Paris Agreement of 2015, and 9 days before the Pan-Canadian Framework was released, the Trudeau government announced their approval of the Line 3 and Trans Mountain expansion projects (Daub, Blue,

Rajewicz, and Yunker 2020). BC's framing of its LNG industry can be seen in a similar light. Throughout 2011-2016 the Liberal government of Christy Clark "froze the carbon tax at $30 per tonne… alongside creat[ing] a highly favourable tax and regulatory regime geared to establishing a Liquified Natural Gas (LNG) industry" (Daub, Ejeckam, Graham, and Yunker 2020: 312). BCs CLP, made just prior to the COP21 meetings in Paris, was developed in response to growing pressure against these measures. However, this plan was widely deemed as insufficient. The inadequacy of the Clark government's climate change policies, alongside its continued pursuit of expansions in fracking and LNG, turned out to be major issues in the provincial election of 2017, which the NDP won (Daub, Ejeckam, Graham, and Yunker 2020).

Despite the election of the right-wing populist government of Jason Kenney in 2019, who campaigned as a staunch opponent of Notley's CLP (Rusnell and Russell 2019), Alberta remains largely situated under the national clean growth framework – albeit with a partial return to Harper era tactics. Shortly after his election, Kenney repealed the then $30/tonne price on carbon emissions from residences, transportation, and business (Government of Alberta 2020b), alongside retracting the NDP plan to generate 30 percent of electricity with renewables by 2030 (Stephenson 2019). However, the industrial carbon price stayed in place, alongside the 100Mt/year emissions cap, and Alberta's plans to phase out coal and to reduce fugitive industry methane emissions by 45 percent.

In comparison, BC's most recent climate strategy is in clearer alignment with the national framework, being mostly a continuation of its predecessor. The NDP-green minority government of John Horgan was elected in 2017. Though campaigning in opposition to the Clark liberal government's close alignment with LNG interests (Daub, Ejeckam, Graham, and Yunker 2020), Horgan has enthusiastically pursued expansions of the industry.

In 2018, Horgan launched the 'CleanBC' climate plan. The CleanBC report[12] outlines the province's strategy to achieve a reduction in greenhouse gas emissions of 18.9Mt/year by 2030, compared to 2007 levels. The report states that this brings the province 75 percent of the way to the legislated target of reductions of 25.4Mt/year. Primary policies listed in the report include increasing zero emissions vehicle standards, rebates, and charging infrastructure; upgrades to active and public transit infrastructure; an increasing low carbon fuel standard; a greater push for more energy efficient and net-zero buildings; and a target of 95 percent organic waste diversion from municipal, industrial and agricultural sources by 2030. The latter is to be combined with a mandate for 15 percent renewable content in natural gas by 2030, alongside research and development programs for sources of hydrogen fuel, and the use of forestry waste for building, products, and renewable fuel. CleanBC intends to continue the policy of reducing fugitive industrial methane emissions by 45 percent by 2030.

As with the previous CLP, the CleanBC plan is largely a clean growth strategy (Gutstein 2019). Here again, climate change is presented as an opportunity for continued growth and capital accumulation, where fossil fuel industries expand, while the emissions intensity of their operations decreases. In the report, we see the same rhetoric of 'low carbon', instead of 'zero carbon', the former mentioned 33 times and the latter only once (Gutstein 2019). Tellingly, CleanBC outlines plans to phase out fossil fuels in residences, businesses, transportation, and industrial production, but, as with the Albertan and Pan-Canadian frameworks, there is no mention of phasing out fossil fuel *production*. Instead, a primary aspect of the plan is an effort to develop and capitalize upon an international 'CleanBC' brand to secure exports. The brand's signature product? LNG. Page 38 of the report outlines that,

[12] See https://blog.gov.bc.ca/app/uploads/sites/436/2019/02/CleanBC_Full_Report_Updated_Mar2019.pdf

> [a]long with our actions to reduce GHG emissions, CleanBC provides an effective blueprint to grow our economy. Working to create the cleanest industries in the world, B.C. companies can be first movers and capture a significant share of the growing clean energy and low-carbon products market.

There is a continued focus on collaboration between government and industry to this end. On page 55, the 2018 *Memorandum of Understanding* between the province and the Business Council of British Columbia is cited as an example of this. It commits both parties to "working jointly on a low-carbon industrial strategy to help our industries compete and win in the global marketplace". To this end, "B.C. industries want to press their comparative advantages and build a clean B.C. brand" (p.55).

Vaguely, the report notes that one of BC's comparative advantages is "a global brand that's recognized for quality" (p.38). However, to further develop the province's brand and advantages, the government aims to redirect industrial carbon taxes paid above $30/tonne towards both "an Industrial Incentive that reduces carbon-tax costs for operations meeting world leading emissions benchmarks" and "a Clean Industry Fund that invests some industrial carbon tax revenue directly into emission reduction projects" (p.40). These incentives will subsidize LNG production (Lee 2019).

Another of BC's comparative advantages, which the government aims to develop further, is its abundance of hydropower. Page 10 of the report states that "by 2030, the policies in [the CleanBC] strategy will require an additional 4,000 gigawatt-hours of electricity over and above currently projected demand growth to electrify key segments of our economy". This increase in electricity demand is to be met via "existing and planned projects that harness B.C.'s vast wealth of clean, renewable power". Hydropower is not mentioned explicitly here, though a dam is depicted in the background of this page. Further, Pages 43-44 outline a key aspect of the CleanBC program for industry. This section is titled: "Making B.C. industries the cleanest in the world – industrial and upstream electrification". Here, it is stated that "[s]witching to clean

electricity will make B.C.'s natural gas the cleanest in the world." Meanwhile, [t]o make it easier for large operations to access clean energy, BC Hydro will add new transmission lines and interconnect existing lines" (p.43). Interestingly, hydropower is not mentioned in this section of the report either, and the Site C dam is not mentioned in the report at all. However, the Peace Region (Site C is located on the Peace River) is featured here as an area undergoing vast increases in electricity demand due to natural gas exploration and development, and, accordingly, as a focus area for increasing electricity capacity, by increasing generation capacity and extending transmission lines.

The BC government has been more vocal in the past about the use of Site C to power LNG production. This is shown by the mention of Site C and LNG in the Pan-Canadian framework report, as part of the province's previous CLP. However, there appears to be a reluctance to mention hydropower or Site C in the CleanBC report as the primary means of electrifying LNG production. This may be due to the controversial nature of the dam.

Perhaps most of all, the controversy stems from the fact that the project will flood approximately 128 kilometres of the Peace River and the surrounding watershed, including vast tracts of First Nations Treaty 8 territory. The dam will not only flood First Nations burial grounds, trapping and hunting grounds, and cultural and spiritual sites, but also farmlands, archeological and heritage sites, the habitats of over 100 protected species, and 800 acres of carbon-storing wetlands (Cox 2020). Site C has thus faced strong opposition because of its violations of Indigenous rights and projected environmental impacts. This includes legal battles between BCHydro and Prophet River and West Moberly First Nations (both live on Treaty 8 territory), a report from United Nations regarding violations of Indigenous rights, and a number of protests and environmental reports (Blake 2018; Cox 2019, 2020). Thus, the province stating

explicitly that Site C electricity is one of the cornerstones of the CleanBC brand may well serve to compromise both the brand and the the claim that its LNG product is 'the cleanest in the world'.

Though being rejected both in the 1980s and 90s due to its significant social and environmental impacts, the Site C dam was eventually approved in 2014 by the Clark Liberal government (Cox 2020). Upon the election of John Horgan in 2017, the BC government announced in December of that year that construction of the project would continue (Shaw 2017). The dam is owned wholly by the province through BCHydro and will function primarily to provide subsidized electricity to LNG Canada for production of liquefied natural gas (Cox 2020; Lee 2019). As mentioned above, these LNG products are largely intended for export to growing markets in Asia, part of the justification being that LNG can help to reduce emissions by replacing coal plants (LNG Canada 2019).[13]

While providing a significant source of power and profit to the corporations with stakes in LNG Canada (that is, Royal Dutch Shell, Petronas, PetroChina, Mitsubishi, and Korean Gas – Cox 2020), the Site C dam will at the same time obstruct more democratic, socially and environmentally minded renewable energy projects. For the vast amount of energy produced by the dam (5,100GWh/year)[14] will prevent opportunities for existing and aspiring renewable energy producers (including solar, wind, biomass, geothermal, run-of-the-river and micro-hydro projects) from selling their power to the provincial grid.[15] This is most concerning for Indigenous

[13] However, the latter claim is disputed, since the emissions generated in the production and transportation of LNG from BC to Asia would in many cases create more emissions than installing high-end coal plants there (Hughes 2015).
[14] See BCHydro: (https://www.bchydro.com/energy-in-bc/projects/site_c.html). Notably, this is 1,100GWh over the 4,000GWh of increased electricity supply that the CleanBC report noted it would need in order to enact its plans.
[15] Significantly, these are producers that do not aim to generate renewable energy for fossil fuel production.

renewable energy projects, which provide much-needed long-term revenue and jobs for their communities and provide sovereignty and self-sufficiency, along with other benefits. For example, renewable energy production is an industry that First Nations report as being aligned with their values (Fitzgerald 2018; Shaw, Cook, Fitzgerald, and Sayers 2017). Indeed, Indigenous-owned projects are an important part of the Canadian renewable energy landscape. A survey conducted by Shaw et al. (2017) concerning First Nations' involvement in the renewable energy sector in BC found that, out of the 105 respondents of the 203 First Nations in the province, 98 percent were either involved or interested in becoming involved in the renewable energy sector. Thirty of these respondents reported 78 operational projects altogether, with a total capacity of 1,836MW. Meanwhile, 32 respondents together reported a total of 48 projects in active development, and 78 respondents were considering a total of 250 additional projects.

As shown, the CleanBC climate plan, and its use of the Site C dam to power LNG production, is part of a broader project across Canada to secure a continued social license to extract fossil fuels. The Pan-Canadian Clean Growth Framework uses a national carbon tax as the primary means to secure this license, both by acting as a signal to the public that meaningful action is being taken on climate change, and a signal to the market to encourage reductions in emissions intensity. This often means a greater role for natural gas in the production of electricity, displacing coal both domestically and internationally. Thus, the use of gas as a lower carbon energy source is used as justification for expanding the industry in Canada, especially LNG. As the Site C case shows, renewable energy can be utilized in the production process in order to boost the image of a 'clean' fossil fuel. Here, renewable energy is utilized as a supplement to the fossil capitalist regime, within a more specific project of climate capitalism, or

clean growth. Though the Site C case is perhaps the best example of this in Canada, it points towards a similar use of renewable energy by other fossil fuel corporations in the country.

Fossil Capitalism, New Climate Denial, and "Carbon Risk": Renewing the Social License to Extract

The oil and gas industry have been integral to the development of the clean growth agenda, both within Canada and internationally (Daub, Blue, Rajewicz, and Yunker 2020; Gutstein 2018). As such, it is clear why this strategy promotes continued accumulation through fossil fuel extraction in the short to medium term, with a full transition to renewables being proposed only in the long-term. Accordingly, the use of renewable energy is not central to the operations of most oil and gas firms. However, Graham (2019) finds that 6 of the 10 largest Canada-based fossil fuel corporations had investments in renewables between 2012-2016. These firms include Enbridge and TransCanada, who both specialize in oil and gas pipelines; Suncor and Husky, integrated oil companies; Teck, which primarily focuses on mining, including bitumen and coal; and Fortis, an umbrella electric utility company whose subsidiaries utilize natural gas and coal in their operations. Graham summarizes these firms' renewable energy investments over the 2012-2016 period:

> Enbridge currently has assets in wind, solar, and geothermal energy in Quebec, Ontario, Saskatchewan, Alberta, as well as in Colorado, Texas, the United Kingdom, France, and Germany. TransCanada operates three wind farms in Canada and the United States, has interests in nine Ontario based solar projects, and a hydro project. Fortis owns six hydroelectric generating facilities in Canada and three in the Caribbean, and has interest in U.S.-based solar power. As of 2016, Suncor's renewables business includes investments in five operating wind facilities throughout Canada, as well as an ethanol plant in Ontario. Husky is the largest ethanol producer in western Canada, with plants in both Saskatchewan and Manitoba. Before selling its shares in 2016, Teck was a partner in the Wintering Hills wind power facility in Alberta and continues to be a majority owner of Waneta hydroelectric dam. (P. 234)

Graham finds that these firms' investments in renewables make up a relatively minor aspect of their overall assets and energy production capacity, compared to their fossil fuel assets. He concludes that these investments likely do not represent a current plan to shift investments from renewables, albeit while noting that Enbridge, with the largest renewable energy capacity of the six, may be an exception in this regard. He argues that Enbridge's current investments in renewables may represent a potential orientation towards a more substantive shift from fossil fuel to renewable investments in the long term, though this may equally be a legitimation effort. Graham posits that, overall, these firms' minor investments in renewables, alongside public pronouncements that they are undergoing energy transition, are a way of justifying their inaction around significant energy transition. He thus argues that these strategies are a form of new climate denialism. From these conclusions, we could surmise how the strategies of Canada's largest fossil fuel firms are located within the broader national, and provincial, climate capitalist frameworks. Here, the clean growth strategy of the federal government, and to greater or lesser extent the provinces, acts as legitimation for continued fossil fuel extraction and accumulation by corporations and their executives and shareholders.

Graham notes that his study could be bolstered through discourse analysis of corporate accumulation strategies in relation to climate change and energy transitioning. The following discussion undertakes this, via examination of the most recent annual reports of 4 of the 6 largest fossil fuel corporations that Graham found to have investments in renewables: Enbridge, Suncor, Teck, and Fortis.[16] Following my broader analysis, this discussion highlights how these firms use

[16] TransCanada and Husky are excluded from this analysis. For the former divested from the last of its renewables assets in 2018 (Snyder 2018), while Husky's renewables investments are only in biofuels, which function as additives to fossil fuels, and thus could not be used as a standalone energy source.

renewables, and the reasoning behind this use, as well as their framing(s) of climate change, mitigation efforts, and related phenomena.

First, page 30 of Enbridge's 2019 annual report[17] lists its current renewable energy assets as comprised primarily of wind and solar, though also in geothermal and waste heat recovery. These are located in Alberta, Saskatchewan, Ontario, Québec, Colorado, Texas, Virginia, the UK, and Germany, with projects under development in France.

Enbridge outlines that its investments in renewables are primarily a pathway towards increasing its resilience, in terms of diversifying its energy mix (alongside increasing its investments in natural gas transmission and utilities assets) while increasing its "environment, social, and governance (ESG) performance" (p.4).[18] It presents some of its renewable assets as avenues towards "low-risk growth" (p.10), primarily where electricity is sold via long-term power purchase agreements in North America and Europe. It is also beginning to invest in self-powering its pipeline assets with their own renewable power plants.

In 2019, Enbridge renamed its 'Green Power and Transmission' 'business segment' to 'Renewable Power Generation'. This, alongside the above actions, indicates a more concerted effort to present itself as taking climate change mitigation seriously. This strategy is highlighted on page 4: "It's clear from the actions we've taken that Enbridge is already playing an active role in the energy transition". These efforts to present a clean image are also a way of mitigating risk, by maintaining relationships with stakeholders while pursuing ESG aims. For example: "[i]nadequately managing expectations and issues important to stakeholders, including those

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[17] See https://www.enbridge.com/~/media/Enb/Documents/Investor%20Relations/2020/ENB_2019_Annual_Report.pdf
[18] Another term for 'corporate social responsibility'.

related to environment and climate change, could affect stakeholder trust and confidence and our reputation" (44).

Lastly, page 32 outlines that increasing economic growth in North America is expected to drive demand for more electricity, where this growth, alongside planned coal phase outs, will increase need for renewables, alongside natural gas. They note that investments in renewables capacity is slowed by uncertainty about tax and other government incentives, alongside a relative lack of power purchase agreements, though improved technology in recent years has increased the yield and thus the competitiveness of renewables. Meanwhile, expected continued developments in these areas will lead to Enbridge increasing its investments in renewables regardless of government incentives. The report describes the situation in Europe as more positive, especially in countries with offshore wind potential with long coastlines and dense populations, while there is also wider public support for emissions reductions and renewables implementation in Europe.

Turning to Suncor, page 4 of its 2019 annual report[19] outlines the firm's use of renewable energy as part of its broader strategy to decrease its emissions intensity by 30 percent by 2030. Suncor's development of the $300 million, 200MW Forty Mile Wind Power Project in Alberta is discussed, albeit alongside a $1.4 billion natural gas cogeneration facility, as bringing the firm a third of the way to meeting these emissions intensity targets. However, the cogeneration facility will make up the bulk of this, by replacing a coke-fired boiler used in oil sands operations. Both projects will sell power to the Alberta energy grid – the wind project selling its entire 200MW, while the cogeneration facility will provide 800MW of its total capacity. Alongside a source of

[19] See https://www.suncor.com/en-ca/investor-centre/financial-reports/annual-disclosure

direct profit, the wind facility will function primarily as a means of garnering emissions credits, to offset emissions and costs “elsewhere in Suncor’s business” (p.7). Suncor’s recent purchase of a $73 million stake in Quebec-based Enerkem Inc. is presented as another way that it plans to meet its emissions intensity reductions. Enerkem is a biofuels company that produces ethanol, methanol, and other chemicals from household waste.

These three projects are again presented on page 9, as part of Suncor’s efforts to “transition the energy system”. Suncor’s recent installation of 50 electric vehicle chargers at Petro-Canada stations is listed as part of this transitioning strategy. Suncor has trademarked this ‘Canada’s Electric Highway’, as the charging stations are each 250km or less apart. As the report states, this is a significant initiative, since it addresses one of the barriers to electric vehicle adoption, being a combination of a lack of the range of vehicles and a lack of charging stations. This network of charging stations “can support reducing emissions by providing Canadians with choices for their energy needs” (p.9).

Like Enbridge’s renewable energy strategy, Suncor focuses on diversifying energy products, though the latter expresses a focus on reducing operational costs that Enbridge does not. Meanwhile, Suncor does not use renewables as part of a ‘low risk investment’ strategy. However, the strategies of Suncor and Enbridge have commonalities in that they aim to present the image that they are taking action on climate change so as to preserve their reputations. In this regard, Suncor discusses its sustainability initiatives on page 4, dividing them into the same three ESG principles that Enbridge uses. Though the ‘environmental’ and ‘social’ aspects are framed as providing benefits to stakeholders external to the firm, we can see ‘governance’ as the core component of these principles. The governance section points towards sustainability initiatives being employed in order to provide resilience to the corporation:

> Through sound governance and committed leadership, we have created a strong foundation for resilient and sustainable energy development. Suncor's robust governance structure includes our board, and its committees, together with our executive management team, whose remuneration is impacted by corporate performance on environmental, social and governance initiatives. The board's responsibilities include governance, strategic planning and the stewardship of Suncor, including identifying and mitigating principal risks such as carbon risk (P. 4).

Here, we see the mitigation of 'carbon risk' as a primary area of focus in Suncor's governance. However, this does not so much entail making significant efforts to mitigate climate change rather than appearing to, as a means of preserving the firm's reputation alongside decreasing operating costs. Carbon risk is discussed in more detail on page 62:

> Public support for climate change action and receptivity to alternative/renewable energy technologies has grown in recent years. Governments in Canada and around the world have responded to these shifting societal attitudes by adopting ambitious emissions reduction targets and supporting legislation, including measures relating to carbon pricing, clean energy and fuel standards, and alternative energy incentives and mandates. There has also been increased activism and public opposition to fossil fuels, and oil sands in particular.
>
> Existing and future laws and regulations may impose significant liabilities on a failure to comply with their requirements. Concerns over climate change, fossil fuel extraction, GHG emissions, and water and land-use practices could lead governments to enact additional or more stringent laws and regulations applicable to Suncor and other companies in the energy industry in general, and the oil sands industry in particular.

Following this, Suncor states that the impacts of 'carbon risk' result primarily from expected increases in environmental regulations. This in turn could result in a decrease in demand for their products, a decrease in the quality or formulation of the products, or increased costs resulting from reclamation obligations, distribution costs, and the potential need to develop new technologies. The latter could lead to delays on obtaining approvals for new development projects.

Regardless of these risks, however, the report goes on to say that "while Suncor continues its efforts to reduce the intensity of its GHG emissions, the absolute emissions of the company may rise as a result of growth" (p.62). Accordingly, "increases in GHG emissions may impact the profitability of the company's projects, as Suncor will be subject to incremental levies and taxes". The threat of litigation is also discussed as a risk factor here, where legal cases against

the firm and its subsidiaries from “third parties [may relate] to climate change, including litigation pertaining to GHG emissions, the production, sale, or promotion of fossil fuels and petroleum products, and/or disclosure” (p.62). Legal cases currently being carried out against Suncor are then mentioned, in Colorado from the Board of County Commissioners of Boulder County, and of San Miguel County, due to “among other things, compensation of impacts they allege with respect to climate change” (p.62).

Thus, alongside a decreased demand for Suncor’s products, these factors could impede “the ability of Suncor to maintain and grow its production and reserves, and Suncor’s reputation, and could have a material adverse impact on Suncor’s business, financial condition, reserves and results of operations” (p.63).

In sum, we see that ‘carbon risk’ results from public support for climate change measures and energy transitioning, and resultant implementation of environmental measures by governments, alongside the increasing threat of legal cases against the firm. Thus, continued operation and growth in the oil sands sector imposes a risk for Suncor and its shareholders, where continued operation of an oil company, especially a tar sands oil company, could impede the company’s growth alongside its continued profitability and competitiveness. Even more so if “compet[ing] with companies operating in other jurisdictions with fewer or less costly regulations” (p.62).

Therefore, Suncor is not only under pressure to reduce costs in its operations, but also to present itself as making efforts to combat climate change. This would explain why its efforts to reduce emissions intensity and to diversify the energy it provides to customers are featured so early in the report. Its installation of electric vehicle chargers is featured in this regard. I.e: “In

2019, the completion of Canada's first electric highway with locations from coast to coast demonstrates our active involvement in the evolving energy transition." (p.5)

Teck's strategy is similar to that of Enbridge and Suncor, albeit with a more concerted focus on positioning itself as a beneficiary of energy transitioning, and less of a focus on the risks imposed by climate change related regulations. Page 39 of Teck's 2019 annual report indicates that the firm has now sold all of its renewable energy assets in Canada. This includes its former investments in wind and hydro, of which its majority share in the Waneta dam was sold to BCHydro (p.34). The latter may be due BC's recent move to prioritizing state over private power, alongside its construction of the monumental Site C dam. Interestingly, though Teck continues to possess stakes in fossil fuel extraction in Canada (see below), it appears to be significantly investing in raw materials extraction for renewable energy technologies in response to increasing global demand. It describes the 'Quadreba Blanca Phase 2' (QB2) project in Chile as a key component of the firm's future growth. The project is planned for completion in late 2021. Teck explains that the mine

> will significantly increase [the corporation's] copper production at a time when the world needs significantly more copper to support the transition to a low-carbon economy. Renewable energy systems, like solar, can require 10 times more copper than traditional energy systems. Zero-emission electric vehicles need up to four times as much copper as an internal combustion vehicle. Recent research by S&P Global Market Intelligence points to the need for between 11 million and 70 million tonnes of incremental copper production by 2030 to meet climate targets outlined in the Paris Agreement. While this range reflects a number of market scenarios, even at the low range of 11 million tonnes of incremental production, the world would need to build the equivalent of about three QB2s every year for 11 years to provide the copper needed to meet these climate targets. Through QB2 and future expansion opportunities, Teck will be well positioned to take advantage of this growing market.

In February of 2020, Teck announced a deal to source 118MW of the power required for QB2 operations from solar, hydro, and wind assets owned by AES Gener, a South American energy company based in Chile. According to the news report outlining this,[20] the deal will provide

[20] See https://www.teck.com/news/news-releases/2020/teck-and-aes-gener-announce-renewable-energy-agreement

approximately half of the power required for the QB2 project. Don Lindsey (President and CEO of Teck) is featured in the news report, stating that "[s]witching to renewable power for QB2 is part of Teck's ongoing work to reduce emissions, achieve carbon neutrality across [the firm's] business, and support global action on climate change". Lindsey goes on to say that "[t]his agreement secures reliable, long-term power for our major copper growth project at no additional cost, while helping to reduce our environmental footprint". He then adds that Teck "will continue to explore further opportunities to increase the use of renewable energy as part of [its] ongoing focus on decarbonisation".

Thus, Lindsey's statements appear to exemplify Teck's decision to procure renewable energy for QB2 as, at least in part, a reputational move, demonstrating the corporation's participation in energy transitioning. However, unlike Enbridge and Suncor, Teck's annual report does not spend much time discussing its reputation or risks in relation to climate change. Nevertheless, it does outline that, out of all the jurisdictions in which it operates, carbon taxes and related regulations in BC and Alberta impose the highest costs on its operations, due to its production of coal, diesel, and natural gas in these provinces. Teck's cancellation of the Frontier tar sands project in early 2020 (which was to be possibly the largest operation of its kind) signals its cognizance of 'carbon risk'. A letter[21] concerning Teck's withdrawal of its regulation application for the Frontier project was sent from Don Lindsey to Jonathon Wilkinson (Federal Minister for Environment and Climate Change) on February 23. The letter explains the withdrawal as due to volatile global markets and increasing expectations of investors and customers for policy frameworks that reconcile resource development, climate change, and social needs.

[21] See https://www.teck.com/media/Don-Lindsay-letter-to-Minister-Wilkinson.pdf

The strategy presented in Fortis' 2019 annual report[22] is similar to the above corporations, yet more akin to Teck's. Here, Fortis outlines the risks imposed by climate change, related government regulations, and the need to uphold a strong corporate reputation as an energy provider amidst these factors. However, it also frames these as avenues of growth for the firm.

Page 23 of the report discusses the uncertainty that increasing climate change related tax and trade regulations at federal and state/provincial levels imposes on their business, but they are not as forthcoming in regards to presenting this as a risk. Later, however, the document does describe risks to the business as consisting of "technology advances" (p.43), and "natural gas competitiveness" (p.44), and relating to "reputation, relationships, and stakeholder activism" (p.47). Risks imposed from technology advances are noted as consisting of increases in distributed, customer produced power (especially solar), and energy efficiency and storage advances, all of which could decrease the retail sales of Fortis. Risks discussed as relating specifically to a decreased competitiveness of natural gas are outlined as those that "support the transition to a lower-carbon economy", consisting primarily of the possibility of more stringent government regulations, since "all levels of government have become more active in the development of policies to address climate change". This in turn may increase the cost of natural gas, or limit the energy sources that are allowed to be sold in certain jurisdictions. This section outlines that this risk is biggest in BC, where 79 percent of Fortis' natural gas retail sales are.

However, on page 23, Fortis also frames climate change, related regulations, and energy transitioning, as opportunities for growth, specifically in the areas of energy generation, energy

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[22] See https://www.fortisinc.com/docs/default-source/finance-regulatory-reports/annual-reports/fortis-2019-annual-report-final.pdf?sfvrsn=d03c7498_2

transmission, and energy storage. The report highlights investment opportunities in cyber and security systems, alongside transmission lines, due to the need to integrate widely distributed renewable energy producers. Indeed, their first 'record capital investment' featured in their report, on page 7, is the completion of a 174km transmission line intended to bring wind power to consumers in the American Midwest. However, Fortis also sees its natural gas assets as a major area of growth and investment. Accordingly, FortisBC is featured on page 8:

> FortisBC is poised to be our fastest-growing Canadian utility in the coming years. The utility has more than one million natural gas customers and is the largest distributor of natural gas in British Columbia. It has earmarked $1.1 billion in its five-year capital plan for major integrity projects, including two significant system upgrades to its natural gas infrastructure. The utility also plans to spend $100 million on renewable gas projects and to encourage the use of natural gas for transportation.

The following section in the report is titled "Reducing Carbon Emissions" (p.10-11). It begins by stating that

> sustainability and reducing our carbon footprint are at the forefront of everything [Fortis does]. Our assets primarily consist of electricity poles, wires and natural gas lines. We own a small amount of fossil fuel-based generation, limiting our impact on the environment. We remain focused on a cleaner energy future through delivery of more renewable energy to our customers.

The report then outlines Fortis' efforts to add renewable energy capacity to its operations in Tucson, Arizona, alongside extensive efforts to add transmission capacity for wind and solar across the US. FortisBC is featured in this section, as part of the corporation's Canadian initiatives, though there are no plans to add capacity for renewables to displace fossil fuels. Instead,

> FortisBC has set a goal to reduce greenhouse gas emissions associated with customers' energy use by 30 percent by the year 2030. To achieve this objective, FortisBC will triple investment in energy efficiency projects, increase renewable gas supply, and focus on low and zero-carbon vehicles and transportation infrastructure. The utility is targeting to have 15 percent of its gas supply from renewable sources by 2030. (P. 10)

On the following page of this section, Fortis lists its recent achievements in rankings and ratings pertaining to ESG principles.

Thus, we can see that Fortis also poses popular pressure to respond to climate change and resulting government regulations as risk factors that merit a corporate response emphasizing ESG principles. However, Fortis appears less forthcoming about these risks, and focuses intently upon framing these issues as opportunities for growth. This may be because it is a diverse corporation that specializes more in transmission than energy generation, and thus is well positioned to take advantage of increasing electrification from energy transitioning. Further, since Canadian clean growth strategies involve heavy investments in natural gas in the short to medium term, Fortis is well poised to take advantage of this as well, since it undertakes intensive natural gas generation in BC.

These corporate strategies will be analyzed in more detail below, alongside those of the Canadian governments. First, however, the following sub-section outlines the how Canada's renewables industry approaches energy transitioning.

Clean Growth in Canada's Renewable Energy Sector

The Canadian Council on Renewable Electricity (CanCORE) is composed of the Canadian Wind Energy Association (CanWEA), the Canadian Solar Industries Association (CanSIA), Waterpower Canada, and Marine Renewables Canada. It thus unites the wind, solar, hydro-electric, and tidal energy industries across Canada, allowing a consortium of renewable energy firms to speak with a unified voice.

CanCORE released its guiding document in November 2016, just one month prior to the official release of the Pan-Canadian Framework. It is titled 'Canada's Advantage: A Vision for

Renewable Electricity in Canada'.[23] The report centres on Canada's target of reducing its emissions by 30 percent by 2030, compared to 2005 levels, and its recognition of the need to reduce emissions to 80 percent below this baseline by 2050, based on the country's participation in the Deep Decarbonization Pathways Project (DDPP). According to the DDPP website,[24] the project "is a global collaboration of energy research teams charting practical pathways to deeply reducing greenhouse gas emissions in their own countries. It is predicated on taking seriously what is needed to limit global warming to 2°C or less". The Canadian DDPP strategy makes up the scientific basis of CanCORE's policy framework.

Page 11 of CanCORE's report posits that reducing emissions in Canada's electricity supply while increasingly electrifying the energy sector can contribute 55-70 percent of the total 2050 target of emissions reductions outlined in the DDPP scenario. Here, they state that between 30-50 percent of these reductions can be achieved with already existing technologies for energy production and efficiency. However, reductions beyond 50 percent "represent a major challenge that would require substantial innovation and large scale adoption of new technologies in transport, oil and gas and industries". Thus, "an acceleration and expansion of renewable electricity… will serve as the single largest emission reduction lever in Canada", acting as the "main driver for decarbonization of personal transport as well as an important contributor for decarbonization of buildings and industry" (p.11).

CanCORE outlines Canadian decarbonization strategies for 'buildings', 'transport', 'industry', and the 'oil and gas' sector. All four areas entail electrification and energy efficiency measures. For transportation, this will require increasing the uptake of electric vehicles,

[23] See https://renewableelectricity.ca/wp-content/uploads/2016/12/CAN_16_VisionReport.pdf
[24] See http://deepdecarbonization.org/about/

alongside more use of biofuels for traditional combustion vehicles throughout this process, though the latter may still be needed in the long term for freight trucks. Further, CanCORE highlights the extensive use of fossil fuel powered heat in production processes. Here, emissions can be lowered via the use of biomass combustion, alongside CCS, energy efficiency measures, and electrification. The report states that the uptake of electric heat pumps and boilers will contribute a significant part of industrial emissions reductions. However, oil and gas is not included in this analysis of industry, nor are strategies for oil and gas discussed in detail (unlike the other three areas), beyond noting the need for CCS, energy efficiency, electrification, and in-situ steam generation.

There appears to be a reluctance throughout the report to discuss the need to phase out oil and gas production in Canada. However, the section titled 'clean power economy' (p.23-34) discusses the benefits of moving a fossil-fuel powered economy over to renewables, including avoiding the impacts of oil price fluctuations on the economic growth, tax revenues, exchange rates, and unemployment, as well as the ability to export renewable energy technologies and services to the rest of the world. Further, they note that renewable energy could provide a great number of green jobs to Canadians, alongside presenting significant potential for exporting electricity to the US. Regarding the latter, CanCORE states:

> Substantial growth of renewable electricity has the potential to provide major opportunities and benefits for the Canadian and North American economy. The vision of a clean economy should be undergirded by supportive policies and regulations to encourage investment, foster innovation and accelerate growth. (P. 24)

Pages 26-29 provide the reports conclusion and recommendations. The primary conclusion of the report is as follows:

> Given the critical role energy production, transmission, distribution and use plays in the generation of GHG emissions, any serious effort to decarbonize Canada's economy must have enhanced energy productivity as the first priority. In addition, there is a broad consensus that any credible climate change plan seeking to meet the level of ambition agreed to in Paris must have at its heart the

> continued decarbonization of electricity generation—replacing existing fossil fuel generation with zero-carbon power over time, and ultimately producing all electricity with non-emitting sources of generation. Just as importantly, Canada's broader energy system must also increase its reliance on electricity—fuel switching away from fossil sources to clean, renewable power in a variety of energy end uses. It is only by taking these actions together that Canada will be put on a path to achieve the scale of emission reductions needed to meet both our national 2030 target and put our economy on the right trajectory to achieve the much deeper reductions required by 2050—all while creating new and expanded economic and social benefits. (P. 30)

The report notes that Canada has an abundance of renewable energy sources, including hydro, marine, solar, and wind, that gives the country an advantage for meeting these decarbonization and electrification goals. Three core recommendations are then offered. The first entails the target of achieving a zero-carbon electricity grid by 2050 (from an 80 percent electrified grid in 2016). The steps CanCORE suggest include a national target; significant measures to reduce emissions from any remaining coal generation, and increasingly stringent measures to reduce emissions from natural gas generation, while allowing for the use of emissions offsets for both; and the establishment of a national price on carbon that rises over time, which they note the federal government is in support of. The second recommendation is for "an electrified economy" (p.28). Here, drawing upon the DDPP scenario, "[t]he federal, provincial, and territorial governments should commit to increasing the use of electricity in our energy system to 50 percent of all energy used in Canada by 2050" (p.28). This target is divided into the three areas of transportation, industry, and buildings. This includes using electricity for 10 percent of the energy used in transportation by 2030, and over 30 percent by 2050. CanCORE note that by 2050, most of the energy used in transportation should be from "non emitting resources", including electric, hydrogen, or biofuels. Next, electricity should provide 45 percent of energy needs for industry by 2030, and over 50 percent by 2050. Then for both residential and commercial buildings, electricity should account for 80 percent of energy needs by 2030, and 100 percent by 2050. The third recommendation is "a renewable energy export strategy". This entails the development of an educational program for Canadians that will highlight the

country's renewable energy potential, and the environmental and economic benefits that exporting renewables would provide for Canada and North America; collaboration with and between North American governments to develop a clean electricity strategy, with focus on streamlining the processes for cross-border electricity transmission; and lastly, the development of "a broad international strategy to address policy barriers and increase the export of renewable electricity technologies, services and products" (28).

Though presenting more ambitious targets than the Pan-Canadian clean growth strategy, CanCORE's vision is also heavily based upon market and technological fixes, and, like the former, seeks to combine climate change mitigation with economic growth. A few points bear mentioning here. First, the report does not question over-consumption, and, rather than proposing transformative changes to the economy, it simply seeks to replace fossil fuels in energy *consumption*, with renewables. Importantly, there is no talk of increasing public transportation as a means of decreasing energy consumption, so much as electrifying personal automobile use, with biofuel use in the short to medium term, perhaps to be continued in the long term for freight trucking. But perhaps most importantly, the *production* of fossil fuels is not questioned, only the need to electrify the production processes. Though ramping up renewable energy production for exportation could be a promising way of replacing Canadian oil and gas exports, there is no talk of the latter. Though from the standpoint of cutting Canada's national emissions, rather than international emissions, this may not matter, from an international standpoint electrifying Canada's economy while continuing its extraction of fossil fuels for exportation will not do much to mitigate climate change. As Lee (2017) explains, this is a major shortcoming of Canadian climate change policy frameworks, which are enabled internationally by the Paris

Agreement. For the latter commits countries to reducing domestic greenhouse gas emissions but does nothing to halt growth in fossil fuel exports.

Altogether, CanCORE's strategies present the Canadian renewable energy industry as largely in accordance with the federal clean growth framework, and with fossil capitalism more broadly. However, the two are not entirely aligned. A series of email submissions[25] sent to federal government officials in the Spring and Summer of 2018 provides more detailed evidence of CanCORE's strategy. The first submission[26] was sent on March 19 to Catherine McKenna (Minister of Environment & Climate Change) and James Carr (Minister of Natural Resources); the second[27] and third[28], on April 18 and 30, to Paola Mellow (Executive Director, Electricity and Combustion Division, Environment and Climate Change Canada); and the last[29], on July 10, to Judy Meltzer, (Director General, Carbon Pricing Bureau) and Kate Teeple (Director, Carbon Pricing System). These emails illustrate that CanCORE's approach is "one of constructive engagement with the federal government".[29] CanCORE commends the phase out of coal by 2030, the use of natural gas as a transition fuel to replace coal, as well as the federal carbon pricing backstop as comprising the cornerstone of the framework. However, CanCORE's main point of divergence is on the need to develop more stringent carbon pricing policies, natural gas performance standards, and emissions credits allocation systems.

The submissions express the Council's position that the federal government's proposed policies will prevent Canada from meeting its electricity emissions reductions targets for 2030

[25] These emails are listed on CanCORE's website under 'resources': https://renewableelectricity.ca/#resources-container
[26] See https://renewableelectricity.ca/wp-content/uploads/2015/04/Aligning-Action-on-Non-Emitting-Electricity-with-Canada%E2%80%99s-Climate-Change-Commitments.pdf
[27] See https://renewableelectricity.ca/wp-content/uploads/2015/04/Federal-GHG-Emission-Regulations.pdf
[28] See https://renewableelectricity.ca/wp-content/uploads/2015/04/Federal-Carbon-Pricing-Backstop.pdf
[29] See https://renewableelectricity.ca/wp-content/uploads/2015/04/Carbon-Pricing-Compliance.pdf

and 2050 by encouraging too much generation capacity from natural gas in lieu of renewables, while also discouraging high efficiency natural gas generation alongside limiting incentives to completely phase-out coal. They further suggest that the current federal standard may also lead to stranded assets if Canada adopts more stringent climate targets in future, since too much and/or inefficient natural gas capacity could then become uncompetitive.

These email submissions exemplify that CanCORE supports a clean growth, climate capitalist vision, prioritizing market-based and technological solutions to climate change – albeit while showing the nuance in CanCORE's clean growth strategy. Here, both CanCORE and the federal government promote natural gas as a transition fuel to meet emissions reductions targets in a phase out from coal, but CanCORE approaches this in a manner that appears more capable of meeting national emissions reductions targets. Thus, CanCORE's strategy does not appear to be one of new climate denial. At least, not in terms of meeting *Canada's* targets. As stated, CanCORE's lack of critique of Canada's growing fossil fuel exports poses a problem for meeting global climate change targets.

Further, though CanCORE's 2016 vision as a whole poses an economy powered by renewables as providing socio-economic benefits, these benefits are non-transformative from a political-economic perspective. Alongside touting the potential that a renewables present for economic growth, the vision document discusses the potential for a modern, flexible renewable energy grid, to "empower" Canadians (p.18). Here, through the implementation of a smart grid,

> ordinary Canadians will be more empowered and engaged in how they power their lives. Their household appliances will be more economical. Their electric powered vehicles will serve as a highly distributed form of storage throughout the grid. They may elect to generate additional power on their own, for instance from a small scale solar or wind power installation (or both). Moreover, they could offer surplus power back to the grid, thereby transforming what was historically a one-way relationship into two-way electron flows. In addition, their EVs will also be capable of taking surplus power–either from their own source of micro-generation or the grid's surplus power–and store it in the form of batteries. Thus in the grid of the future, consumers, localized microgeneration, centralized sources of generation and electric vehicles will all work synergistically to optimize electricity resources and how they are managed (P. 18).

Thus, empowerment of Canadians is posed primarily within the framework of consumerism, albeit while outlining the potential to sell surplus power to a grid that is integrated with centralized renewable power generators. This is comparable to the 'empowerment' of Northern consumers through the use of fossil fuels, which, beginning especially during the post-WWII boom, gave working classes a stake in fossil capitalist hegemony (Huber 2013). Hence, CanCORE's vision employs a framework that is entirely within the bounds of capitalism, and thus does not propose transformative changes that present a challenge to corporate power. This is perhaps not surprising given that CanCORE represents the renewable energy *industry*.

Analyzing the Use of Renewable Energy Within Canadian Clean Growth Projects

In sum, the federal, BC, and Alberta governments, along with Enbridge, Teck, Fortis, Suncor, and Canada's renewable energy industry all implement renewables within a clean growth framework. Enbridge, Teck, Fortis, and Suncor deploy renewables in a supplemental manner in their operations, increasing their production or provision of fossil fuels alongside their use of renewables, rather than using the former to displace the latter. This is not surprising, given the commodities and services these firms provide. However, close examination of the strategic implementation of renewables by these corporations can shed light on the political economy and ecology of climate change and energy transitions, including how renewable energy is deployed to (re)produce social relations, or bring about or obstruct more democratic and transformative types of renewables implementation. Regarding this, all four of these corporations deploy renewables in order to maintain their corporate power and profits, as derived from fossil fuels.

These strategies are also supported, at least in part, by the broader clean growth policies of their host jurisdictions in Canada.

Core to the operational frameworks of all four corporations is a cognizance of the risk resulting from climate change, and strategies designed to mitigate this risk. Significantly though, the direct impacts of climate change are not seen as a problem in any of the firms' annual reports. Rather, increasing government, popular, and stakeholder pressure to respond to climate change is posed as the problem. This is discussed most explicitly by Suncor in its usage of the term 'carbon risk'. All four corporations note the influence that popular pressure to respond to climate change has on their reputations and on stakeholder trust and confidence, though Teck and Fortis are less explicit about this than Enbridge and Suncor. Further, the latter three present energy transitions as threats to their continued competitiveness and profitability, perhaps due to potential decreases in demand for their products. Both Suncor and Fortis discuss that this will increase the costs of their operations and products due to the need to comply with climate change regulations and carbon taxes. Meanwhile, Suncor adds that its continued growth could, and already is, leading to litigation against the firm.

Accordingly, the four firms frame their strategies as a means of retaining their resiliency as fossil fuel corporations. Here, renewables are used, to greater or lesser extent, by all four. First, Suncor uses renewables to mitigate the costs of its operations, which are increasing due to carbon taxes. It is currently constructing a wind farm (alongside investing in a biofuels plant) in order to lower its emissions intensity, while intending to sell the wind power to the Albertan grid to garner emissions credits, in order to offset emissions generated in its production of fossil fuels. Second, Enbridge and Fortis use renewables to diversify the investments, amidst increasing efforts to mitigate climate change through energy transitioning. Teck's strategy is the same here,

albeit while investing in copper, a raw material for which demand is expected to grow as adoption of solar power continues. Suncor too employs this strategy in part, through its installation of electric vehicle chargers across Canada to diversify the energy options it offers to its customers – although this is not so much a direct accumulation strategy as it is for the former three corporations. Significantly, however, all three are investing in renewables alongside increasing investments in natural gas, while continuing to offer their other fossil fuel products, and in most cases increase their production.

Perhaps the most important part of these firms' use of renewables, and indeed the most common, is as a means of preserving their reputations. Here, renewables are used to decrease emissions intensity, or more symbolically, to present the image that these corporations are taking action on climate change. This provides legitimacy while these corporations continue to ramp up their fossil fuel production. Importantly, the utilization of renewables by these fossil fuel corporations presents an example of new climate denial (Graham 2019), as part of the broader clean growth strategy employed by the federal government. However, the latter does not present renewables as a way of reducing emissions intensity, though the CleanBC plan does. Electricity produced by the Site C dam is central to the BC government's efforts to brand the province, and to label its LNG products the cleanest in the world.

Notably, Enbridge, Teck, and Fortis appear to have some orientation towards increasing their renewables assets, though, as Enbridge states, this is dependent upon increasing government regulations and carbon taxes. Importantly, these firms' strategies also come alongside their growth in natural gas industries and/or their other fossil fuel industries (i.e. bitumen, oil, coal). The fact that these firms continue to utilize traditional fossil fuels and natural

gas is an indication that carbon taxes are not high enough to sufficiently prompt a renewable energy transition.

Therefore, though this clean growth framework is pre-dominant in Canada, it is not harmonious. CanCORE proposes its own clean growth vision, which is focused on a more intensive energy transition. The primary difference between CanCORE's strategy and the rest of the clean growth segment is the former's insistence that the latter make its policies more stringent, in order to prompt a significant enough transition from fossil fuels to renewables to meet Canada's climate change targets. Thus, CanCORE can be differentiated from the new climate denial segment of the clean growth project. However, like all of the actors in this chapter, CanCORE proposes a pro-market framework that prioritizes consumerism and corporate power. The prevalence of the clean growth project in government policy and the energy industry is thus indicative of the need for movements and projects that combine energy transitions with broader social concerns. The following chapter explores models that are more along the lines of these latter aims.

"Power to the People"? Co-operatives, Energy Democracy, and Eco-socialism in Canada

In Canada, clean growth is the current climate change policy framework employed by governments, alongside some of the country's largest fossil fuel firms and the renewable energy industry. As the previous chapter outlined, the use of renewable energy by these actors serves to preserve capitalism and corporate power. Renewable energy co-operatives offer an alternative model to the corporate-friendly, clean growth agenda. This model is better positioned to integrate energy transitioning with social concerns and well-being, as co-ops offer a more democratic governance structure, while tending to be more localized and integrated with and responsive to the needs of their members and the communities that they serve. The strategies of 5 renewable energy co-ops, located in BC and Alberta, are discussed in more detail in the following sub-section, albeit while positing that they appear limited in their ability to influence change beyond the localized or regional scale. In contrast, initiatives such as Leap, the Pact for a Green New Deal, and Iron and Earth together present more comprehensive alternatives to the clean growth project and broader capitalist hegemony.

Renewable Energy Co-operatives: A Path Beyond Clean Growth?

Peace Energy Co-operative[30] is based in Dawson Creek, in the Peace region of North-Eastern BC. The co-op provides solar power to its members, alongside installation of photo-voltaic panels and electric vehicle charging stations. It is also a former partner of its founding project, the nearby Bear Mountain wind park, which it continues to invest in. One of its stated aims is "to make renewable energy accessible and affordable for its members". Related to this, the co-op

[30] See https://peaceenergy.ca/about-us/

presents itself as an alternative to the domination of the energy industry by fossil fuel corporations. The following quote illustrates this while outlining why the Peace was created:

> The basic concept for Peace Energy Cooperative was conceived in early 2002. Two Dawson Creek businessmen with a keen interest in renewable energy and energy conservation, Don Pettit and Paul Kurjata, realized the potential for wind energy in the Peace River Country. The Peace [region] is rich in fossil fuels that are extracted by a handful of giant and mostly multi-national companies. Pettit and Kurjata argued that as a cooperative, Peace Energy can pool resources and expertise from local people who can then actually own some of this this new resource industry in the Peace Region.

Peace presents itself as an organization that allows local people access to and ownership of energy resources in a way that large corporations do not. As stated, it does this by acting as a means for people to pool their skills, knowledge, and resources. This notion of collective power is also exercised in that the co-op provides members with “a united voice in lobbying governments to encourage the move to renewable energy”.

Vancouver Renewable Energy Co-operative (VREC) [31] is a worker-owned co-op that sells and installs solar panels, solar heating, small wind turbines, energy storage systems, and electric vehicle charging stations for residences, business, and other organizations, alongside selling shares in co-operatively owned solar energy projects. It also offers maintenance and repair services, in additional to solar panel rentals and leases, and grants of solar energy systems to co-op housing complexes. VREC describes itself as a “values based business [who’s] mission is to reduce greenhouse gas emissions, other pollution and the consumption of non-renewable energy sources by installing fairly priced renewable energy systems”. It states that its co-operative structure “improves… service to customers, dealings with suppliers, and interactions with the public”. VREC also highlights the co-op’s “democratically-flat organizational structure, with all members working as a collective, having equal voice and authority in decision making”. Importantly, VREC notes: “[u]nlike many companies, profit is not the sole driver of our

[31] See https://www.vrec.ca/

business. We value the triple bottom line which includes the economy, the environment and social equity". This problematization of the profit-motive, along with a focus on the democratic nature of co-operatives, and a prioritisation of social and community well-being is a common feature among the co-ops featured in this chapter.

Viridian Energy Co-operative[32] operates on Southern Vancouver Island, BC. It is another worker-owned co-op, and sells and installs solar panels. Its vision is "[t]o contribute to a World where Clean renewable energy is the established method for powering energy-efficient, environmentally friendly, healthy and resilient communities". Viridian's stated mission is "[t]o provide the best services and products which optimize energy use and reduce reliance on fossil fuels by using a co-operative, community-empowering business structure". The co-op values "a more sustainable and just society" and aims for their work to act towards this. Like VREC, it outlines that its status as a worker's co-operative gives its employees "a vested interest in the long term", which ensures "quality, efficiency, and reliability". And like both VREC and Peace, Viridian presents the co-operative as an alternative to the profit focus of corporations. This is illustrated by the following quote:

> Viridian was established in 2012, the international year of Cooperatives. Tired and disillusioned about what the corporate path offered, the founders set out to achieve something more than profit. They asked themselves, "Can a business be successful, connected with community, and strive for a broader goal than mere dollar profit?", "Is it possible to have "right livelihood" for its members and a triple bottom line objective for the business. Can we build on all fronts - personal wealth, environmental protection, education, community resiliency?

In Viridian's outline of its values, aims, and vision, we see an articulation of the idea that co-operative structures can work well as providers of renewable energy, since both offer resiliency to communities.

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[32] See https://viridianenergy.ca/

Alberta Co-operative Energy (ACE)[33], headquartered in Thorhild, provides perhaps the best critique of corporations, alongside strong arguments for the alternatives that co-ops offer:

> Most traditional businesses, especially large enterprise. They focus on their for-profit motives. Their primary purpose is to create wealth for their shareholders. If the company is not generating profits, then business decisions need to be made to make sure money is abundant. This can have impacts on their employees, their customers and the larger community. Many co-operative businesses are driven to provide a product or service that is not presently available and would be a benefit to their membership or local community. This is especially true of the Rural Electric Associations (REAs), like our founding members. They were created because many rural communities were not being serviced by established utility companies–they focused on larger urban areas. These co-operative associations were created to make the lives of their membership better by providing electricity to their rural community. So, the major difference between a co-operative and traditional business is their fundamental reason to exist – the pursuit of profit or improving the lives of their membership. Through ACE's Co-operative values, we believe that we can improve the lives of our members, customers and the communities we serve.

Here, ACE states that co-ops can provide services that are not currently available to members or the local community. This is similar to the point that Peace makes regarding its ability to pool the resources and skills of local community members in order to build a wind park. However, ACE articulates well that co-ops can respond to local needs as well as local capacities. As stated, the notion that co-ops are more responsive than corporations to the needs of communities is a recurrent theme raised among the co-ops. As a co-operative energy retailer, ACE fosters the ability to meet the needs of both local energy producers and consumers. It outlines that micro-generation of renewable energy offers an alternative to the "[c]ities and private companies [who] own the powerplants and the electricity". Instead, "small operators can own micro-generators that produce wind and solar. A local school might have a solar installation. A community may have a windfarm or biofuel project. Through ACE, you use electricity directly from these neighbours".

[33] See https://www.acenergy.ca/about-energy

Interestingly, however, ACE is a hybrid, member-owned energy retailer, that alongside renewables, offers natural gas from a co-op that owns 1000km of pipeline. In addition to retail, ACE offers membership in the Alberta Energy Cooperative (one of their partners). Similar to the Peace Co-op, ACE states that these memberships “support education and lobbying efforts of community based renewable energy development”.

Lastly, Alberta Solar Co-op[34] is a developing project that aims to build a 2MW community owned solar farm. They highlight the decreasing costs of solar energy systems, alongside the abundance of solar energy potential in Alberta. Through this project, the co-op aims to “creat[e] the working model for future community owned solar farms in [Alberta]”. They highlight the opportunity for prospective members to “[s]upport, invest and own a part of Alberta’s renewable energy future”. Appearing to reference the heavy dependence of Alberta upon fossil fuels, the co-op’s slogan states: “Our brightest and best energy resource is right above us”. Though providing no critique of corporate structures, the website instead highlights the opportunity that the project provides its members to directly participate in and benefit from a transition from fossil fuel energy This is summed up in their phrasing that “Unlimited Sun Fuel + Community Owned Solar Farm = Power to the People”.

To summarize, the co-operatives outlined here present renewable energy systems as an alternative to fossil fuel energy production, as well as a way to leverage social and economic benefits for both producers and consumers of renewables. The co-operative structure is generally presented as more capable than corporations of providing these environmental and social benefits of renewable energy. A number of reasons are given for this, including the democratic nature of

[34] https://albertasolarcoop.com/

co-operative membership, the locally-embedded, community focused nature of co-ops that goes beyond a mere profit motive, and the tendency for large corporations to prioritize fossil fuel production. Further, co-operatives are presented as capable of meeting needs of people and communities that may not be met otherwise, as well as being capable of integrating the capacities of people and communities. This is important, given the slow uptake of renewables by governments and large corporations, alongside the barrier that high cost technologies present for many people to buy their own renewable energy systems. All of these points indicate that renewable energy co-operatives are a form of energy democracy (Angel 2016). Further, Peace and ACE discuss the ability for co-ops to unify the voices of their members, as a way of lobbying governments to promote energy transitioning. However, this is the only strategy discussed that appears to have to potential to influence broader scale change within the co-operative structure alone. This suggests that renewable energy co-operatives alone appear insufficient to advance energy democracy as a project that contributes to broader social justice and ecological sustainability.

Just Transitioning and Eco-Socialism in Canada

Iron and Earth[35] is an organization led by oil sands workers that seeks to advance the uptake of renewable energy in Canada. It was created in 2015 in response to declining oil prices and resultant job losses in the industry, which spurred discussions amongst workers about the need to diversify Canada's, and especially, Alberta's, energy sector. In doing so, Iron and Earth aims to "realize [a] shared vision for a sustainable energy future for Canada - one that would ensure the

[35] See https://www.ironandearth.org/about_us

health and equity of workers… families, communities, economy, and the environment”. The overall aim of Iron and Earth entails a slow phase-out of the fossil fuel sector amidst a just transition for workers. The strategies it employs are to offer training assistance and networking opportunities for those seeking to enter the renewables sector, while providing a unified voice with which to advocate for a just energy transition for workers. In terms of skills retraining, Iron and Earth gives priority to those who have lost jobs or hours in the coal, oil, and gas sectors. It also recognizes that many of the skills required in the oil and gas sector are transferable to renewables. In these ways, Iron and Earth works to forge and streamline pathways toward a Canadian energy transition, in a way that advances, rather than decreases, the well-being of those currently or formerly employed in the fossil fuel sector.

Though energy transitioning is Leap’s primary aim, for which it adopts a just transition strategy like Iron and Earth, the former’s mandate is broader than this, representing a just and sustainable eco-socialist alternative to the Pan-Canadian Framework on Clean Growth and Climate Change. Leap began in 2015, as a manifesto borne out of collaboration between representatives of Indigenous rights, social and food justice, environmental, faith-based, and labour movements. It has since been endorsed by over 50,000 people. The manifesto contains elements of these combined movements, opting for a sustainable and just society that encompasses concerns surrounding Indigenous decolonization/reconciliation, energy transitioning, energy efficiency, race, gender, and class inequality, climate adaptation, agriculture, labour, and immigration. These issues are addressed via a proposed vast expansion of public infrastructure and services, local economies, and low carbon sectors, alongside a withdrawal of policies that favour international trade, austerity, corporate power, and myopic economic growth.

The Leap manifesto aims for a target of 100 percent renewable electricity by 2050, and, importantly, has an explicit focus on energy democracy. Page three of the manifesto document outlines this focus:

> The time for energy democracy has come: we believe not just in changes to our energy sources, but that wherever possible communities should collectively control these new energy systems. As an alternative to the profit-gouging of private companies and the remote bureaucracy of some centralized state ones, we can create innovative ownership structures: democratically run, paying living wages and keeping much-needed revenue in communities. And Indigenous Peoples should be first to receive public support for their own clean energy projects. So should communities currently dealing with heavy health impacts of polluting industrial activity. Power generated this way will not merely light our homes but redistribute wealth, deepen our democracy, strengthen our economy and start to heal the wounds that date back to this country's founding.

Leap thus frames energy democracy as a project that can combine energy transitioning with democratization and equality, in a way that can be integrated with the broader movements for social justice that it incorporates. Leap's discussion of energy democracy also ties in with just transitioning, as it highlights the importance of prioritizing the development of Indigenous owned renewable energy projects. As mentioned above, such projects have been vital to providing sustainable employment and income, as well as self-sufficiency and sovereignty, to Indigenous communities, alongside other benefits (Fitzgerald 2018; Shaw et al. 2017). Further, Indigenous communities are often those that bear the brunt of ecological and health impacts from polluting industries, including from fossil fuel industry projects such as in Alberta's tar sands. Renewable energy projects have the potential to facilitate resistance to such industries, while fostering sustainable and just alternatives that emphasize and revitalize the values of Indigenous communities. The Beaver Lake Cree First Nation in Alberta demonstrates this.[36]

[36] See (http://www.beaverlakecreenation.ca/Raven-Trust-JFK/); (https://raventrust.com/2017/11/27/beaver-lake-cree-bring-the-power-of-the-sun-to-tar-sands-ground-zero/)

The Beaver Lake Cree First Nation has experienced long-term ecological disruption from over 19,000 fossil fuel projects on their territory, including tar sands mining pits and oil and gas wells. This has deeply impacted their livelihoods, including their ability to undertake traditional hunting and gathering practices, while threatening local water resources. Since 2008, the Beaver Lake Cree have been undergoing legal battles against the Albertan and federal governments, to challenge the development of damaging energy projects on their lands, and to seek monetary compensation for the damages that have already occurred. Meanwhile, existing and planned solar projects owned by Beaver Lake have provided multi-faceted benefits to the community, including economic, political, socio-cultural, ideological, and ecological. Crystal Lameman, a member of the community, discusses this:

> By bringing this energy project into our community, we're changing the way our children are educated… In the face of extreme energy, pipeline approvals, governments running rampant over our inherent and treaty rights we are here, we are exercising self- determination and we are changing the language and shaping the economic and political ideologies of our children to be in line with sovereignty and traditional land use.

Chief Germaine Anderson expands upon this:

> Our Treaty [Treaty 6, signed in partnership with Canada in 1876] states that as long as the sun shines, the rivers flow, and the grass grows that we will continue our traditional way of life. The sun will continue to shine and be a part of all our lives, and we should be utilizing it with the present and future solar capabilities.

Next, the Pact for a Green New Deal is an initiative that began in the Spring of 2019. It is based upon over 150 townhall meetings that took place in every province and territory across Canada, in which 7000 people participated in a collaborative proposal for a just and ecologically sustainable Canada. The Pact "[calls] for a far-reaching plan to cut [carbon] emissions in half in 11 years, in line with Indigenous knowledge and climate science; [to] create more than one million good jobs; and [to] build inclusive communities in the process". The Pact calls for a similar suite of policies to Leap. Its proposal recognizes the interconnectedness of social and

ecological issues, and proposes policies to address multi-dimensional social inequality, alongside ecological degradation and climate change, primarily via expanding public services and infrastructure, within a broader move away from neoliberal capitalism. However, the Pact expresses a need "for improvement in reaching out to the labour movement, social justice movements, Indigenous peoples, and those who are marginalized or who have been most impacted by the current and historical harms a Green New Deal must address". Though its grassroots proposals seek to incorporate these movements, the Pact could thus use more representation from or integration with them going forward.

The Pact's proposals regarding climate change include a legally binding emissions reduction target for Canada, designed to keep global warming below 1.5°C; a phase out of Canada's fossil fuel industry and transition to a 100 percent renewable energy economy by 2040; and plans to support displaced workers throughout this transition. This would involve halting the construction and approval of new fossil fuel infrastructure projects, while ending fossil fuel subsidies and redirecting them towards the clean economy. Though the Pact does not include an explicit focus on energy democratization, the similarities between its proposals and those of Leap, which is explicit about energy democracy, indicates that the Pact has potential to be integrated with energy democracy as well.

While Iron and Earth operate on a sub-national scale and Leap and the Pact operate primarily on a national scale (Carroll 2020), the latter two also outline some international strategies. Both initiatives outline the need to expand offerings for Canadian immigrants and refugees. This includes Leap's proposal that immigration status be given to all incoming workers, and the Pact's proposal that permanent resident status be given to all immigrants and refugees. Moreover, the Pact discusses that the there needs to be more of a focus on stopping the

unjust practices of Canadian corporations that contribute to displacing people from their homes in other countries through climate change and ecological destabilization. The Pact also highlights the need for Canada to pay a climate debt to countries in the Global South that have contributed little to climate change, yet are disproportionately impacted by climate change, which in turn countries in the Global North, like Canada, have disproportionately contributed to.

The following section undertakes a comparison between the climate change and renewable energy implementation strategies of all of the actors examined in this research project. This serves to deepen the critique of clean growth, and of renewable energy co-operatives, with a discussion of how the latter could more effectively be integrated within just transitioning and eco-socialist projects as part of a counter-hegemonic alternative to capitalist social and socio-ecological relations.

Renewed Imperialism and Hegemony, Energy Democracy and Counter-Hegemony

According to the central claim of this project, the socio-ecological outcomes of renewable energy implementation hinge upon the social relations that seek to bring about energy transition, and/or are (re)produced throughout the transition. This in turn will depend upon the broader socio-political context within which renewables are implemented. Accordingly, I hypothesized that renewables within clean growth projects are more likely to either reproduce or worsen current socio-ecological conditions, while renewables within eco-socialist projects are more likely to be in alignment with energy democracy movements and agendas. In order to examine this, the previous two chapters have discussed in detail a number of contexts in which renewable energy is framed and/or implemented across a range of Canadian socio-environmental projects. This includes policy frameworks of the federal, British Columbian, and Albertan governments, of fossil fuel corporations, and of the renewable energy industry itself. Further, renewable energy co-operatives were examined, as on-the-ground examples of alternatives to corporatized renewable energy, and as a form of energy democracy. Meanwhile, emergent eco-socialist initiatives in Canada present the potential to implement renewables and energy democracy within broader projects that aim for social justice and ecological sustainability, as a counter-hegemony to clean growth and fossil capitalism. The following sub-section compares the strategic use of renewables by these actors, in light of my research questions and the literature.

Clean Growth and Capitalist Hegemony in Canada

As discussed, clean growth is currently the predominant approach employed by Canadian governments to address climate change. This approach prioritizes a slow transition from fossil

fuels to renewables, with increasing use of natural gas in the short to medium term, primarily to replace coal-fired electricity generation. This strategy functions largely as a social license for corporations to continue to extract fossil fuels, amidst growing pressure to respond to climate change. The primary aspect of this strategy involves reducing the emissions intensity of fossil fuel production (alongside increasing the efficiency of energy consumption), facilitated by carbon taxes or levies that increase the costs of emissions. This in turn serves to send the message that meaningful action is being taken to combat climate change. Though proponents of clean growth acknowledge the reality of climate change, the strategies they propose to address it are not synonymous with the emissions reductions needed to meet Canadian or international climate change targets. This is largely due to the focus on reducing emissions intensity and domestic fossil fuel consumption, in lieu of reducing fossil fuel production, exportation, and absolute emissions in the industry. The CleanBC climate plan, adopted by the Horgan NDP government in 2018, presents a clear example of this. The plan seeks to create a green brand for BC in order to carve out a stake in the growing LNG market. Renewable energy produced by the Site C dam is an integral part of this strategy and will provide a significant source of subsidized electricity to be used by LNG Canada in its production processes. This functions as a cheap source of energy, alongside adding further value to the product by providing justification to label it “the cleanest in the world”.

My analysis of the most recent annual reports of Enbridge, Suncor, Teck, and Fortis affirm and bolster the literature concerning clean growth strategies in Canada. These corporations are cognizant of climate change, but rather than presenting the source of their profits as the problem, they flip the script and frame pressure to respond to climate change as a risk to their continued competitiveness and profitability, stemming from increasing costs,

potential damage to their reputations and relationships with internal and external stakeholders. These firms seek reductions in emissions intensity as the primary means to mitigate these risks, and, like the CleanBC plan, use renewable energies as a means to this end (albeit alongside natural gas), as well as in a more symbolic manner, to indicate that the firms are taking part in energy transitioning. Meanwhile, however, these firms continue to ramp up their fossil fuel production, leading to absolute emissions increases. Thus, I find that these firms utilize renewable energy as supplemental to emissions reductions, without a significant plan to transition from fossil fuels in the near future, and thus as part of the strategy of new climate denial (Graham 2019). However, akin to Graham's suggestion, Enbridge may exhibit some signs of an orientation towards a more significant transition to renewables, for it poses renewables as a means to diversify its business as a low risk investment. Fortis does this too, albeit while both continue to ramp up their provisioning of natural gas. This suggests that any significant displacement of fossil fuels by renewables in a manner that reduces *overall* fossil fuel production is a long-term endeavor. Thus, these strategies are aligned with the broader clean growth project. Teck's increasing investments in copper mining to facilitate solar panel production is similar to the strategies of Fortis and Enbridge, since all three continue to increase their extraction of fossil fuels.

This use of renewables by these corporations thus also serves to maintain their power, as part of the broader clean growth strategy that presents climate change as a means of continued economic growth and capital accumulation. These uses of renewable energy thus limit opportunities for energy democracy as they preserve corporate power and fossil capitalism. This contrasts with energy democracy's mandate to resist fossil capitalism, while reclaiming and restructuring energy systems (Burke and Stephens 2017). Site C acts in a similar manner, albeit

by using state-owned energy to manufacture corporate-produced fossil fuels. The Site C dam constrains energy democracy further by limiting opportunities for smaller producers to sell their power to the provincial grid and derive social and economic benefits from this, which in BC has a greater impact on Indigenous communities with limited opportunities for income or employment. This disempowers First Nations communities in a dual sense (Shaw et al. 2017), since it will also flood large areas of Treaty 8 First Nations Territory. Site C thus exemplifies what Klein (2019) calls green colonialism. However, I posit that the concept of 'renewed imperialism' more accurately describes the forces at work here. For renewed imperialism describes the preservation of top-down power via the use of renewables, similar, yet in opposition to, the way that energy democracy can be integrated with counter-hegemonic projects. This thus incorporates Klein's concept of green colonialism, though more specifically in the context of renewable energy implementation. Further, renewed imperialism denotes the way in which renewables are integrated within a broader project of clean growth to reaffirm neoliberal capitalist hegemony. The Site C dam entails a process of accumulation by dispossession, whereby Indigenous peoples are deprived of their lands and livelihoods, as well as their ability to benefit from access to commons resources such as air, water, and sunlight by developing their own renewable energy projects.[37]

Further, Site C is intended to facilitate capital accumulation through a corporatized LNG project, at the expense of both democratic renewable energy projects and effective climate change mitigation. The latter therefore denotes the use of renewables to deplete and enclose the commons that are Earth's atmosphere and ecosystems. Similarly, Enbridge, Teck, Fortis, and

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[37] And the same can be said for non-Indigenous community or democratically owned/controlled renewable energy projects.

Suncor utilize renewables as part of their accumulation strategies, and in a manner that does not amount to effective climate change mitigation. Canada's renewable energy industry also fails to call into question continued fossil fuel extraction, while promoting corporatized renewable energy within a clean growth framework.

In a broad sense, CanCORE is in alignment with the Pan-Canadian Clean Growth framework, whereby climate change is treated as an opportunity for economic growth and capital accumulation, and where the primary strategy employs market-based and technological solutions. To this end, CanCORE proposes specific plans for electrification of and increased use of renewables in buildings, personal transport, and industry – alongside efficiency enhancements. CanCORE also proposes a renewable energy exportation strategy. However, it disputes the specifics of the federal framework, arguing that the prices on carbon, performance standards for energy generation, and carbon crediting systems are not stringent enough to meet Canada's 2030 or 2050 emissions reductions targets, or to facilitate the effective transition to natural gas as a transition fuel amidst a long-term transition to renewables. It contacted the federal government on numerous occasions in 2018 with these critiques, suggesting more stringent measures. These critiques of the Pan-Canadian framework, alongside CanCORE's science-based plan to meet Canada's climate change targets, indicate that the renewable energy industry can be differentiated from the new climate denial segment of the clean growth project. However, though CanCORE includes the oil and gas industry in its vision for electrification and energy efficiency, its plans for this sector are lacking compared to the former three, and it does not question the production or exportation of fossil fuels in Canada. Its goals are therefore complementary, rather than contradictory, to Canadian fossil capitalism, at least in the short to medium term. Thus, CanCORE's strategy may not prove effective for meeting global emissions reductions targets.

Notably, however its renewable energy exportation plan could perhaps serve as a means of displacing fossil fuel exports, if economic and/or social pressure was exerted to this end.

Further, CanCORE focuses primarily upon meeting Canadian climate change targets alongside using renewable energy implementation as an avenue of economic growth. This means that it too does not question the basis of corporate power, and thus limits opportunities for energy democracy. Though there are opportunities to derive social and economic benefits from a privatized renewable energy industry, including for marginalized groups such as Indigenous communities, privatization can also have negative impacts on Indigenous communities (Fitzgerald 2018; Shaw et al. 2017). Further, the benefits are generally limited to those that can be attained within a consumerist, capitalist framework, as CanCORE's discussion of 'empowerment' for renewable energy consumers demonstrates. This is reminiscent of the way in which fossil fuel corporations in Canada are increasingly seeking out First Nations partners as a supposed avenue of reconciliation, which largely limits empowerment to what can be achieved within the bounds of neoliberal capitalism (Atleo 2020). We can see a further thread of renewed imperialism here, since, alongside employing territorial and economic domination, imperialism is a cultural force, constraining narratives surrounding what participating in a society or culture means (Said 1994). Indeed, hegemony itself is also a cultural force (Gramsci 1971), and corporate power sustains itself through the domains of economics, politics, and civic life (Carroll and Sapinski 2018). Correspondingly, the Canadian clean growth project is supported not only by a consortium of governments and corporations in Canada, but also by a closely-knit network of foundations, NGOs, and civil society groups as part of an integral state complex (Carroll, Graham, and Shakespear 2020). It is further backed by the deeper hegemony of neoliberal capitalism, which has been a dominant paradigm since the 1970s.

In sum, I see in these expressions of clean growth a preservation of corporate power. The segment promoted by the renewable energy sector appears to have the potential to provide greater socio-economic benefits than the new climate denial segment, but these benefits are largely limited within the bounds of neoliberal capitalism, and do not displace corporate power. Thus, there is more potential for *forms* of energy democracy in the segment of clean growth that favours renewables compared to that which favours fossil fuels. But the potential for energy democracy to be exercised as an avenue towards projects for ecological sustainability and social justice appears limited within clean growth as a whole, and is opposed by the force of renewed imperialism, which here constrains models of renewable energy implementation to those that can be attained without fundamentally challenging neoliberal capitalism. My analysis of Canadian renewable energy co-operatives supports this argument.

Most of the renewable energy co-operatives featured in this study are explicit about their aim to provide an alternative to corporate power. Reasons for this include an imperative to move beyond a myopic focus on profits, the democratic nature of co-ops relative to corporations, the opportunity to participate in the energy industry that corporations do not provide, a greater responsiveness to the needs of people and communities, and the ability to integrate the resources and capacities of their members. This comes alongside some potential to provide a unified voice to their members as a means of lobbying governments to transition from renewables.

However, co-ops still present similarities to corporations in some ways. For example, they are in a sense private organizations, since membership is restricted to those who can afford a buy in. However, unlike corporations, which are controlled disproportionately by those who hold the most shares (i.e. those with the most capital to invest in the corporation), all members of

a co-op hold equal decision-making power. This means that co-ops are still more democratic than corporations in an economic sense. Meanwhile, in worker-owned co-ops membership is determined not via one's ability to buy in, but by one's status as a worker for the co-op. Further, though co-ops often invest in social and environmental initiatives as well as their local economies, they are still driven by a profit incentive (Angel 2016). Along these lines, VREC and Viridian co-ops discuss their 'triple bottom line', of valuing social and environmental goals alongside economic ones. We see this echoed in the ESG principles utilized by the fossil capital firms in this study, who appear to trumpet these principles primarily to maintain their reputations, and their relationships with and trust of their stakeholders. This is likely a factor in why co-ops pursue a triple bottom line as well. However, profit in capitalist enterprises is primarily reinvested to grow the corporation, alongside being distributed to shareholders, and the capitalist profit incentive takes precedence above social and environmental goals since competitive corporations must grow or perish in a market predicated upon infinite economic expansion. Meanwhile, corporate profit is extracted from the surplus value generated by wage laborers, and thus distributed unequally among stakeholders in the firm. Worker co-ops present an especially compelling alternative to this model, since these workers both manage and own the means of production, and profits generated by the co-op do not take the form of capital appropriated by capitalists, but comprise an economic surplus controlled by the worker-owners. Moreover, I argue the profit incentive of co-ops does not take away from their unique capabilities which further set them apart from corporations.

These capabilities include the ability to integrate the capacities and meet the needs of people and communities in a way that corporations cannot. This is important, as the co-ops featured in this study appear to be able to implement renewable energy within a capitalist

framework that is reluctant to undertake a significant transition from fossil fuels to renewables within the timeframe that is needed. Further, co-ops present a way to democratize the energy sector. Nonetheless, though these renewable energy co-ops present themselves as an alternative to both corporations and the use of fossil fuels, they are able to operate within the larger-scale fossil capitalist and clean growth frameworks. This appears to be both a strength and a weakness, for it indicates a level of versatility and resilience, though also a limited ability to influence the workings of multi-scalar policy agendas. In sum, though the renewable energy co-ops examined present an alternative to the fossil capitalist and/or clean growth system and its structures, they are limited in their ability to challenge it.

In other words, though Canadian renewable energy co-operatives exhibit a *form* of energy democracy (Angel 2016), on their own, they do not appear to comprise a *project* of energy democracy, in terms of resisting fossil capitalism, alongside reclaiming and restructuring the energy system as a whole. Rather, the co-ops appear to present an alternative that can exist within the hegemonic system without fundamentally transforming it. Co-ops exhibit an expression of power-with instead of that of power-over, which is more characteristic of corporations. As such, they do act as an example of one element of a complex that could add up to a broader project that pursues social justice and ecological sustainability (Angel 2016), or of energy democracy as a bundle of non reformist reforms (Carroll 2020). The ability for co-ops to act as an alternative on their own appears to be limited by their scale, however, which is often local (Angel 2016). Though the existence of co-operatives as a movement could be seen as evidence that they transcend the local, I argue that, in Canada, the apparent lack of integration between co-operatives themselves and between co-operatives and broader counter-hegemonic projects limits their multi-scalar potential. This contrasts with the large-scale of multi-national

corporations and provincial or federal policy frameworks. As discussed, for an alternative system to effectively challenge the multi-scalar, hegemonic regime of fossil capitalism, it must operate across multiple scales, ranging from the local to the international (Carroll 2020).

Thus, this indicates that, for Canadian renewable energy co-ops to work toward an effective alternative to the fossil capitalist regime, they need to integrate themselves with other groups and initiatives, to contribute to a broader project that can effectively act as a counter-hegemony. As discussed, a project of democratic eco-socialism comprises the best example of such a counter-hegemonic project.

Energy Democracy, Just Transitioning, Eco-socialism, and Counter-hegemony

Together, Leap and the Pact for a Green New Deal present multi-faceted and multi-scalar alternatives to a society based primarily upon growth, corporate power, and fossil fuels. Unlike clean growth projects, their proposals go beyond the bounds of consumerism and neoliberal capitalism and seek to address a comprehensive suite of both social and ecological issues. Meanwhile, Iron and Earth focuses specifically on a just energy transition for workers in the fossil fuel industry and related fields. This initiative appears to have the potential to be integrated with the eco-socialist mandates of Leap and the Pact, which also incorporate just transitioning into their proposals. Both Leap and the Pact present policy frameworks as a means to influence governmental policy in regards to these issues. Iron and Earth exemplifies a more on-the-ground initiative, actively providing skills training and networking opportunities to workers seeking to enter the renewables industry. It is also similar to the Peace Energy Co-op and ACE in that these

workers seek to utilize their unified voice in order to advocate for uptake of a more comprehensive renewable energy transition by governments.

Together, Leap, the Pact, and to some extent Iron and Earth, recognize that the state is a necessary terrain of struggle. We see that Leap and the Pact present policy frameworks that, to be effective, would need to be undertaken through state institutions, as alternatives to the current clean growth policy, and neoliberal capitalism more broadly. However, this recognition must come alongside acknowledging that the state is oriented towards preserving capitalist interests. Accordingly, this presents the need to leverage politics *in* and *against* the state, as in remaking state functions through governmental policies, though also *beyond* it, as in using power external to the state in order to influence politics (Angel 2017). However, *beyond* also entails the need to exercise extra-state power as an end in itself, to preserve the autonomy of actors and create a space for politics beyond the party form (Adkin 2017; Satgar 2018). This represents a way of working towards a 'democratized democracy' (Williams 2018). Initiatives including Iron and Earth, Peace and ACE co-ops, Leap, and The Pact exercise both of these potentials by unifying voices of citizens, labor, the renewable energy industry, and a range of social movements. Meanwhile, Leap explicitly utilizes an energy democracy frame, highlighting the potential for collective control over energy systems for empowering communities and citizens, to deepen democracy, and to redistribute wealth, which in turn could leverage power to influence the state. The renewable energy co-operatives examined in this study present already existing examples of this in renewable energy systems, albeit with limitations including financial barriers to participation and the need to leverage energy democracy as part of a broader movement. In order to address these limitations, it would be pertinent for co-ops to integrate more deeply with the broader eco-socialist initiatives such as Leap and The Pact. Partnerships between states and co-

operatives could be one way of addressing the accessibility issues of the latter (Angel 2016). More broadly, policies of wealth redistribution as outlined in eco-socialist proposals could also address this.

Further, there is the need to exercise forms of energy democracy across multiple scales in Canada. Both municipalized and state-owned renewable energy systems present examples of this (Angel 2016). Along these lines, Canada is in need of greater articulation and implementation of these forms of energy democracy, incorporating promising visions such as the Leap manifesto and the Pact for a Green New Deal. In relation to this, integrating already existing and future renewable energy projects with these eco-socialist projects could help to push undemocratic forms of renewable energy implementation in a more democratic direction. One case where this type of action is much needed is the Site C dam.

Though state-owned renewables present a potential form of energy democracy, the case of Site C shows this is not inherent, and that renewable energy systems are a terrain of struggle similar to that of the state. The driving forces behind whether energy transitions are hegemonic or counter-hegemonic can be encapsulated by the opposing concepts of energy democracy and renewed imperialism. Further, integration of counter-hegemonic projects with state politics present the opportunity to influence current or future state-owned renewable energy projects in a more democratic direction, or to implement alternative projects in their stead. This is supported by the fact that, though privatized power has afforded a mix of positive and negative benefits for First Nations communities, the province's return to state-owned power has been more damaging, both due to the direct physical impacts of Site C, as well as its pushing Indigenous producers off the grid. Accordingly, Shaw et al. (2017) argue for the need to think beyond privatized or state-

owned power, and for state policy to support First Nations and community owned renewables projects. As the example of the Beaver Lake Cree First Nation demonstrates, such projects can foster multi-faceted benefits for Indigenous communities, building sustainable and just alternatives to fossil capitalism, which can be combined effectively with direct resistance to the latter. These points add weight to my argument that counter-hegemonic and energy democracy projects need to implement renewables on multiple scales, and that energy democracy initiatives need to be combined with broader movements (in the latter case, incorporating movements for Indigenous rights and decolonization).

Conclusion

A transition from fossil fuels to renewables is a major avenue of climate change mitigation. In addition, the dispersed nature of renewables makes them more conducive than fossil fuels to democratic ownership and control of energy. Energy democracy proponents recognize these dual potentials, seeking to leverage them to forge pathways toward deep ecological sustainability, equality, justice, and democratization. However, these possibilities are not inherent to energy transitions. In fact, renewables have the potential to contribute to worsening social and environmental conditions. The analysis undertaken in this project highlights this range of potentials, through examination of renewable energy implementation and climate change strategies of Canadian governments, fossil fuel corporations, renewables industry associations, renewable energy co-operatives, just transitioning, and eco-socialist initiatives.

Canadian governments, fossil fuel corporations, and the renewables industry were found to support a clean growth project, which approaches energy transitioning within the bounds of capitalist hegemony, thus preserving corporate power. However, the renewables industry can be differentiated from the 'new climate denial' strategy of governments and fossil fuel corporations in that it employs a science based plan that offers real potential for achieving national emissions reductions targets, albeit while failing to question the production and exportation of fossil fuel products, which perhaps calls in the question the ability for its policies to achieve global targets. However, the clean growth strategy of all of these groups was found to mute the potential of energy democracy to bring about a comprehensive move toward a sustainable and just society. The concept of 'renewed imperialism', representing an opposing force to energy democracy, helps to explain the dynamics of this process, which here entails the use of renewables to preserve capitalist hegemony through territorial, economic, and cultural spheres.

Meanwhile, renewable energy co-operatives were found to present themselves as democratic alternatives to corporatized energy systems, offering opportunities for more widespread participation and distribution of social and economic benefits from energy production and consumption. Further, two of the co-ops discussed their ability to unify the voices of their members as a means of influencing governments to undertake more significant efforts to transition to renewables. However, co-ops still present barriers to participation, and appear limited in their ability to leverage the full potential of energy democracy as part of a counter-hegemonic project. These issues could be addressed via the integration of renewable energy co-ops within a multi-scalar complex of initiatives that constitute a convergence of movements working towards deep democratization, social justice, and sustainability. In Canada, recent initiatives including Leap, the Pact for a Green New Deal, and Iron and Earth were found to present key nodes of such an emergent project, which could provide a comprehensive alternative to the national and provincial clean growth frameworks, while fostering other forms of energy democracy, such as municipalized or state owned renewables.

The strategies of renewable energy implementation featured in this study highlight the opposing forces of renewed imperialism and energy democracy, respectively, as hegemonic and counter-hegemonic forces. These dual potentials indicate that energy systems are a key terrain of struggle for achieving both a sustainable and socially just society. However, in order to achieve these potentials, actors and initiatives must also recognize the state as a key site of struggle, and thus exercise an energy politics in and against the state, seeking to remake it and to achieve non-reformist reformist from within it. Moreover, struggles for energy democracy must extend beyond the state, seeking to integrate themselves within broader movements in order to influence

the state, as well as to extend politics and counter-hegemony to the economic and cultural spheres, and across multiple scales, from the local to the international.

These implications point towards the limitations of this study, as well as avenues of future research. The qualitative nature of this project allowed for a detailed look at the range of ways in which renewables can influence socio-political change. However, I focused on the ways in which actors frame their strategies, rather than the actual outcomes of those strategies. Thus, the findings of this project could be bolstered via research that examines the effects of instances of renewable energy implementation that are part of these strategies. The most effective ways to undertake this would likely be to interview a range of stakeholders of specific renewable energy systems, to which could be added analysis of any news stories which may discuss these systems.

Further, though the critical realist perspective drawn upon in this study was useful for its ability to encapsulate and compare the viewpoints, framings, and strategies of various actors, eco-feminist and Indigenous ontologies also have relevance, as they recognize human and non-human entities as enmeshed and interdependent, and understand the natural to mean both societal and ecological (Todd 2016). Such views are arguably necessary to bring about a truly sustainable and just society, that not only is maintained within natural limits, but contributes to regenerative, thriving ecosystems. For these reasons, future work regarding how to implement renewables as part of sustainable and just transitions would benefit greatly from collaboration with Indigenous communities. Additionally, including Indigenous communities as active participants in collaborative research – as opposed to examining Indigenous peoples simply as subjects of research – is an essential aspect of decolonizing the academy, and society more broadly (Coburn 2013; Todd 2016). This was not undertaken in this project due to time and space constraints. However, it is important to recognize the realized and potential roles that Indigenous

communities play as actors in the renewable energy landscape, alongside both the benefits and drawbacks for Indigenous communities resulting from different forms and contexts of renewable energy implementation. Thus, future studies examining specific stakeholders of renewable energy systems could be undertaken in collaboration with Indigenous communities involved in renewable energy projects.

Next, network analysis of energy democracy and eco-socialist initiatives would be a way to examine their level of integration, and to point towards potential ways to advance it. Such research projects would do well to examine networks not only within one region or nation, but on the international scale as well. Future research could also look at municipalized and state-owned energy democracy projects, their framings and effects, and their integration within broader projects and networks. This could be combined with international comparisons of energy democracy, clean growth, and fossil capitalist projects. As opposed to analysis centred within one country, this would add greater nuance to understandings of related strategies and their socio-ecological outcomes, and would serve to illuminate a wider range of paths toward, and away from, social justice and sustainability.

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