

ECOLOGICAL MODERNIZATION AND CANADA'S ENERGY DEBATE: RECONCILING  
ECONOMIC, ENVIRONMENTAL AND POLITICAL AGENDAS?

by

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## ABSTRACT

Like many modern industrialized nations, Canada is grappling with the need to maintain a stable, growing economy and to take meaningful action on climate change by reducing greenhouse gas (GHG) emissions. This is particularly challenging in a resource-based economy and federalist state like Canada, where competing regional interests and a historical dependence on oil has made it difficult to legislate and implement long-term energy and climate change policies. Two visions for energy development in Canada have emerged within public discourse. The first advocates the continued and expanded development of Canada's oil sands and new pipeline infrastructure to access overseas energy markets. The second proposes a re-conceptualization of the Canadian energy sector based on a phasing out of carbon-based fuels and expanded use of renewable alternatives to support a thriving green economy and meet international climate change obligations. Both visions promise an environment-economic win-win scenario where Canada's growth imperative can co-exist harmoniously with sustainable environmental policy.

Ecological Modernization (EM) theory is a school of thought which maintains that decoupling economic growth from its environmental impacts is possible through technological and institutional modernization processes. This thesis examines both visions of energy development through the lens of EM theory to determine the likelihood of each in achieving environmental, economic and political reconciliation. EM has been successful in helping to frame and understand how industrialized societies are changing their views of the environment and incorporating ecological considerations into policy decisions. However, this thesis finds that the current political climate in Canada remains unfavourable to the transformative institutional reforms necessary to implement a truly ecologically modern national energy strategy. From the Canadian perspective, EM's promise of an environmental-economic "win-win" scenario appears to be outweighed by political challenges.

## **LIST OF ABBREVIATIONS USED**

AER – Alberta Energy Regulator

AOSTRA - Alberta Oil Sands Technology and Research Authority

BAU – Business as usual

BCC – Business Council of Canada

BNA – British North American Act

CAT – Climate Action Tracker

CAPP – Canadian Association of Petroleum Producers

CCS – Carbon Capture and Storage

CCF – Canadian Council of the Federation

CDE – Canadian Development Expense

CEE – Canadian Exploration Expense

CERI – Canadian Energy Research Institute

COP – Conference of the Parties

COSIA – Canada’s Oil Sands Innovation Alliance

ECCC – Environment and Climate Change Canada

EM – Ecological Modernization

ENGO – Environmental Non-Governmental Organization

EPIC – Energy Policy Institute of Canada

EU – European Union

FDI – Foreign Direct Investment

FQD – Fuel Quality Directive

GA – Global Adjustment

GDP – Gross Domestic Product

GEA – Green Energy Act



GHG – Greenhouse Gas

IEA – International Energy Agency

IISD – International Institute for Sustainable Development

IMF – International Monetary Fund

IPCC – Intergovernmental Panel on Climate Change

IRC – Indian Resource Council

Mb/d – million barrels per day

Mt – megaton

MW – Megawatts

NCCP – National Climate Change Policy

NDC – Nationally Determined Contributions

NEB – National Energy Board

NEP – National Energy Program

NRCan – Natural Resources Canada

NRTEE – National Roundtable on the Environment and the Economy

OECD – Organization for Economic Cooperation and Development

PCF – Pan-Canadian Framework on Clean Growth and Climate Change

SDTC – Sustainable Development Technology Canada

UCP – United Conservative Party

UNFCCC – United Nations Framework Convention on Climate Change

WEO – World Energy Outlook

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## CHAPTER 1 INTRODUCTION

Canada has enormous energy potential; it is one of the richest countries in the world in terms of renewable and non-renewable energy sources. The prairies hold the potential to tap vast amounts of solar electricity, and Quebec, Manitoba and B.C. are rich in hydroelectricity reserves. In the north, untapped geothermal energy and natural gas remain underexplored but promising. On the east coast wind energy and natural gas are in great supply, and plans to harness the powerful tides of the Bay of Fundy through tidal-powered turbines are currently being explored. Meanwhile, Newfoundland and Labrador enjoyed a short-lived but lucrative offshore oil boom, and is currently building its hydro electric capacity. Since the turn of the century, however, the Canadian energy landscape has been dominated by one resource in particular – crude oil. The Alberta oil fields hold the third largest supply of crude oil on the planet after Saudi Arabia and Venezuela (Alberta, 2017), and are a key pillar of Canada’s economic strategy. Despite its abundance of energy resources however, Canada is facing an energy dilemma.

Like most industrialized nations, Canada is grappling with the need to balance the economy with its international climate change obligations. In 2015, Canada signed the Paris Agreement on Climate Change, committing itself to reducing domestic greenhouse gas (GHG) emissions to 30% below 2005 levels by 2030. Achieving these reductions is complicated by many factors, not least of which the fact that the oil and gas sectors make up the largest source of GHG emissions in the country (ECCC, 2018). The dilemma can be characterized as a conflict between environmental agendas and the need for economic development; the potential financial gains to be made from rapidly developing Alberta’s oil sands are viewed by some as being at odds with increasingly urgent calls to mitigate climate change. Previous federal governments, particularly under Stephen Harper, resisted strong, market-based emissions-reductions strategies

on the basis that they impede resource development and job creation and are harmful to the Canadian economy (Payton, 2014). Today, this sentiment is echoed by the official opposition in Alberta, the United Conservative Party (UCP), and provincial governments in Saskatchewan and Ontario. At the same time, increased scholarly attention is being paid to the economic shortcomings of Canada's oil sands and the potential for a new energy trajectory built on innovation and clean technology. The result has been a fierce energy debate within Canadian social, economic, and political landscapes exacerbated by Canada's unique constitutional makeup.

Despite the apparent economy-environment dichotomy within Canadian energy discourse, there is a growing body of literature under the sustainable development paradigm which suggests economic growth does not necessarily have to come at the expense of strong environmental policies. Ecological Modernization (EM) is a school of thought which maintains that decoupling economic growth and environmental impacts is possible through technological and institutional modernization processes. In other words, EM theory assumes that the need for environmental reform and the state's "overarching need to promote economic growth can be reconciled, allowing environmental values to support economic ones" (Dryzek 2005, 168).

This project is a case study of the national energy debate, and aims to determine whether a harmonious relationship can exist between Canada's economic growth imperative and its climate change responsibilities. EM theory was chosen as a theoretical framework on which to examine the debate because it assumes that there is no *necessary* conflict between environmental protection and economic growth. This thesis will examine the energy debate in Canada through the lens of EM theory and attempt to answer the following question: Can EM be used as an effective policy framework for reconciling environmental, economic and political agendas?

Stemming from this analysis, this thesis will also consider the following secondary research questions: Can Canada meet its international environmental responsibilities through an energy strategy based on fossil fuel production? And, is it possible to achieve and maintain a growing economy without fossil fuels as a key economic driver?

To answer these questions, a comparative analysis of two opposing positions within the energy debate will be presented. The first, more conventional position advocates the continued and expanded development of Canada's petroleum resources, particularly the Alberta oil sands. The second vision highlights the long-term dangers of such an approach and advocates instead for a re-conceptualization of the Canadian energy sector based on a phasing out of carbon-based fuels and expanded use of renewable alternatives to support a thriving green economy and meet climate change obligations. These visions will be referred to as the *petroleum-centered* and *green economy* approaches, respectively. It is important to note that perspectives within the energy debate exist on a spectrum, and represent a reality that is complex rather than easily compartmentalized into neat categories. Proponents of the petroleum-centered and green economy approaches fall broadly into a number of 'perspectives' that are not mutually exclusive and often overlap. These perspectives include business-as-usual (BAU), EM, strong EM, and green radicalism and will be examined in the following chapter.

The fossil fuel sector in Canada is vast and complex and encompasses many industries including natural gas, crude oil, and coal. For the foreseeable future each of these industries, particularly oil and gas, will play a role in Canadian energy policy. For the purposes of this project however, the focus will be the oil sands and their role within the energy debate. The reasons for this are twofold. First, the sheer volume of previous and planned bitumen extraction projects when compared to other fossil fuel industries in Canada merits special attention. Second,

the oil sands industry has dominated the Canadian energy sector for nearly twenty years and will likely continue to play a leading role in the future. More than any other sector, the oil sands industry and associated pipeline politics are at the centre of the Canadian energy debate.

Both visions of energy development maintain that Canada's energy potential is hampered by the fact that it has yet to implement a coordinated and comprehensive national energy strategy. Over the past several decades, Canadian energy policy has been characterized by a lack of coordination and conflict among federal and provincial policies, regional inequalities, and an overall inefficiency in the way the country manages its vast energy reserves. Energy policy in the country remains fragmented, with each province pursuing their own energy initiatives based on narrow economic interests and differing greatly in terms of their resource base, energy mix, patterns of production and consumption and economic reliance on energy exports (Gibbins 2010, 71). In July 2015, Canada's premiers unveiled their Canadian Energy Strategy (CES), a document which promised to manage the country's energy industry in an environmentally-responsible way and to work collaboratively to advance large-scale, mutually-beneficial energy projects. At time of writing however, this document remains aspirational and, as will be discussed throughout this thesis, CES advocates in the petroleum-centered and green economy visions have very different ideas about what ought to be driving the future of energy in Canada. The same remains true for climate change policy; the federal government's national carbon pricing policy, which came into effect in January 2019, has been met with significant opposition and faces a constitutional challenge from three provinces. Still, there remains strong support among Canada's premiers, the federal government, industry leaders, academia, and environmental non-government organizations (ENGOS) to formalize long-term energy plans for

the country, momentum that is driven largely by geopolitical changes in the global energy sphere.

Canada's largest energy trading partner has historically been and continues to be the United States; 99 percent of Canada's oil exports currently go to the U.S. (NRCan, 2018). Energy trade with the U.S. at time of writing is unpredictable however. President Donald Trump has approved the Keystone XL pipeline that was rejected by the previous Obama administration, and has indicated his intentions of reviving the domestic U.S. coal industry all while introducing protectionist trade measures. Whether the Trump administration's actions will benefit or be a detriment to the Canadian oil industry has yet to be determined. Meanwhile, global demand for energy is rising steadily and projected to grow 30% by 2040 (IEA 2017, 1) The need is being driven by worldwide population growth - expected to rise from 7.4 billion to more than 9 billion in 2040 – as well as rapid urbanization and expanding economies in India, Asia, and the Middle East (IEA 2017, 1-2). These changes are driving calls for a reorientation of Canadian energy trade, focused on tapping both conventional and clean energy export markets.

### **Ecological Modernization: Literature review**

EM has become one of the more prominent theories within environmental politics and as will be discussed further below, can be distinguished between its uses as a theoretical concept, discourse, and policy framework. At the core of EM theory is the idea that there is no necessary conflict between environmental agendas and economic development; the two can exist in a mutually-supportive, win-win scenario. These mutual benefits are said to be achieved through innovative and technology-driven modernization processes. EM has been defined as “first and foremost a project of technology-based and innovation-oriented strategy focusing on the efficient

use of resources and providing co-benefits for ecology and the environment” (Mol and Janicke 2009, 17).

The concept of EM originated in Germany in 1982 when the Berlin State Parliament, driven by a perceived crisis of unsustainable production processes in the industrial sector, launched a policy debate on the need to “give modernization processes a strong ecological twist” (Mol and Janicke 2009, 17). The term ‘ecological modernisation’ was coined by Joseph Huber, a German environmental social scientist to “provide a formula for the interplay of ecology and the economy” (Janicke 2008, 557). The original intention was to link the drive for modernization with the long-term requirements for more environmentally sound development. Contributions of Huber in the early 1980’s focused extensively on the role of technology in spurring environmental reform, and demonstrated a critical attitude towards the nation-state in favour of market based actors as drivers of technological and environmental innovators (Mol & Spaargaren 2000, 5). While market-driven technological advancements remain a central theme of EM, its theoretical scope has matured and expanded significantly.

*Complementary theoretical perspectives: modernisation theory and sustainable development*

Modernisation is the systematic, knowledge-based improvement of procedures and products (Janicke 2008, 2). According to modernization theory, the capitalist economic system has an intrinsic drive to constantly improve the efficiency and cost-effectiveness of its procedures. Through ecological modernisation, this compulsion towards improving procedures and products is placed at the service of the environment (Janicke 2008, 2). The central assumption of the modernization paradigm is that dominant institutions can indeed learn and that their learning can produce meaningful change (Hajer 1995, 85). Similarly, EM maintains that environmental reforms are not only possible, but inevitable within the framework of modern



societies; that is, within modern welfare states and a market-oriented economy (Mol and Spaargaren 2000, 19). EM challenges traditional environmental notions that fundamental changes to the core institutions of modern society - the industrialised production system, the capitalist economy, and the centralized state - are essential to the path of long term sustainability (Mol and Spaargaren 2000, 19). EM theorists maintain that successful environmental reforms are possible under a capitalist economy, where each sector requires its own environmental reform programme; in other words, one size does not fit all (Mol and Spaargaren, 2000, 23). So, while EM theorists acknowledge the need for conscious and coordinated institutional reforms to remedy the environmental problems they caused (Dryzek 2005, 167), the institutions themselves are not viewed as the problem. Rather than advocating the abolishment of the capitalist economy, EM theorists such as Mol and Spaargaren (2000, 23) are concerned with redirecting the free market so that it contributes to the preservation of the environment. EM then is not only a theoretical concept, but a "policy strategy based on a fundamental belief in progress and problem-solving capacity of modern techniques and skills of social engineers...drawing on modernist policy instruments such as expert systems and science" (Hajer 1995, 33). The literature on EM can be categorized between its descriptive, theoretical functions and its use as a prescriptive policy framework. Because theorists vary so widely in their use and interpretation of EM, it can be difficult to establish an agreed-upon definition of the theory.

The 1987 World Commission on Environment and Development's publication *Our Common Future* - better known as the Brundtland Report - popularized the concept of sustainable development. Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (UNWCED, 1987). Notably, the report recognized the dependence of humanity and our

economy on the environment, stating that “ecology and economy are becoming ever more interwoven - locally, regionally, nationally and globally” (UNWCED, 1987). Since then, there has been a visible shift in how environmental considerations are incorporated into both market and state policies and procedures (Berger et al., 2001, 57). EM, a sub-theory of the sustainable development paradigm, has attempted to analyze and interpret the nature of these transformations (ibid). In other words, EM seeks to understand and explain how environmental considerations are factored into policy decisions, and how these decisions ultimately create an ecological-economic win-win scenario.

Hopwood et al. (2005), provide a broad conceptual framework to aid in differentiating theories falling under the sustainable development paradigm. Ecological modernization is classified as both status quo supporting and reformist. Supporters of the status quo believe that sustainable development can be achieved within present institutions and structures. They argue that minor adjustments can be made without any fundamental changes to society, means of decision making or power relations (Hopwood et al 2005, 42). Generally, reformists are critical of the current policies of business and government, and accept that profound policy and lifestyle changes will be required at some point. At the same time, they acknowledge that these changes can be achieved from within the current social and economic structures. As we will see, there is a tendency among EM theorists to either support the status quo or be critical of current policies, divisions which can be attributed to varying usages of EM theory. Murphy (2000) has reviewed the work of major contributors in the field of EM over the course of its evolution to identify a set of key tenets that can be used to better define and understand the theory.

### *Central components of EM*

The central component of EM is that economic growth can be decoupled from its negative environmental impacts. Toke (2001) states that “probably the most fundamental point (of EM) is that environmental protection policies involve both gains for ecological wellbeing and for the economy - ecological and economic rationalities can be reconciled with a positive sum outcome” (Toke 2001, 281). Hajer also insists that current economic, political and social structures can internalize care for the environment, maintaining that “economic growth and the resolution of environmental problems can, in principle, be reconciled” (Hajer 1995, 25-26).

According to Janicke, the “urge to modernise is a compulsion inherent in capitalistic market economies” and while there are fundamental problems with this compulsion, it is “nonetheless possible to change the direction of technological progress and put the compulsion for innovation at the service of the environment” (Janicke 2008, 558). Janicke bases his argument on a series of cross-national studies he conducted by comparing the GDP and associated environmental impact of several countries. He determined that despite an overall decrease in environmentally harmful practices - such as the consumption of energy, cement and steel - GDP growth had continued to rise steadily (Murphy 2000, 2). In other words, economic growth was successfully decoupled from its environmental impacts. The path to environmental-economic harmonization is presented as rather complex, however, involving the participation of many different actors, and encompassing reforms in all areas of sectorial politics. Janicke’s research on this point remains highly contentious, however, as most scholars see little evidence that economic growth had truly decoupled from its environmental impacts. A study from Wiedmann et al. out of the University of New South Wales, for example, analyzes the material footprint of wealthy nations and finds achievements in decoupling economic growth from environmental impacts “smaller than reported or even nonexistent” (Wiedmann et al., 2015, pp.

6271). Still, EM theorists would maintain that given the compulsion to modernize this would eventually be the outcome; that environmental reforms are inevitable within a modern society (Mol and Spaargaren 2000, 19).

EM theorists vary in their interpretation of how this is accomplished. Some, like Martin Janicke (1993, 2000, 2009), emphasize the restructuring of national economies from environmentally harmful sectors towards industries that could be reconciled with environmental goals. Murphy describes this as an environmental ‘gratis effect’ - “environmental benefit which results seemingly unintentionally from macro-economic structural changes that take place as advanced industrial economies evolve (Murphy 2000, 2). In the case of the energy debate this strain of EM thought might argue that to become an ecologically modern state, a truly green economy, Canada would need to move away from environmentally harmful sectors like the petroleum industry. The majority of the literature on EM however, contends that with the proper technological advancements, even environmentally harmful industries could be made compatible with environmental objectives. This will be examined further below in the discussion on weak vs. strong EM.

#### *Role of technology and economic actors*

There is universal consensus among EM scholars that environmental solutions are and ought to be accomplished through the investment and development of innovative technologies in the industrial sector. The contributions of Huber, one of the earliest EM theorists, focused almost exclusively on the importance of technological innovation to overcome environmental crises. For Huber, the key to environmental reform was through the transformation of industrialised sectors from inefficient, polluting operations to cleaner, more efficient systems based on more sophisticated technologies (Huber, 1982 in Murphy 2000, 2). Specifically, Huber (1991, 48)

maintained that successful incorporation of EM required specially designed technologies such as renewable energy, low-impact chemicals, and innovative recycling programs to replace old, unsustainable technologies. He also advocated the replacement of costly, end-of-pipe solutions with productive and profitable new integrated technologies (ibid, 50).

While the theory has matured past its original, almost exclusively technological focus, the importance of technology and innovation in the industrial sector remain central within more recent work on EM (see, Mol and Janicke 2009). Science and technology have taken on new and crucial functions; these fields are no longer simply judged for their role in causing modern-day environmental problems, but celebrated for their role in both preventing them and solving existing ones (Mol and Sonnenfeld 2000, 7). Human ingenuity through technological advancement is the key justification given by EM theorists and others to justify continued growth and development on a finite planet.

Who is to lead the charge towards innovative industrial practices? Huber (1991) sees a particularly vital role for economic actors within the environmental reform process, identifying “businesses and entrepreneurs... as most important in achieving the transformation associated with EM” (Murphy 2000, 2). While EM theorists maintain that it is in the interest of both business and government to adopt more ecologically sound practices (Toke 2001, 281), industry in particular is said to benefit economically from increased productivity. Dryzek (2005, 168) identifies five ways in which environmental reforms can economically benefit a business: 1) less pollution means more efficient production; 2) preventative measures to avoid environmental damage are often cheaper than dealing with the consequences later; 3) an unpolluted work environment means more productive employees; 4) the increase in consumer demand for more environmentally friendly products means more business; and 5) there is money to be made in

selling green technologies themselves. Janicke (2008) also sees a lead role for markets and economic actors with respect to environmental governance. For example, the growing economic risk to heavily polluting industries in an era of increased environmental awareness may encourage innovation and increase the potential for creative environmental regulations (Janicke 2008, 558).

### *Changing roles of the state*

Early EM theorists, particularly Huber, believed that government ought to play a very limited role within the technological transformation of the industrial sector. He believed too much state interference would hinder the process of industrial innovation. There are however, a growing number of EM theorists who discuss the changing nature of environmental policy, regulation and decision-making at the state level. Theorists of this strand of EM are understood to have generally moved quite far away from Huber's original interpretation of EM, maintaining that a broader restructuring of policy goals in the areas of economics, energy, transport, and trade, are needed (Murphy 2000, 3). In this sense, EM can sometimes be characterized as a programme of action, where the "integration of environmental policy goals into all policy areas of government is considered central to a programme of EM" (Murphy 2000, 3). Janicke and Jorgens (2009) identify targets and results-oriented governance, the integration of environmental policy into all sectorial policies, and cooperative governance as imperative to successful environmental reforms. They further argue that "persistent, complex and long-term environmental problems demand targets that enable coordinated and continuous action" (Janicke and Jorgens, 2009, 166). It is government, then, that ought to oversee this coordination and integrate EM into their policies.

The recent emphasis on state intervention within EM literature stems from the belief that previous market failures up to this point are indicative of the need for political support to encourage the development and diffusion of eco-innovative technologies. Janicke (2008, 559) maintains that traditional neo-classical deregulation policies are ineffective, and that “smart regulation” plays a key role in the move towards environmental innovation. The idea is that to achieve environmental reform broader, more strategic policy changes are needed rather than technology-based solutions alone. In other words, environmental considerations must be “anchored in the institutional redesign from development to production to consumption” (Mol and Spaargaren 2000, 27). According to Mol and Spaargaren, it is this kind of thinking that establishes the link between EM as a general theory of social change, and a political programme and policy discourse (Mol and Spaargaren 2000, 28).

Innovative ways to incorporate environmental considerations into the economy are encouraged through policy prescriptions, including market-based reforms aimed at stimulating industry to innovate its operations (Murphy 2000, 3). In the energy sector, these policies could include market-based approaches such as a carbon tax, financial incentives for improving environmental performance or clean energy systems, or regulations in the energy industry. Notably, improved environmental regulations and technological advancements are generally argued to be advantageous to industry. Government regulations can encourage and promote innovation in the industrial sector, “provid[ing] the opportunity for technological transformation and sustainable development” by establishing clean standards and policy goals (Patanakul and Pinto 2014, 1). This can in turn create demand for new technologies, and help industry become more efficient. In their study of how environmental regulations affect innovation in the Australian oil and gas industry, Ford et al. found that “environmental regulatory burden relates

strongly to product and service innovations as well as all types of novel innovations” (Ford et al. 2014, 205).

Government regulations can also serve to even the competitive playing field by ensuring all businesses are subject to the same regulations, rather than businesses risking losing a competitive edge through voluntary approaches (Janicke 2008, 559). For example, upgrading crude oil refineries with the newest technologies may have large up-front cost and could discourage companies to voluntarily upgrade their processing plants. However, if all plants were forced through regulatory changes to upgrade their equipment, arguably no one company would bear an unfair economic burden. Government action in promoting and investing in the innovation and diffusion of innovative technologies is also a key policy prescription of EM (Murphy 2000, 3). These actions could include government funding of carbon capture and storage (CCS) - a technology which seeks to capture the carbon released through the burning of fossil fuels before they enter the atmosphere, and then bury it underground. Equally important is that states, in order to reach their environmental goals, must move away from bureaucratic, hierarchical and reactive command-and-control structures towards more flexible, decentralized and preventative methods of policy making (Janicke 1993, 35).

Certain states appear to have followed in this developmental path by implementing additional domestic policies, and there is now a general expectation that there will be an institutionalization of environmental considerations in state policies (Buttel 2009, 142). The European Union (EU) for example, has adopted legislation ensuring sustainability principles are ingrained in all EU activities. Countries such as the Netherlands, Germany and Japan have been identified as nations who have broadly adopted an ecological modernization policy framework (Murphy 2000, 3). Although North American policy makers have been much slower in adopting



principles of sustainability into legislation, it is becoming increasingly clear that policymakers are being forced to consider the environmental implications of their policy decisions. At the very least, Canadian policy makers must give the impression that they are addressing environmental concerns. The “complete neglect of the environment” and the “fundamental counter positioning of economic and environmental interests” are no longer accepted as legitimate positions (Mol and Sonnenfeld 2000, 7). There are criticisms, however, as to the degree in which EM, rather than simply the rhetoric of EM, has been institutionalized. This will be discussed further in the following chapters.

*EM discourse: embedding social and political ‘storylines’*

EM consists of “a set of interrelated statements concerning relationships between the environment the economy, and state intervention” (Toke, 2011, 279). In this sense, theorists like Hajer (1995, 1996) and Dryzek (2005) have used discourse analysis to study how EM might contribute to changing cultural politics, or be used to explain the social construction of environmental issues (Murphy 2000, 3). For Hajer, this is accomplished through analyzing the creation and institutionalisation of particular “story-lines” within the environment-economy debate. These story lines are becoming culturally embedded into our collective psyche, and frame a discussion in a way that makes some elements appear fixed or appropriate while others appear problematic (Hajer 1995, 54). In the case of EM, environmental problems are framed as a matter of inefficiency, and thus economically inefficient. At the same time, environmental problems are presented as having the potential to create positive opportunities, and that anticipatory rather than reactionary responses to environmental problems are best (Hajer, 1995, 65). By integrating environmental considerations into policies and operations before they become problematic, industry and government gain a competitive advantage. According to

Hajer, these story lines can be linked to observable changes within environmental policy. An example here could be the popularization of the ‘precautionary principle’, which first appeared in scientific reports and then gained momentum during international discussions on how to address global environmental crises such as climate change (Hajer 1995, 68).

At the core of EM is the idea that ‘pollution prevention pays’ (Hajer 1995, 3), and it is essentially an efficiency-oriented approach to environment reform (Christoff 1996, 482). More recently, Janicke (2008) has linked EM with the concept of eco-efficient innovation, or the introduction of environmentally friendly technology that also increases resource productivity (Janicke 2008, 558). In this sense, environmental pollution and degradation caused by industry are framed as ‘inefficient’. By reframing environmental pollution as a matter of inefficiency, EM uses the language of business and operates within the boundaries of cost-effectiveness and administrative efficiency (Hajer 1995, 31). It is more cost-effective for example, to use fewer virgin materials in production processes, in the same way that mitigating climate change now may be cheaper than adapting to its consequences later. This discourse has proven effective in framing environmentally harmful practices as economically unwise, and EM has been a particularly useful concept for those wishing to see environmental change happen within the existing economic system. Because of its use of business language and the fact that it does not challenge traditional notions of unlimited economic growth and development, EM (like sustainable development), has become an attractive discourse for policy makers, industry leaders, and moderate environmentalists. While some argue that this has helped institutionalise environmental governance, others maintain the discourse of EM has been used primarily as a form of “green washing”, or a way to legitimize environmentally harmful policies and practices (Connelly and Smith (1999) in Berger et al., 2001, pp. 61).

### *Institutional reflexivity*

For Mol, EM is an observable phenomenon which can be studied empirically within public and private institutions (Murphy 2000, 4). Through his work researching the Dutch chemical industry, Mol describes how environmental considerations have moved from the periphery to the centre of decision-making within political and economic institutions (Murphy 2000, 4). For Mol, analyzing this transformation is key to understanding the “growing independence of ecological rationalities vis-à-vis political or economic rationalities when making policy decisions (Mol and Janicke 2009, 22). In other words, a central purpose of EM theory has been to understand how states and industries are incorporating environmental considerations into their practices. Within the energy sector of developed nations for example, there has been a visible shift from reactive approaches such as adding scrubbers and filters to smokestacks to manage air pollution, to more anticipatory and precautionary solutions like integrated pollution prevention, waste minimization efforts and increasingly efficient use of resources (Berger et al. 2001, 57). Most industries, including the fossil fuel industry, are paying attention to waste outputs, and improving resource efficiency (ibid). Today, virtually all industries now place a greater emphasis on environmental protection and awareness in their day-to-day operations. Janicke too, points to the rise of “knowledge-based” policy making which includes innovative environmental policy-making such as monitored targets, co-operation, participation and policy integration (Janicke 2008, 562). According to EM, these innovative policy measures are indicative of the increasing prevalence of reflexive environmental policy making among industrialised nations.

### *Weak vs. strong EM*

It is important to note the distinction between two development paths that are apparent within EM literature. Maarten Hajer (1995) first distinguished the divide between a ‘techno-corporatist’ and ‘reflexive’ approach to EM. The techno-corporatist literature on EM focuses mainly on technological change as an autonomous outcome of market forces. In this sense, environmental improvements are purely a techno-administrative affair, driven by economically efficient use of resources and the elimination of negative outputs such as waste and pollution. On the other hand, reflexive approaches to EM are said to encourage a “deliberate and strategic political transition to an ecological democracy” (Hajer 1995, 282). Reflexive EM points to practices of social learning and new institutional arrangements (Mol and Spaargaren, 2009, 21). Key here is the difference between those EM theorists who view environmental reforms as an inevitable outcome of the capitalist economy’s drive to modernize, and those who see environmental reforms as being a deliberate incorporation into the political economy.

Christoff (1996) makes a similar distinction between ‘weak’ and ‘strong’ EM. ‘Weak’ EM is characterized by its limited scope of policy measures, focused almost exclusively on technological solutions to environmental problems. The role of government is limited to minimal state intervention, market facilitation, and information distribution. Its policy approach is instrumental; calculated on a cost-benefit analysis and characterized as technocratic and hegemonic (Christoff 1996, 104). In this sense, Christoff views weak EM as a strategy primarily intended to maintain or improve market competitiveness where environmental benefits are incidental rather than at the core (ibid). Similarly, Dryzek agrees that in the weakest versions of EM, the literature is concerned only with the “re-tooling of industry and agriculture along more environmentally responsible but still profitable lines” (Dryzek 2005, 168). Strong EM - or what Dryzek (2005) refers to as a radicalization of EM - can be treated as a restructuring of political

and economic life, rather than simply modernizing industrial systems. In this sense, the scope of change within strong EM literature is much broader, seeking institutional change and viewing leadership roles for government as key to successful environmental reforms. Strong EM literature maintains that it is the government's role to restructure and reform economic and regulatory policies, while at the same time encouraging communicative, open and deliberative discourse between a wide range of actors. Furthermore, strong EM "favours communicative rationality and participatory public deliberation, accepts activism and recognizes the transnational aspects of [environmental] issues (Dryzek et al. 2003, 230).

Dryzek (2005) offers a useful example to illustrate the difference between weak and strong EM that is worth mentioning here. In an effort to reduce GHG emissions, the U.S. state of California passed a law forcing more efficient technical changes to car engines. Despite these changes however, emissions continue to rise because the growing number of cars on the road offsets the reductions made from innovative changes to car engines. The changes to car engines is a technical-solution to an environmental problem that, in the absence of any other factors, could significantly reduce emissions. This is an example of a weak EM approach. A strong EM approach would focus on broader, more long-term policy measures aimed at developing and promoting robust public transit systems and controlling urban sprawl, thus reducing the number of cars on the road (Dryzek 2005, 174). In the context of the energy debate in Canada, a similar analysis can be made. In Alberta, discussions of emissions reductions strategies to curb climate change have centered around technological solutions such as CCS. CCS technology has so far proven insufficient to reduce emissions on the scale needed to address climate change, and the technology says nothing of downstream emissions from burning fuel for automobiles, electricity and air travel. Under a strong EM framework however, policies might be aimed at gradually

transitioning from a fossil fuel exporting country, towards a more knowledge-based, innovative economy focused on the development of renewable energy resources (Clarke et al., 2013). This framework includes broader changes to economic institutions and can be regarded as an example of strong EM. As will be discussed further, weak EM is in line with much of the thinking behind proponents of the petroleum-centered, while the green economy is more in line with stronger EM.

Some EM theorists, including Janicke, argue that the term ‘ecological modernisation’ should refer only to its original, economic-technical version, or at least restricting its use to increasing levels of eco-efficiency (Janicke 2008, 4). Eco-efficient innovation, or the introduction of environmentally friendly technology which also increases resource productivity, comes closest to defining ecological modernisation, and although equally important, institutional restructuring beyond the technical is something else altogether (Janicke 2008, 4). Others like Christoff (1996) question the degree to which fundamental ecological reforms can be achieved through almost exclusive reliance on technology. He points to technological laggards, and those unwilling or unable to develop newer, cleaner technologies for example. It is important to note, however, that the two paths of EM are not always direct opposite of one other and “some features of weak EM are necessary... for an enduring ecologically sustainable outcome” (Christoff 1996, 113). Regardless, given the dominant emphasis on increasing the environmental efficiency of industrial development and resource exploitation, most of the literature on EM remains only superficially or weakly ecological (Christoff 1996, 109). For this reason, unless otherwise noted, the term ‘EM’ will refer to the weak EM definition as outlined above for the remainder of this paper.

## **Research methods**

As noted in the literature review, EM has a number of uses, including as a theoretical concept, a discourse, and a policy framework. Because of this, it is important to clarify how it is being used in this project. While this thesis will draw on EM's use as a theory and discourse in the context of the Canadian energy debate, the purpose of this project to determine if EM as a policy framework can be used to reconcile environmental, economic, and political agendas. To test the application of EM to the Canadian energy debate, a set of criteria has been established to assess the capacity of the petroleum-centered and green economy visions in meeting environmental, economic, and political agendas. It should be noted that these criteria are not meant to be a complete representation of the multifaceted components driving the debate. Rather, they are meant to establish the capacity of each vision in meeting minimum internationally recognized environmental and economic standards, and to provide an indication as to the likelihood of overcoming wide-ranging, complex political challenges. By comparing the environmental, economic and political capacity of each vision, this project will 'test' EM's assumption of a 'win-win' scenario for the environment and the economy in the Canadian context. This thesis will examine a series of reports, position papers, peer-reviewed studies and examine the central components of each position including key actors and policy recommendations for industry and government.

### *Economic criteria*

Nearly all governments are driven by an economic growth imperative, and Canada is no different. The short and long-term growth of the Canadian economy will continue to be an important consideration in any future energy trajectory. Further, any policies aimed at mitigating climate change must factor in potential economic impacts. When determining a country's overall

economic performance, economists generally look at two indicators - annual average GDP growth and employment rates.

A steady annual GDP growth rate is a widely used indicator of the overall health of an economy. While fluctuations are common, investors look for long-term GDP figures to stay within the 2-3 percent range when making business decisions (Amadeo, 2018). This level is high enough to ensure corporate profit and job growth, but not so high as to risk inflation (ibid). Between 1998-2017, the average annual GDP growth rate among Organization for Economic Cooperation and Development (OECD) countries was 2.1 percent. This figure will be used as a benchmark to compare projected GDP growth rates under the petroleum centred and green economic visions to give an indication of their likelihood in maintaining stable economic growth. Employment is another critical factor in assessing economic performance, and projected job growth numbers under both the petroleum centred and green economy visions will be compared.

#### *Environmental criteria*

There is near-universal scientific consensus that to avoid the most severe environmental, social, and economic impacts of climate change, global temperatures should not rise more than 2° Celsius above pre-industrial levels (UNFCCC, 2015). The 2009 Copenhagen Accord was recognized by 114 states including Canada, and explicitly acknowledged the need to keep global warming below 2°C. In 2015, 196 states at the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP) formally adopted the Paris Agreement, which reiterated the goal of keeping global temperature rise below 2°C and, going further, to limit the increase to 1.5°C. Each signatory of the Paris Agreement agreed to outline and communicate their post-2020 climate actions, known as Nationally Determined



Contributions (NDCs). Collectively, these NDCs constitute the global action required to achieve the Paris Agreements' goal of limiting warming to between 1.5-2°C.

It is important to note that there is growing debate as to whether limiting global temperature rise to 2° is even possible at this point, or whether this target would be sufficient to mitigate the most dangerous consequences of climate change. A 2018 report from the Intergovernmental Panel on Climate Change (IPCC) found that a 2° warming, versus a 1.5° warming, would result in significantly worse climate change related impacts. Much of the world would be expected to experience an increase in extreme weather such as drought, heat waves, floods, and wildfires, as well as sea level rise, habitat loss, and water shortages (IPCC 2018). For this reason, there is growing chorus of scientists warning that the world should limit warming to 1.5°. Still, the 2° target remains the best internationally recognized benchmark to judge the success of climate change mitigation. In the context of this project, the petroleum-centered and green economic visions will be assessed based on their ability make a 'fair share' contribution to the 2° Paris Accord goal. The environmental criteria will be assessed using GHG emissions data from Environment Canada, as well as a 2018 study conducted by leading climate economists Dave Sawyer and Chris Bataille (Sawyer and Bataille, 2018).

### *Political criteria*

An energy framework which can theoretically satisfy environmental and/or economic demands is not necessarily one that is politically viable. The implementation of any energy or climate change strategy faces significant political obstacles beyond economic logic or environmental reasoning. This thesis identifies five key political challenges associated with the Canadian energy debate: 1) regional interests and values; 2) differing ideas of real and perceived distributional effects; 3) "veto actors" in the realm of energy policy making (MacDonald and

Houle, 2012); 4) competition in contemporary energy federalism (Gattinger, 2013); and 5) historical rigidities (Haley, 2011).

Provinces and territories are responsible for setting their own energy and environmental policies, and do so based on their own unique set of regional interests and values. These regional interests significantly impact discussions and the development of a unified approach to energy and climate change policy. Distributional effects refer to the impacts, real or perceived, faced by stakeholders as a result of a policy measure (Macdonald and Houle 2012, 3). Key to the discussion of distributional effects is the concept of fairness; do the policy measures needed to achieve an objective unfairly punish some while benefitting others? In their study, MacDonald and Houle use the concept of distributional effects to study Canadian climate-change policy. Pal and Weaver (2003) define a veto actor as “an individual or collective actor whose agreement is required for a change in policy (Pal and Weaver 2003 in MacDonald and Houle 2012, 11). Veto-power is a major factor in discussions surrounding pipelines and the ability of the federal government to impose emissions reductions legislation on constitutionally empowered provinces. Here, the ongoing fight over the Trans Mountain pipeline will be a useful example. The work of Monica Gattinger (2013) on what she calls the historical “hyper-competitive federalism in the energy sector” will also be explored as a uniquely Canadian political challenge. Finally, political economist Brendan Haley’s work on Canada’s role as a resource-based, margin economy and the historical rigidities that role reinforces will be explored in the context of the Canadian energy debate. In the following chapters, each of these political challenges will be examined to determine the likelihood of both the petroleum-centered and green economy visions in overcoming them. This will be used to draw conclusions as to the political viability of each approach.

## **Chapter outline**

Chapter 2 will begin with a historical outline of the federalist nature of Canadian energy and environmental policy-making, highlighting key conflicts and challenges. This overview is important for establishing the interconnected relationship between energy and environmental policy in Canada and will provide context for a later discussion on the current political obstacles associated with implementing a national energy policy that meets national emissions targets. The second half of chapter 2 will outline recent calls for coordinated national policies on energy and climate change, highlighting four differing perspectives and more broadly, outlining the two approaches to energy development that will be the focus for the remainder of the project.

Chapter 3 will examine the petroleum-centered approach to energy development in Canada, examining the rationale, key priorities and policy recommendations put forward by its supporters. Part two will examine the economic risks and benefits associated with oil sands development, followed by an assessment of environmental implications. The chapter will conclude with an examination of the political implications of a petroleum-centred energy strategy, and draw conclusions as to the likelihood of overcoming key political challenges. It will be determined that while there are short-term economic benefits associated with developing Alberta's oil sands, there are major economic and environmental risks associated with this approach to energy development in Canada, both in the short and long term.

Chapter 4 will examine calls for a more ecologically-centered approach to energy development and climate change policy in Canada. There will be a discussion of key factors driving demands for a new energy vision for Canada, as well as an outline of priorities and policy recommendations put forth by proponents of the green economy. Many of the documents examined in this section link strong environmental policies with new economic opportunities for

Canada. Further, many challenge the conventional notion that oil sands development is economically beneficial for Canadians. Of particular focus here will be the work of Brendan Haley and what he calls the Canadian “carbon-trap”; the risks Canada faces by becoming increasingly dependent on carbon-based sources of energy as a key economic driver. Section two will assess the green economy vision according to the economic, environmental and political criteria outlined above. It will be determined that while some economic challenges exist in creating and implementing effective green economic policies, it is political obstacles that pose the greatest challenge to the implementation of a green energy strategy in Canada.

Chapter 5 will draw comparisons between both visions of energy development, highlighting their political, environmental and economic strengths and weaknesses. The discussion will be linked back to the concept of EM, and final conclusions drawn as to the usefulness of the theory in reconciling three competing agendas. This thesis will conclude by acknowledging some success with EM in helping to understand how industrialized societies are changing their views of the environment and incorporating ecological considerations into policy decisions. In theory, a green economy approach to energy development could satisfy Canada’s desire for both steady economic growth and action on climate change. Based on the continued political importance of the oil sands at time of writing however, it can be argued that the dominant vision within Canadian energy politics is a BAU approach combined with elements of EM discourse. The current political climate in Canada remains unfavourable to the transformative institutional reforms necessary to implement a truly ecologically modern national energy strategy. From a Canadian perspective, EM’s promise of an environmental-economic “win-win” scenario appears to be outweighed by political challenges.

## **CHAPTER 2 ENERGY AND ENVIRONMENTAL POLICYMAKING IN CANADA**

Since the 1960s when the environmental movement began to emerge into mainstream social and political dialogue, energy and environmental policies have been interconnected. More recently, issues such as First Nations land claims in energy rich areas and concerns over the impact of the fossil fuel industry on climate change have strengthened these links. The challenges of creating effective climate change mitigation policies that do not conflict with conventional energy production have proven especially difficult. The IPCC maintains that the burning of fossil fuels is the dominant cause of climate change (IPCC 2014, 4) and the International Energy Agency (IEA) has stated that the Paris Agreement on Climate Change is, at its heart, an agreement about energy (IEA 2016, 1). Attempts at policy implementation become more complicated in a federalist state like Canada, where constitutional authority over energy and environmental policies is shared between the provinces and federal government.

### **Energy policy in Canada**

Some scholars argue Canada has one of the most divided and decentralized constitutional arrangements for energy policy among Western industrialized states (Gattinger 2013, 6). Under the Canadian constitution, provinces own the rights to their underground resources and, apart from First Nations territories and certain federally-protected areas, are responsible for the regulation, production, distribution, and planning of their energy resources and policies. As a result, provinces are powerful players within the energy policy landscape (MacDonald and Lesche 2013, 12).

The federal government plays a role in energy policy-making in the regulation and review of infrastructure crossing provincial boundaries, regulating emissions from energy

producers, and encouraging foreign direct investment (FDI) and trade relationships. They can also use their purchasing power to subsidize certain industries, provide incentives for industry, and impose market mechanisms such as carbon taxes. Natural Resources Canada (NRCan) is responsible for developing policies aimed at promoting resource development deemed to be in the national interest and plays a regulatory role on energy products. The National Energy Board (NEB) - an independent federal agency - regulates interprovincial and international aspects of oil, gas and electricity, as well as pipeline infrastructure and approvals of new energy projects. The NEB is mandated to factor in economic, environmental and social considerations when making decisions on energy projects. The federal government's jurisdiction in energy-related matters is far from cut and dry, however. Their current climate change strategy, the Pan-Canadian Framework on Clean Growth and Climate Change (PCF), includes a mandatory national carbon price enforced on any province without their own carbon pricing policies in place. However, despite the federal government's apparent constitutional authority to do so, the carbon price plan faces significant opposition from several provinces. This will be discussed further below.

The federalist nature of energy politics in Canada has created a system where policies often overlap, and where federal and provincial energy initiatives can be incompatible with one another. Energy resources vary greatly from province to province; the concentration of fossil fuel-based energy in Alberta, Saskatchewan and Newfoundland compared with the abundance of hydro-electric capacity in B.C., Manitoba, Ontario and Quebec have led to very different regional interests (Gattinger 2013, 2). The resulting policy landscape is a complex, inconsistent system characterized by provinces pursuing their own interests more or less independently of their federal and provincial counterparts. When there is direct interaction inter-provincially or

between provinces and the federal government, there tends to be jurisdictional conflict (Gattinger 2013, 8). Interprovincial pipelines such as the Trans Mountain proposal highlight this conflict and will be discussed further in Chapter 3.

### **Climate change policy in Canada**

Federally, environmental policies are governed through the Department of Environment and Climate Change Canada (ECCC). While not directly involved with conventional forms of energy development, the department is mandated to conserve Canada's non-renewable energy sources, monitor GHG emissions, and coordinate environmental policies and programs for the federal government (ECCC, 2017). Further, the ECCC is tasked with "informing Canadians about protecting and conserving our natural heritage, and ensuring a clean, safe, and sustainable environment for present and future generations" (ECCC, 2017). Officially, the federal government is also responsible for creating national climate change mitigation policies and represents Canada in major international discussions on climate change. It was the federal government that signed the Kyoto Protocol and the subsequent Paris Accord where national emissions reductions target were solidified.

The federal government has taken some action to address climate change, including the introduction of improved performance standards and plans to phase out coal-fired power, new vehicle emission standards, and the national carbon pricing policies which came into effect in January 2019. It is provincial governments however, who have so far made the most climate-change related progress (Fertel et al. 2013, 1143). Two of the best examples of action on climate change in North America were created and implemented by provincial governments, namely Ontario's elimination of all coal-fired energy generation, and the successful implementation of a carbon tax in British Columbia. Alberta's carbon tax, introduced in January 2017, has also been

hailed as a progressive emissions-reductions strategy. Provincial-related climate change progress will be discussed in further detail in chapter 4. Municipal governments can also play an important role in developing and implementing climate change mitigation measures by introducing more efficient public transportation, environmentally-friendly building regulations, procurement policies, and grassroots initiatives such as Halifax's award-winning Solar City Program, for example.

Much like energy policy however, provinces have generally implemented climate change policies that suit their economic interests. As noted above, the federal government is responsible for negotiating international agreements and treaties related to climate change and regulating the energy-sector. At the same time, provinces and territories have the constitutional authority over their natural resources. One can see the dilemma then, when the federal government legislates nation-wide carbon pricing, only to be met by opposition from provincial governments who refuse to implement the appropriate policy measures. Ontario, Saskatchewan, and New Brunswick are currently challenging the federal government's carbon tax in court, arguing that it is unconstitutional and violates provincial jurisdiction. After originally agreeing to the plan, Manitoba announced in October 2018 that it would no longer support the carbon tax. Many observers however, have noted the provinces are unlikely to be successful in their court challenge. According to an independent legal opinion commissioned by the Manitoba government, there is a "strong likelihood" that the Supreme Court of Canada would uphold the proposed carbon price, based on the federal government's "broad taxation powers" (MacPherson 2017, parag. 1-2).

### **History of energy and environmental federalism in Canada**



Throughout the 1980's and 1990's, Canada played a leading role in international cooperation efforts to address global ecological challenges. Canada was instrumental in the development of the Montreal Protocol on Substances that Deplete the Ozone Layer (Matthews-Glenn & Otero 2013, 491), and sponsored the first major international conference on climate change in Toronto in 1988. Canada played a key role in securing an agreement on the UNFCCC in Rio in 1992, and earned recognition for environmental stewardship for its part in drafting the Kyoto Protocol. In 1997, the federal government signed the Kyoto protocol and committed to reducing its GHG emissions to 6% below 1990 levels by 2012.

Between 1992 and 2002, the National Climate Change Process (NCCP) was the inter-governmental forum for federal, provincial and territorial governments to explore options and reach a consensus on how best to meet its Kyoto targets. From the beginning of the process, it was made clear that “no region should bear an unreasonable burden from implementing the Protocol” (NCCP, 2000). This guiding principle was important in securing Alberta's participation, as policymakers in the province were wary of policies that could harm its oil industry. There were concerns that a national GHG reduction strategy would unfairly harm the Alberta economy and after many failed attempts at reaching a compromise, Alberta withdrew from the NCCP in 2002. Ultimately, regional difficulties in reaching a consensus, combined with a perceived economic disadvantage from the U.S. refusal to sign the Protocol contributed to Canada's failure to meet targets and eventually withdraw from the Kyoto Protocol in 2011.

Canada's federal system means provincially-owned resources contribute to climate change and the regional conflict amongst these constitutionally-empowered provinces could prove a significant challenge in realizing national emissions-reductions policy under the PCF. While resistance in some provinces continues, changing geo-political landscapes in the realms of

energy and the environment have forced most provincial policy-makers to accept some form of national energy coordination as necessary to achieve meaningful emissions reductions.

Until very recently, federal governments have shied away from public discussions of national energy coordination. The issue has been a contentious one in part because of the controversial National Energy Program (NEP) introduced in 1980 by Pierre Elliot Trudeau's administration. The NEP was created in response to fears over a mounting global energy crisis and called for increased Canadian ownership and control in the energy industry, preferential pricing for Canadian consumers, restrictions on energy exports, and several other protective measures meant to increase energy security and independence from world markets (Gattinger, 2013, 1). The backlash from the Alberta government, who viewed the NEP as an infringement on their constitutional resource rights, was severe. The Program not only damaged federal-provincial relations with Alberta, but also Canada-U.S. relations, with the American government portraying it as an attack on American energy security and company operations in Canada (Gattinger 2013, 2).

The NEP was ultimately undone by the signing of the Western Accord, which deregulated oil prices and opened the door to international trade, and its final remnants were done away with in 1984 after the election of Brian Mulroney's Conservative Party. Since then, federal energy policy has been characterized by a strong tendency towards energy deregulation and pro-market policies (ibid). Lingering sensitivities over the NEP program continue to affect Western and federal relations today and according to Gattinger, has created a norm of competitive federalism in the energy sphere where provinces "vigorously assert their dominance and defend their powers over energy, and develop their energy policies in mostly autonomous ways" (ibid, 2).

Despite the failure of the NEP, the need for provincial cooperation on energy infrastructure reignited the concept of a national approach to energy development in 2007. That year the Canadian Council of the Federation (CCF), made up of Canada's 13 provincial and territorial premiers, published plans for what they called a "shared vision" for energy in Canada (Gattinger 2013, 15). The document was comprised of three guiding principles: secure, sustainable, reliable and competitively-priced supply, a high standard of environmental and social responsibility, and continued economic growth and prosperity (CCF 2007, 3). The CCF's vision spurred a flurry of reports from industry and environmental groups on the idea of a nationwide energy plan. These reports led to the creation of the Winnipeg Consensus group: a consultation and dialogue process that brought together representatives from think-tanks, industry and environmental organizations to discuss possible national approaches to energy development. The group agreed that a national dialogue was needed to address the increasingly interconnected and complex role of energy in Canada's environmental and economic future. In 2010, members of the Winnipeg Consensus met with industry and business groups in Banff to further the discussion on whether Canada needed a national energy strategy.

Participants in the Banff Dialogue agreed that a nation-wide energy strategy was needed immediately or else Canada would face missed economic opportunities and risk damaging its international reputation. While the final report recognized the need for clean energy, innovation in green technology, economic opportunities in green energy and jobs, and a market-based emissions reductions scheme, it also highlighted the importance of supplying emerging overseas markets with fuel from the oil sands (Banff Report 2010, 11). According to Roger Gibbins, CEO of the Canada West Foundation and one of the first to write on the need for a national framework to guide Canada's energy future, such a strategy would "tap new efficiencies and strengths by

reducing costs, complexity and uncertainty for business, providing greater policy coherence at home and on the international stage, and strengthening the contribution of the energy sector to Canadian economic prosperity while protecting the economic union from further policy fragmentation” (Gibbins 2010, 72). The Banff Dialogue was important in putting the concept of a CES on the national policy agenda. Likewise, it highlighted how intergovernmental challenges and jurisdictional complexities could negatively impact the creation of a cooperative and comprehensive strategy (Gibbins 2010, 71). Indeed, it became clear that the creation of any CES would require the cooperation of all levels of government – federal, provincial, and territorial.

In 2012, at the height of the oil sands boom, then-Alberta premier Alison Redford proposed her vision for a national energy strategy at a First Ministers meeting. The focus of Redford’s plan, which would eventually become the premiers’ 2015 Canadian Energy Strategy, was achieving the necessary cooperation to move landlocked Alberta oil to the Canadian coast for export to overseas markets (Paris 2012, parag. 6-7). The bulk of the plan was essentially an outline of Alberta’s energy strategy based on expanded oil sands development, stressing the importance of market diversification, pipeline infrastructure, and streamlined regulatory reviews for new energy projects. These goals were shared by the Conservative government under Stephen Harper, whose administration made oil sands development and securing access to overseas markets a top economic priority (Dodge & Dion 2016).

### **Business-as-usual: The Harper era**

From 2006-2015 the Harper administration, provincial policymakers in Alberta and Saskatchewan, and industry leaders embarked on an aggressive campaign to promote Alberta oil at home and abroad. Controversial energy projects like the Northern Gateway pipeline received enthusiastic endorsement by the Harper government and were promoted to Canadians as a

nation-building, mutually-beneficial projects. Meanwhile, the government pushed two omnibus bills through parliament in 2012 that gutted domestic environmental laws, most notably the Fisheries Act and Navigable Waters Protection Act, to make it easier for pipelines to gain approval (Livesey 2018, parag. 46-48). The administration was also responsible for withdrawing from the Kyoto Protocol – awarding Canada the dubious distinction of being the only country in the world to have ratified Kyoto only to withdraw. These actions were widely condemned by environmental groups and viewed as proof of the administrations’ hostility towards environmental reform. Indeed, the government repeatedly failed to introduce a price on carbon or any kind of national plan to combat climate change. In short, this era was characterized by policies aimed at rapidly developing Alberta’s oil sands and eliminating environmental regulations seen to be hindering these efforts.

While the Harper administration was accused of blocking efforts to address climate change and promoting an unsustainable BAU policy programme, even they recognized the need to legitimize the oil sands industry in the wake of mounting environmental criticism. Their strategy included occasional use of EM language to justify continued oil sands development. In 2012, former Natural Resources Minister Joe Oliver stated that “some claim that it is an either/or proposition, the economy or the environment. We disagree. We believe the two can - and must - go together” (Davidson, 2012). Notably, the administration focused almost exclusively on technology-based solutions to lowering GHG emissions, particularly CCS. Industry proponents used similar language, highlighting how the environment and the economy go hand-in-hand. The now-defunct Energy Policy Institute of Canada (EPIC), an industry lobby group, released their energy strategy report in 2012, clearly stating that it did not “segregate economics, environment

and social components but rather, [they] are considered blended throughout our work” (EPIC 2012, 11).

Despite the Harper administration’s occasional use of EM language, the government’s position was fundamentally BAU, prioritizing economic interests above all else. In his analysis of a decade’s worth of public statements from Stephen Harper and his top officials, Blair (2017) found three recurring themes. First, the argument that economic growth should be prioritized over environmental protection, second that adopting more ambitious climate policies would harm Canada’s international competitiveness and finally, that the country’s entire economy could be damaged as a result of robust climate protection policies (Blair 2017, 769). This is what Blair refers to as the Harper administration’s “trade-off” framework – an attempt to frame the relationship between international economic competitiveness and climate policies as conflicting (ibid, 764). In 2009, former Environment Minister Jim Prentice remarked to group of business leaders in Quebec that “ultimately, the only effective environmental policy is one that takes into account the competitiveness of the Canadian economy” (ibid). The same year, Prentice noted that “imposing requirements on emitters regardless of their economic consequences” would result in dire consequences for the entire Canadian economy (ibid, 770). While the Harper government used EM language to gain social license for the oil sands industry, trade-off language was far more common and clearly demonstrated the value the government placed on the economy over the environment.

It is important to note that previous Liberal governments also supported oil sands development. What differentiated the Harper administrations’ framing of the environment-economy debate, however, was the “extraordinary length of its commitment” to the messaging that strong climate policy would ultimately harm the Canadian economy, even from the

Environment Department (Blair 2017, 771). Liberal governments under Jean Chretien and Paul Martin instead favoured a “synergy frame” that presented strong climate policies as encouraging “innovation, greater efficiency and technological development, giving a country’s industries an edge in international competition (Blair 2017, 771). As will be discussed further below, the “synergy frame” is more in line with EM and is also used by the current Trudeau administration.

### **Changing narrative: The Trudeau era**

For the first year after the Liberals took office in 2015, the narrative changed to one of improved cooperation among the provinces and federal government in realm of energy and environmental policy making, and took on a noticeably more environmentally-friendly tone. The election of the NDP government in Alberta in 2015 amid plummeting oil prices and mass layoffs in the oil and gas industry also contributed to a changing narrative around the oil sands. Among other things, both governments campaigned on promises to improve environmental legislation and protections.

The Trudeau government has taken a more active leadership role in national and international discussions around climate change; Canada’s participation at the COP21 talks and subsequent signing of the Paris Agreement has arguably improved Canada’s international reputation on the environment. At the COP21 Conference, Trudeau’s use of the synergy frame was apparent when he announced his government’s plan to introduce policies aimed at developing a low-carbon economy to “make sure [Canada is as] competitive and energy efficient as possible” (Blair 2017, 775). At the same time, the Trudeau administration’s PCF was developed in collaboration with the provinces and territories and seeks to "grow [Canada's] economy while reducing emissions and building resilience to adapt to a changing climate" (ECCC 2016, 1). The PCF includes a \$518 million climate change adaptation fund for local

governments, a five-year moratorium on oil and gas drilling in the Arctic, and nation-wide carbon pricing.

Despite a seemingly fresh commitment to environmental governance and continued use of ‘synergy’ language to frame the economy and environment as complementary, the Trudeau administration is supportive of continued oil sands development. The government approved both the Trans Mountain and Line 3 pipeline projects, calling the former “of vital interest to Canada and Canadians” (Chase 2018, parag. 7). In May 2018, in an effort to ensure the project goes ahead, the Trudeau government made the controversial decision to purchase Kinder Morgan’s Trans Mountain pipeline for \$4.5 billion, further solidifying its commitment to diversifying oil markets beyond the U.S. (Chase 2018, parag. 4). Some analysts have argued the Trudeau government's political future hinges on its ability to get the Trans Mountain project approved and built amid an inter-provincial battle between B.C. and Alberta (Ibbitson, 2018). Speaking on the standoff over the Trans Mountain pipeline, Manitoba premier Brian Pallister told CBC News in April 2018 that the Canadian federation is currently in a state of “confusion and disarray” over the constitutional division of powers between federal and provincial governments (Zimonjic and Kapelos, 2018).

Support for pipeline infrastructure and expanded oil sands development comes in stark contrast to the kinds of policies environmental groups say are necessary to take meaningful action against climate change, and would only further entrench Canada into carbon dependence at a time when the world is in the beginning stages of weaning itself off fossil fuels.

Environmental activist group Sum of US claims it is impossible for the Trudeau government to be both a leader in environmental protection while also approving pipelines (Rabson 2018, parag. 20). Indeed, there is evidence to debunk the administration’s claim that “protecting the



environment and growing the economy go together” (Canadian Press 2018, parag. 8) while still pursuing new oil sands development. Analysis has shown that only a complete phase-out of oil sands production combined with significant replacement of electricity with renewable sources and stringent efficiency measures would enable Canada to plausibly meet its 30 percent emissions reductions target by 2030 (Harvey & Miao 2018, parag. 3). The administration has also faced criticism for failing to cut oil sands subsidies; the Liberal Party previously campaigned on a promise to cut \$1.6 billion in federal subsidies to the oil industry but at the time of writing no action has been taken (Livesey 2018, parag. 78). For these reasons, the Trudeau administration's reputation as a climate leader has waned both at home and abroad in recent months.

### **Petroleum-centered and green economy visions**

Fears over a dramatic reduction in U.S. demand for Canadian crude oil combined with the desire to take advantage of energy-hungry markets in Asia and India are at the core of the petroleum-centered vision for national energy development. Proponents of the petroleum-centered approach maintain that Canada must take full economic advantage of its vast natural resources, especially the oil sands, and facilitate cooperative access to global energy markets (CAPP, 2018; Alberta, 2018). This means creating the infrastructure and policies necessary to rapidly develop Alberta’s oil sands, and to promote long-term trading partnerships in overseas markets.

The national energy debate has also been driven by changes in attitude towards the importance of ecological considerations within the energy sector as well a wave of new research questioning the economic wisdom of oil sands expansion (see; Bramley et al. 2009, Haley, 2011, Blue Green Canada, 2012, Lemphers and Woynillowicz, 2012, Dobson et al. 2013, Clarke et al.,

2013, Harvey & Miao, 2018) An alternative vision for energy development advocates a type of national energy plan that would see Canada become a world leader in sustainable energy development and action on climate change by dramatically reducing or eliminating its economic dependence on and consumption of fossil fuels. A key argument is that by ignoring new economic opportunities within the green energy market, Canada is both contributing to the mounting global environmental crisis and putting its own economy in jeopardy. The economic risks identified include international vulnerability from changing energy demands worldwide, missed opportunities in the growing green energy market, and regional disparity among oil sands ‘winners and losers’ (Dobson et al., 2013; Clarke et al., 2013).

### **Perspectives within the Canadian energy debate**

It is important to acknowledge that the ideas, opinions and goals of advocates within the petroleum-centered and green economy visions examined in this thesis do not fit neatly into conceptual boxes. Achieving the ideal environmental-economic balance is a matter of perspective, and actors within the debate range from those who view nature as a free good to be exploited for the advancement of society, to those who fundamentally challenge notions of growth, consumption, and the institutions of modernity. Advocates of the petroleum-centered and green economy visions fall broadly into four perspectives: BAU, EM, strong EM, and green radical. This categorization is not definitive, however. For example, while the petroleum-centered approach is essentially BAU, it also encompasses certain components of EM. At the same time, views within the green economy vision can be stretched to include elements of both EM and strong EM, and even to accommodate some green radical ideals. The diagram below offers a visual interpretation of the varying degree of perspectives.

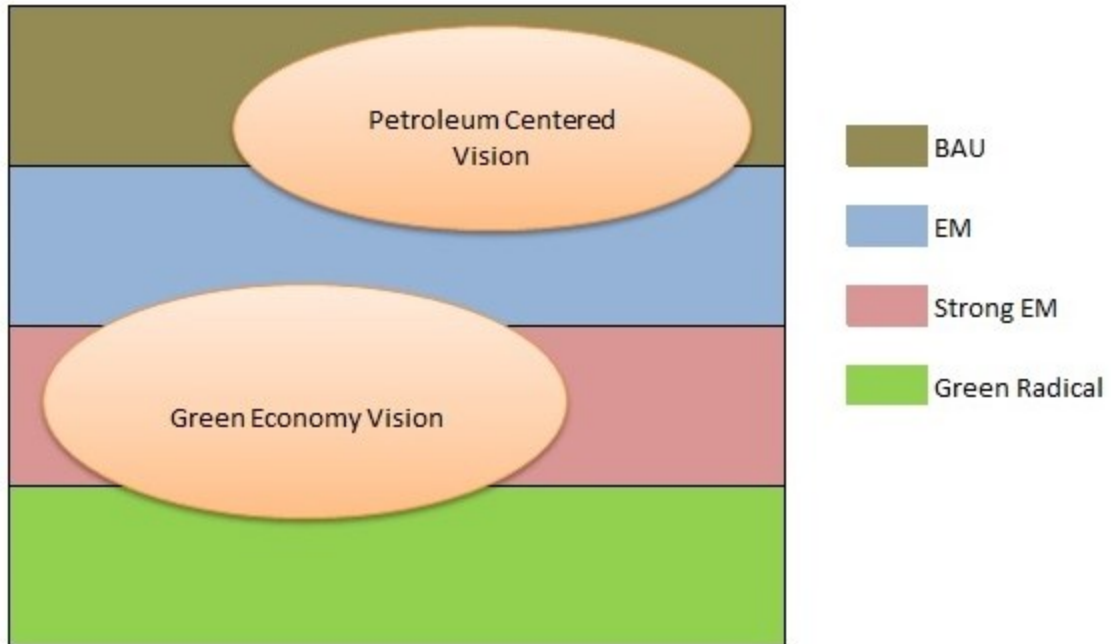


Figure 1 Perspectives within the CES debate: two visions of energy development. NOTE: Information contained in this figure is purely for demonstrative purposes.

### **Business-as-usual (BAU)**

The BAU approach to energy encourages the continued and expanded development of fossil fuel resources and little to no change from the status quo. This approach accepts only the weakest and most cost-effective environmental reforms as legitimate. Individuals and groups falling under this ideal type maintain beliefs that were prevalent during the industrial revolution, when production and consumption reigned and there was little room for ecological considerations (Mol and Spaargaren 2000, 36). The BAU approach is rooted in the promethean concept that ‘nature’ as an entity is separate from socio-economic life; natural resources and the ecosystems that sustain them are viewed simply as a means to an end, materials to be harvested and developed for the advancement of human civilizations. For Prometheans, nature is regarded

purely as matter, and matter is believed to be “infinitely transformable given enough energy” (Dryzek 2005, 57).

This belief stems from Prometheans’ “unlimited confidence in the ability of humans and their technologies to overcome any problem - including environmental problems” (Dryzek 2005, 49). One of the founding Promethean theorists, Julian Simon, argued that the earth’s natural resources are infinite because “there is no fixed supply of resources; resources are only sought and found as they are needed” (Dryzek 2005, 57). In other words, a resource cannot ‘run out’ because when it becomes too scarce or expensive, humans will discover or develop a new resource to replace it. If environmental problems do arise, human ingenuity will find a solution. Even the most serious global environmental problems are no match for the technological adaptability of mankind. In this sense, the BAU perspective is very much in line with the technocratist or weak EM described by Hajer (1995) and Christoff (1996).

What separates BAU from EM thought is the former’s lack of emphasis on environmental sustainability as something to strive for. Many BAU advocates have either denied or downplayed the severity of environmental issues such as climate change, for example. In May 2018, UCP leader Jason Kenney tweeted that “there is a debate of the precise degree to which there are anthropogenic causes of climate change”. Maxime Bernier, leader of the newly formed right-wing People’s Party of Canada, has indicated that while he believes the Earth’s climate is changing, he has “no opinion” on the cause and posits that CO<sub>2</sub> is “food for plants, not pollution” (Smith 2018, parag. 1-2). Further, a survey conducted by the Ecofiscal Commission released in April 2018 found that Albertans were the least likely of all Canadians to believe in global warming. While 70 percent of Canadians said climate change was caused by human and

industrial activity, only 54 percent of Albertans believed the same. The remaining 46 percent believed climate change is a natural part of earth's cycle (Ramsay 2018, parag. 1-5).

Dryzek makes several comparative links between promethean thought and dominant neo-liberal economic policy-making within developed nations. The central priority of any government is almost always the promotion of economic growth. Despite a visible shift towards incorporating environmental considerations into economic policies, which has been captured in the research of EM theorists among others, “the political-economic discourse of liberal capitalist systems still generally floats free from any sense of environmental constraints (Dryzek 2005, 52). Similarly, both promethean and neo-liberal thought emphasize individual consumers and economic actors as main drivers for policy change, while advocating a limited role for government in all areas of economic policymaking. Dryzek offers the example of the Reagan and George W. Bush administrations as marking the beginning of the relationship between neo-liberal policies and promethean thought in North America. Both administrations were characterized by their enthusiasm for economic growth and market-oriented ideologies, and gutting of environmental regulations (Dryzek, 2005 62-65). Dryzek further argues that “Promethean discourse backed the U.S. withdrawal from the Kyoto Protocol in 2001, on the grounds that US economic interests took precedence over environmental considerations” (Dryzek 2005, 65). The same can certainly be said about current President Donald Trump's decision to pull the U.S. from the Paris Agreement on the grounds that it is not a fair deal for America.

## **EM**

As noted above, BAU advocates argue that left to its own devices, the free market ensures a level of environmental security because as particular resources become scarce, and

therefore more expensive, there is a financial incentive for producers to develop new, more plentiful resources to replace them. Many EM theorists would agree that too much market interference or diversion from the status quo could be harmful to the Canadian economy. While EM theory does see a role for state intervention in achieving environmental goals, those falling under the EM perspective emphasize the importance of industry and business-led technological innovation as being the real leaders in environmental reform. This is because, as mentioned in chapter 1, environmentally sound business practices are thought to be more economically beneficial.

Importantly, EM also assumes no conflict between the environment and the economy, which differs from the trade-off frame used by BAU proponents to position the environment and the economy as being at odds. EM also differs from a BAU approach in that it recognizes significant (but not insurmountable) flaws in the current capitalist system which require adjustment. EM adopts a systems approach and takes seriously the complex ways in which consumption, production, resource depletion and pollution are interrelated (Dryzek 2005, 170). This differs from the BAU approach which fails to incorporate a systems approach into its analysis and instead views the environment and human institutions as separate entities.

Individuals falling under the EM perspective remain focused on technological fixes to environmental problems to increase resource productivity and to eliminate pollution - a further indication of inefficiency. Christoff characterizes this type of EM as made up of technocratic neo-corporatists “seeking to manage radical dissent and secure the legitimacy of existing policy while delivering limited, economically acceptable environmental improvements” (Christoff 1996, 111). Importantly, the EM perspective does not challenge the legitimacy of the state’s complicity in practices that generate economic risk, and emphasizes policy learning and

institutional adjustment rather than fundamental social change (Dryzek et al, 2003, 229). In this sense, individuals falling under the EM perspective differ from the ‘strong’ EM or green radical types discussed below.

### **Strong EM**

Individuals falling under the EM perspective are concerned primarily with the introduction of eco-efficient innovation and environmentally friendly technology that increases resource productivity and provides environmental benefits. Taking this further, those with strong EM views believe that institutional restructuring beyond technological innovation is essential to achieve true economic and environmental harmony. For example, while EM might concern itself with technological advancements required to make the fossil fuel industry more environmentally sustainable, proponents of strong EM might go further in questioning whether continued development of fossil fuel resources is the best path for a modern society. As noted in the literature review in chapter 1 Janicke, a proponent of stronger EM, might go further than EM in advocating the restructuring of national economies away from environmentally harmful sectors (i.e. the oil sands), towards industries that could be reconciled with environmental goals (i.e. renewable energy).

Where the EM perspective may show a strong tendency to consider environmental concerns only when the fundamental sector interests are unopposed, proponents of strong EM may encourage environmental considerations to be factored into all policy areas, and not treated like a “bolt-on extra, to be retrofitted like environmental technology” (Janicke & Jorgens 2009, 157). As will be discussed in Chapter 3, terms like “environmentally responsible” and “clean technology” often seem to have been included *ad hoc* throughout reports from the petroleum-centered vision. Comparatively, documents falling under the green economy vision incorporate

these ideas more fully into their analysis of what policy measures ought to be taken to achieve an ideal environmental-economic balance.

Further, those falling under the strong EM perspective maintain that the successful incorporation of EM requires a bottom-up, reflexive, and participatory policy-making system where all actors – including the private sector, non-profits and academia - are involved in the decision-making process (Fisher et al. 2009, 150). Indeed, some of the literature of EM emphasizes the “ways in which citizenship and democratic participation in planning may serve to socialise and ecologise the market and guide and limit industrial production (Christoff 1996, 111).

It is important to note that while proponents of strong EM see a more fundamental restructuring of economic and political institutions as necessary, the perspective maintains that meaningful environmental reform and continued growth and development can be achieved under the current economic system. Capitalism itself need not be done away with, but rather restructured. In this sense, even strong EM does not question traditional notions of growth and consumption as being inherently harmful to the environment and ultimately unsustainable. Although, as noted above, it can include questioning the growth of industries thought to be inefficient and not aligned with sustainable, modern societies.

Activist groups Greenpeace Canada and Environmental Defense have perhaps gone further than most moderate environmental groups in calling for the cessation of oil sands activity, arguing that "the single most important thing a [CES] should do is plan for the curtailment of tar sands production" (Environmental Defense, 2015). The reality is however, that even activist groups are dependent on public support and a "constant quest for credibility" (Hayden 2014, 116), and challenging fundamental principles of the capitalist economy could risk



significant backlash. For this reason, even Greenpeace and Environmental Defense have stopped short of publicly challenging notions of growth and consumption. Green radicals demonstrate a significantly more critical approach to capitalism and the concept of creating environmental policies from within the confines of economics.

### **Green radical**

Green Radicalism is a broad term that encompasses dozens of ideologies and groups. According to Dryzek, green radicalism can be divided into two categories: those who focus on changes in consciousness and those who focus more explicitly on green politics (Dryzek 2005, 181). Green consciousness seeks to change the way people regard their natural environment and the way we live in the world; once society has changed their view on our place in the natural world, other political, social and economic systems will follow suit (Dryzek 2005, 181). Deep ecologists for example, identify the need for cultivating a profound consciousness and awareness of organic unity; of valuing species, populations and ecosystems and not just individuals (Dryzek 2005, 181). No species, even humans, are regarded to have more value than another. Deep ecologists argue that nature has intrinsic value beyond simple use for humans and should therefore be conserved for its own sake (Dryzek 2005, 181). More broadly, deep ecologists advocate fundamental changes in present values and patterns of production and consumption, and see a restructuring of all political, social and economic life as the only way to truly achieve meaningful environmental reforms (Mol and Spaargaren 2000, 32).

A growing movement of radical greens focus more intently on changing the current political and economic systems – institutions viewed as being fueled by corporate greed and who are the true perpetrators of ecological and social degradation. The sufficiency perspective for example, questions the unending growth of production and consumption in wealthy nations

(Hayden 2014, 5). Advocates of sufficiency view the limitless expansion of production and consumption as key obstacles to meaningful environmental reform. In this sense, it is a far more radical notion than strong EM, as it challenges the current neo-liberal, capitalist economy and the concept of growth in and of itself (Hayden 2014, 5). In Canada, proponents of the sufficiency perspective have tended to come from academia and individuals, although at time of writing remain marginal (Hayden 2014, 101).

Although EM lacks the radical edge of green politics, it still “posits a structural transformation of capitalism” (Dryzek 2005, 220). However, where EM sees minor to moderate structural changes to the capitalist system as an effective agent for ecological change, many radical greens reject mainstream notions of economic growth and instead promote economic self-sufficiency among local communities, and significant reductions in consumption and waste (Toke 2001, 283). While proponents of EM are more likely than those in the BAU camp to take the concerns of green radicals seriously, they still believe an effective response can come from within the basic parameters of liberal capitalism (Dryzek 2005, 225). Most green radicals welcome any policy changes aimed at protecting the environment, and often support efforts by proponents within the weak and strong EM groups (Toke 2001, 283). However, the scope of change they ultimately view as necessary runs much deeper, and fundamentally challenges institutions of modernity and humanity’s role and responsibility on the planet.

After examining these perspectives, two broad visions for Canadian energy development can be established; a petroleum-centered vision promoting the expanded development of the Alberta oil sands and market diversification with a strong focus on technology to address environmental concerns, and a green economy vision with a focus on transitioning away from petroleum resources and towards a low-carbon economy through investment in and deployment

of renewable energy systems. The next chapter will examine the petroleum-centered approach and its ability to meet economic, environmental, and political agendas.

## **CHAPTER 3 THE PETROLEUM-CENTERED VISION: CHALLENGES AND OPPORTUNITIES**

### **The oil sands**

Canada is the 6<sup>th</sup> largest producer and 5<sup>th</sup> largest exporter of crude oil in the world (NRCan, 2019). The oil sands contain approximately 98 percent of Canada's estimated crude reserves, and constitute 62 percent of Canada's oil production (ibid). It is estimated that the Peace River, Athabasca and Cold Lake oil sands contain approximately 165 billion barrels of recoverable bitumen (ibid). Even more ambitious estimates put the amount of recoverable bitumen at 1.8 trillion barrels, provided the appropriate development and diffusion of new technology (ibid). In 2016, Canadian crude oil production was 3.9 million barrels per day (mb/d) (ibid). The Canadian Association of Petroleum Producers (CAPP), an industry association representing Canada's upstream oil and gas interests, estimates that number will rise to 5.4 mb/d by 2030, driven by a 53 percent increase in forecasted oil sands production from 2016 (CAPP 2017, 2). These projections remain highly uncertain however, and depend not only on continued investment in oil sands production, but the ability of petroleum producers to get the infrastructure required to ship oil out of Alberta. The recently scrapped Energy East pipeline alone would have led to a 34-39 % increase in oil sands production from 2012 levels (Flanagan and Demerse 2014, 2).

Determining the precise economic impact of Canada's oil sands can be challenging because estimates consider direct and indirect contributions and are open to interpretation. NRCan estimates that the oil sands represent approximately 2.6 percent of Canada's GDP (NRCan, 2019). The entire energy industry in Canada, which also includes natural gas, hydro, coal, and renewables, accounts for 7.3 percent of GDP and indirectly, an additional 3.3 percent

(ibid). In Alberta, oil sands contributions to the economy vary greatly depending on the year. In 2015-16, oil sands royalties accounted for \$1.2 billion, or approximately 2.9 percent of total provincial revenue (Harvey & Miao 2018, parag. 19). It is important to note however, that the 2015-16 year included heavy losses for the oil sands industry as global oil prices plummeted. In comparison, in 2013-14 while oil sands were booming, the bitumen and crude oil sectors accounted for \$9.6 billion or 21.1 percent of total revenue (Alberta 2014, 3). Under ideal conditions of high oil prices and high demand, the oil sands sector can certainly be considered a significant contributor to the Alberta economy, especially.

Employment figures for the oil sands vary depending on the source. NRCan estimates that the total number of Canadians directly employed in the energy sector to be 276,000, or 1.5 percent of total share of employment (NRCan, 2019). Of that 276,000, just over 67,000 are estimated to be directly employed in the crude oil industry (ibid). There are also 613,000 indirect jobs related to energy in Canada, or 3.9 percent of total employment (ibid). Indirect jobs related to the oil sands industry however, are not available from a government source at time of writing. Industry association CAPP on the other hand, estimates that the oil sands currently support 223,000 direct and indirect jobs across Canada (CAPP, 2018). What is clear, is that from an economic and employment standpoint, the oil sands are extremely susceptible to outside market forces.

In late 2014, worldwide oil prices began to crash due to a slow down in emerging economies in China and India and a decision by Saudi Arabia to keep its oil production stable despite declining prices. In June 2014, oil prices hovered around \$107 per barrel; by March 2015, the price had dropped to \$42 per barrel. The result was a major slowdown of oil sands production and investment, as well as huge job losses in the Alberta oil fields. Between 2014-

2016, investment in Canada's oil sands dropped by 62 percent (Cryderman 2016, parag. 2).

Based on estimates by CAPP, Statistics Canada and the number of Albertans collecting EI, from December 2014 to April 2016 between 35,000 and 45,000 direct and indirect jobs were lost in Canada's oil patch (Johnson 2016, parag. 6-12). CAPP estimates that the total number of jobs lost could be as high as 110,000, when accounting for its 2.5 multiplier that assumes 2.5 indirect jobs for every 1 direct job. At time of writing, the price of oil per barrel has rebounded slightly and is now approximately \$55 per barrel.

Despite the global crash in oil prices, worldwide energy consumption continues to increase, including the consumption of non-conventional fossil fuels. It is estimated that global demand for energy will grow by 30% by 2040 (IEA, 2016). According to the 2017 BP Statistical Review of World Energy, fossil fuel use continues to rise every year worldwide, and supplies at least 85 percent of global energy use (BP, 2017). Oil and gas, including unconventional oil such as Canada's oil sands, are expanding more than other energy sources (ibid). However, given increasing demand for renewable energy, worldwide efforts to address climate change, and the oil industry's proneness to booms and busts, projections of unconventional oil remain highly uncertain and difficult to predict. Even CAPP notes that Canada's energy future will depend on overcoming the challenges of low oil prices, pipeline capacity, industry competitiveness, regulatory uncertainties, and access to new markets (CAPP, 2017). And, as will be discussed further below, there is much research questioning the long-term economic wisdom of continued investment in a boom-bust industry.

Subsidies have historically played a key role in ensuring the long-term financial viability of the capital-intensive oil sands. Today, the government of Canada continues to heavily subsidize Alberta crude, despite a federal election promise to phase out subsidies. In their 2015

election platform, the Liberals stated their intent to "fulfill Canada's G20 commitment to phase-out subsidies for the fossil fuel industry over the medium term" (Liberal Party of Canada 2015, 40). The 2018 budget however, has clearly laid out plans to continue to subsidize the industry for at least the next ten years. The two primary subsidy programs are the Canadian Development Expense (CDE) and the Canadian Exploration Expense (CEE). The CDE provides support for pre-production expenses for oil sector projects, while the CEE is a deductible rate that applies to exploration expenses. It is estimated that Canada and the province of Alberta provides \$3.3 billion to the oil and gas sector through these subsidies and others each year (IISD 2018, parag. 7). The fact that the oil industry continues to be subsidized by the federal government is a key criticism of the government's claims to be taking tough action on climate change (Livesey 2018, parag. 91-95).

### **Pipeline politics: Trans Mountain and Keystone XL**

Pipeline politics are at the very centre of the petroleum-centered vision for energy development in Canada. Proponents of this vision, including industry, policymakers and some economists maintain that added pipeline capacity to the Canadian coast is critical to end reliance on the U.S. as Canada's only export market and to gain access to energy-hungry markets in Europe and Asia. Indeed, the Business Council of Canada (BCC) (formerly the Canadian Council of Chief Executives) note how delays and uncertainties around pipelines deny Canadians the opportunity to get full value for their energy resources in international markets. Further, industry claims that this uncertainty casts doubt on Canada's reputation as a safe place for investment (BCC, 2018). At time of writing, the Trans Mountain pipeline project is Canada's most viable and controversial option to move crude out of landlocked Alberta. Canada is also interested in moving more oil for export to the United States, a plan that was recently given new

life by U.S. President Donald Trump when he reversed Barack Obama's decision to block the Keystone XL pipeline.

The Trans Mountain pipeline project was approved by the federal government in November 2016, with 157 conditions. In April 2018, Kinder Morgan announced it would suspend all non-essential spending on the project after months of intense protests. According to Kinder Morgan, the uncertainty surrounding the pipeline created an unacceptable risk to shareholders. The following month, amid fears the project would be abandoned altogether, the federal government announced it would purchase the pipeline from Kinder Morgan for \$4.5 billion – a decision amounting to the “nationalization of what Ottawa considers a critical-infrastructure project” (Chase 2018, parag., 3). The Trans Mountain project involves the twinning of an existing pipeline, built in 1953, and would have the capacity to transport an additional 890,000 barrels of crude oil per day from the oil sands to B.C.’s coast in Burnaby and on to markets in Asia (Kinder Morgan, 2018). In early 2018, Kinder Morgan estimated that the pipeline would create 15,000 new jobs during the construction phase, and would support 37,000 direct and indirect jobs per year during operations (Kinder Morgan, 2018). Other commentators have questioned the accuracy of these industry claims. Economist Robyn Allan calls Kinder Morgan’s projections “bogus”, arguing the company exaggerated the 15,000 claim to gain public support, and that the job creating potential of the project is actually less than 20 percent of that number (Allan 2017, parag. 1-17). The project remains highly controversial and faces intense opposition from indigenous communities and environmental groups, as well as political obstacles from provincial and municipal leaders who question the environmental risks and economic implications of the trans-border pipeline. This will be discussed in further detail below.



The south-bound Keystone XL pipeline would transport 500,000 barrels of crude oil per day from Alberta to refineries in the Gulf Coast and was approved by President Donald Trump in 2017 on the grounds that it would create tens of thousands of jobs and billions of dollars in earnings to the U.S. (Kinder Morgan, 2018). For its part, TransCanada Corp. spent millions lobbying the U.S. Congress and administration on the Keystone pipeline, including \$1.05 million in 2013 alone (Bloomberg 2014, para. 1). In March 2014, CAPP published an open letter submission to the U.S. State Department's Bureau of Energy Resources urging the U.S. government to "move expeditiously to a favorable decision on Keystone XL" (CAPP 2014, 2). The letter highlighted what CAPP deemed the minimal adverse environmental repercussions of the project, including the assertion that Keystone would not impact global GHG emissions (CAPP 2014, 2). The submission went on to elaborate that "the decision on Keystone XL is unlikely to have a substantial impact on the rate of development in the oil sands and thus, GHG emissions from oil sands will not be affected by the decision of Keystone XL" (CAPP 2014, 9). The statements reflect earlier ones made by TransCanada's president that Alberta oil sands have almost no impact on global GHG emissions, and that shutting down the oil sands completely would have "absolutely no measurable impact on climate change" (Associated Press 2013, para. 11). Of course, this says nothing of the downstream impacts of burning Alberta bitumen elsewhere, and goes to show the industry's efforts to present the pipeline and Canada's oil sands in general in a favourable light.

The Alberta provincial government remains steadfast in its efforts to expand oil sands to overseas markets. Even if the Trans Mountain or Keystone XL pipelines fail to be constructed, it would not necessarily mean the end of a petroleum dominated energy trajectory over the next several decades. The Alberta and federal governments have several, albeit less desirable,

shipping alternatives to consider. One, is oil transportation by rail. Canadian National Railway Co. and Canadian Pacific Railway Ltd. ship oil by rail today, and have expressed an interest to add crude by-rail capacity if the oil industry commits to shipping large volumes in the long-term (Bloomberg 2018, parag. 6). This could be in the form of liquid oil or turning bitumen into solid pellets to be shipped by ordinary rail cars and vessels. Another possibility is the construction of partial upgraders that would lighten oil-sands bitumen enough to flow without adding diluent – which constitutes about a third of the volume of oil that is currently shipped (Bloomberg 2018, parag. 10). This would mean 30 percent more oil capacity in existing pipelines. The Alberta government has pledged \$1 billion to support the construction of these upgraders (ibid).

### **Environmental politics in Alberta**

The oil sands are one of the most carbon intensive crudes in North America. According to the Oil Climate Index, oil sands crude produces 31 percent more emissions than the average North American crude throughout its entire lifecycle, from extraction to end use (Israel 2017, parag. 2). The oil sands account for 9.8 percent of Canada's total GHG emissions, and 0.1 percent of total global emissions (NRCan, 2018). This number continues to climb each year. As discussed in Chapter 2, Canada's previous failure to address GHG emissions and other environmental issues associated with oil sands development has impeded its ability to successfully lobby on behalf of pipeline projects. On the original decision by the Obama administration to block the Keystone XL pipeline, Alberta premier Rachel Notley was quoted as saying she was “disappointed” by the way the U.S. government characterized Canada's energy exports, but noted that the decision underlined the “need to improve our environmental record and reputation so that we can achieve our goal of building Canada's energy infrastructure, including pipelines to markets” (Alberta 2015, parag. 2). Indeed, over the last decade, industry

leaders and the Alberta provincial government have acknowledged the need for the oil sands industry to become more environmentally responsible.

Despite Alberta's continued investment in the oil sands, the province has taken action on climate change through its Climate Leadership Plan, introduced by the NDP government in 2015. The plan includes a carbon levy that currently sits at \$30/tonne, as well as a cap on oil sands emissions of 100 megatons per year (Alberta, 2018). The plan also includes a commitment to end coal-generated electricity and generate 30 percent of electricity from renewables by 2030 (Alberta 2018, 3). Alberta is also becoming a leader in energy efficiency. The province has a No-Charge Energy Savings Program that funds the cost and installation of energy saving measures such as LED light bulbs, high efficiency shower heads, smart power bars and thermostats in single family homes. The Residential and Commercial Solar Program offers incentives for homeowners and businesses wishing to install solar (PV) systems. Perhaps most interesting, is the fact that Energy Efficiency Alberta and its programs are funded primarily through the province's carbon levy. According to Brendan Haley, Alberta is leading the way in this regard, by using carbon pricing to meet climate objectives (Haley 2018, parag. 5). Alberta, despite its vast oil sands industry has, in many ways, taken some of the strongest action on climate change among Canadian provinces.

Despite this progress, Alberta's emissions continue to rise. The province formed a Climate Change Advisory Panel in 2015 that was tasked with providing advice to the government on the development of a comprehensive climate change strategy. Many of the panel's recommendations were later adopted to form the Climate Leadership Plan. In their final submission to the Minister of Environment, the panel was clear that even if all its policy recommendations were implemented, Alberta's emissions would continue on an upward trend

inconsistent with meeting the global 2° target (Leach et al. 2015, pp. 11). More stringent policies, the panel argued, would “come at a significant cost to the province due to lost competitiveness” (ibid). Indeed, a key plank in the government’s Climate Leadership Strategy includes a 100 megaton (Mt) ‘hard cap’ on oil sands emissions per year. The cap however, actually represents a 47.5 percent increase in emissions from 2014 levels (Hussey 2017, parag. 8). Further, a 2018 report from the Canadian Energy Research Institute (CERI) found that oil sands emissions could exceed the cap by 2030, growing from 72 million tonnes in 2017 to 103 million tonnes in 2030 (CERI 2018, 6). So, while the province is keen on touting its action on climate change, the policies themselves accommodate a nearly 50 percent increase in oil-sands emissions over the next decade. This means the province’s good work in ending coal-fired electricity and introducing a carbon levy is essentially undone due to the continued rise in GHG from oil sands development.

The Climate Leadership Plan focuses heavily on how better environmental performance can improve the province’s economic performance, create jobs, and increase social license for continued oil sands development. Indeed, the first line of the document characterizes the Plan as a “made-in-Alberta strategy designed to diversify our economy, create jobs, and reduce green house gas emissions” (Alberta, 2018). Speaking on the Alberta carbon levy, Deputy Premier of Alberta Sarah Hoffman was quoted as saying in January 2018 that although the levy means average Albertans pay a small amount more to fill their tanks, it is necessary because it “gets that very strong environmental leadership profile that we need to ensure we have a strong economy for future generations” (Litvin 2018, parag. 13). This is important because it highlights Alberta’s acknowledgement of having to improve or at least appear to be improving environmental performance because it will help increase its social license – which can translate into favourable

decisions on pipelines, as was the case with the federal government's approval of Trans Mountain.

The governing NDP in Alberta face declining support and popularity, and a significant challenge in the 2019 provincial election from the UCP under Jason Kenney. Kenney has promised to scrap the provincial carbon levy and vigorously oppose any attempt at a federally imposed carbon tax, saying these kinds of measures kill jobs, put entrepreneurs out of business, and do nothing to help the environment (Litvin 2018, parag. 6). On the other hand, politicians like Kenney are quick to point to technological improvements in the oil sands as a means of improving environmental performance. Taken together, these examples illustrate the messy mix of EM and BAU dialogue found within Alberta provincial politics.

### **Industry support for environmental regulation**

Past failures in implementing clear, national emissions reductions policies have harmed both Canada and the oil sands international reputation. Industry executives are keenly aware of the need to improve their public image and appear more environmentally conscious. Indeed, it is “commonly accepted that reductions in carbon intensity and environmental improvements (such as in tailings ponds) are needed to increase the ‘social license’ of the sector” (Haley 2016, 8). In their 2018 report titled *Competitive Climate Policy: Supporting Investment and Innovation*, CAPP claims that the oil and gas industry's environmental performance is “critical to realizing a vision for Canada as a global oil and natural gas supplier of choice” (CAPP 2018b, 2). CAPP has also acknowledged the negative impact of GHG emissions on global climate change, and have stated their willingness to work with the federal government on “appropriate solutions” (CAPP 2018b, 2). They are careful however, to maintain that any climate policy ensures the oil sands remain “cost and carbon competitive with other jurisdictions, especially the U.S.” (ibid).

Further, the organization insists that climate policy should ensure Canada receives "full value for Canadian energy products through effective access to global markets" (ibid). For many oil sands producers, a price on carbon is a way to improve their social license and reduce the risk of alienating energy markets. However, the imposition of a carbon tax that environmentalists and many economists believe is high enough to achieve meaningful GHG emissions is another story.

The argument can be made that environmental policies aimed at curbing climate change are the strongest they have ever been under the Trudeau government. CAPP however, maintains that current policies and regulations on the oil and gas sector – including the national carbon pricing policy - is damaging the industry’s competitiveness and investor confidence (CAPP 2018, 14). Instead they argue policies should be aimed at decreasing global GHG emissions, as opposed to reducing emissions only in Canada “at high cost to Canada’s economy and with minimal effect on global emissions” (CAPP 2018c, parag. 3). So, while the industry supports “climate policies that efficiently and effectively manage GHG emissions”, those policies must not come at the expense of a “vibrant and competitive oil and natural gas sector” (CAPP 2018b, 1). While most industry leaders agree that some action on climate change is necessary to move their vision forward, what industry is actually advocating is weak environmental legislation that above all does not impede growth in their sector. A key part of their strategy has been to emphasize the success and opportunities that lie in using technological innovation to address environmental concerns.

### **Technological innovation in the oil sands industry**

Canada’s oil sands producers have consistently emphasized the importance of technological innovation in ensuring the future success of the industry. The belief that science and technology can “allow society to grow economically, without compromising a safe and

healthy environment” (COSIA 2014, 3) is widely shared among industry leaders. According to CAPP, the Canadian oil and gas sector can “continue to lead in a carbon-constrained future...through the development of cost-effective, clean technology” (CAPP 2018b, 3). In their submission to the CCF the BCC also emphasize the important role for technology and innovation in addressing economic and environmental challenges in the oil sands, specifically advocating the expanded use of CCS, biofuels, alternative energy, and advanced vehicles (BCC 2012, 5). Even UCP leader Jason Kenney admitted in 2018 that he believes the answer to climate change lies in “research, development, science, and technology” (Fletcher 2018, parag. 11).

The economic-environmental benefits of technological innovation are presented as threefold: increased energy security for Canada through diversified production, increased value-added potential on Canadian exports, and enhanced ability to deal with climate change (EPIC 2012, 19). Market-based initiatives on the other hand, are viewed as less desirable by many industry leaders. EPIC has stated that GHG control policies such as a cap-and-trade and carbon tax are “unlikely to provide a really strong signal to support and encourage sustained long-term research into the development of needed technologies” (EPIC 2012, 150). While most industry organizations highlight the importance of environmental stewardship and the need to address climate change, the focus is very much on technological change to improving Canada’s global competitiveness in energy markets. In this sense, the industry's position is very much framed in the language of EM, in that technology is key to environmental and economic harmony.

Industry leaders claim to have taken a leading role in the investment and development of innovative technologies in the energy sector. Members of Canada’s Oil Sands Innovation Alliance (COSIA), who together produce 90% of crude from the oil sands, have invested \$1.4 billion in developing technologies aimed at reducing the environmental impact of the oil sands

since being launched in 2012 (CAPP 2018b, 10). Projects include an algae carbon conversion technology designed to convert CO<sub>2</sub> into biomass products, the development of a tailings solvent recovery unit for heat recovery, and CCS (COSIA 2017). To put COSIA's investment in context, the Alberta Energy Regulator (AER) estimates that the oil sands spent \$14.6 billion in capital expenditures in 2017 alone (AER, 2018). In this sense, \$1.4 billion seems a small investment for the amount of lip service paid to the importance of innovation in the industry.

For their part, the provincial government in Alberta has identified innovation and technology as key to the province's response on climate change (Alberta 2017b, 6). Alberta's 2017 Climate Change Innovation and Technology Framework serves as the province's guide for investing in innovation and clean technology, and aims to reduce GHG emissions, diversify the economy, and transition to a lower-carbon economy by the year 2030 (ibid, 7-8). The government states that through technology, "Alberta industry [will] reduce emissions while also creating new economic opportunities" (ibid, 7). The Government of Canada too, acknowledges a strong link between environmental protection and technology noting that "clean, innovative technologies are central to successfully addressing climate change and growing a clean global economy (Government of Canada, 2018). The federal government has recently committed \$200 million annually to specifically support R&D in the oil sands, citing "innovation [as] critical to reducing the environmental footprint of oil sands development" (NRCan, 2017).

### *Carbon capture and storage (CCS)*

CCS is a technology used to reduce carbon dioxide from large-scale industrial facilities by capturing emissions that would normally be vented into the atmosphere, and injecting them into deep underground rock formations for permanent storage (Alberta Energy 2017, 1). Until about 2015, CCS was a key technological priority among proponents of the petroleum-centered



vision. In 2008, the federal government announced \$2 billion in funding for six CCS projects that would aim to reduce emissions by 139 megatons by 2050 (Thomson 2015, parag. 10). The following year, Alberta premier Ed Stelmach was joined by then-Prime Minister Stephen Harper to unveil a \$1.4 billion-dollar CCS project by TransAlta near Edmonton (Thomson 2015, parag. 10-12). In 2012, EPIC highlighted the importance of technology such as CCS, stressing that the “commercialization of technology solutions, including CCS... will ensure that Canadians can count on a long-term source of near zero-emission base load power in the future” (EPIC 2012, 119). The BCC, too, noted Canada’s advantage in the field of CCS technology, not just to address environmental challenges but to “solidify Canada’s reputation as a developer of sustainable energy solutions” (BCC 2012, 6).

By 2012 however, it became clear that the ambitions of CCS as a solution to rising GHG emissions were overshadowed by problems of economics and scalability (Thomson 2018, parag. 28). One problem, according to the Council of Canadian Academies, is that CCS technology is mostly applicable to upgraders that help convert heavy crude into synthetic crude oil so it can be refined, and CCS technologies could only capture 20-40 per cent of upgraders’ emissions (Haley 2016, 8). Further, CCS technology is extremely capital intensive, has long lead times, and requires the installation of elaborate infrastructures for transport and storage of CO<sub>2</sub> (Haley 2016, 8). When the NDP came to power in Alberta in late 2015, the provincial government’s investment in CCS came to an end, with the exception of Shell’s Quest project near Edmonton and the Alberta Carbon Trunk Line project. While there is still some support from industry for CCS, as evidenced by its inclusion in CAPP’s 2018 Economic Report, the focus is beginning to shift to new and emerging technologies such as injected hydrocarbon (solvent) extraction (CAPP

2018, 11). CCS, once believed to be a promising technological innovation to ‘green’ the oil sands industry, has failed to meet expectations.

### **Economic, environmental and political criteria**

To test EM’s assumption of a win-win scenario for the environment and the economy under a petroleum-centered approach, the following section will examine the economic and environmental risks and benefits associated with oil sands development, followed by an examination of the political challenges associated with this vision for energy development.

#### *Economic criteria*

As noted in Chapter 1, the average rate of growth among OECD countries was 2.1 percent between 1998-2017. Except for the period immediately following the 2008 global financial crisis, over the past 20 years the Canadian economy has shown steady economic growth, averaging an annual GDP growth rate of 2.5 per cent (OECD, 2017). Two economic modelling studies have been conducted in an attempt to predict the health of the Canadian economy under a petroleum-centered vision for energy development, and one where Canada meets or exceeds its emissions reductions targets. The first, conducted by M.K. Jaccard and Associates in 2009 and commissioned by the David Suzuki Foundation and the Pembina Institute, analyzed federal and provincial government climate policies and their implications for meeting Canada’s pre-Copenhagen target – which was at the time a 20 percent reduction of GHG emissions below 2006 levels by 2020. The study aimed to determine which policies would allow Canada to meet an internationally accepted 2° reductions target. While the economic modelling uses a reduction target that is now outdated, the results are useful in illustrating Canada’s projected economic performance under both a BAU and green-economy scenario. The report found that under a BAU petroleum-centered approach to energy development, Canada’s GDP

would grow an average of 2.4 per cent annually by 2020 (Bramley et al. 2009, 4). In this scenario, governments at the federal and provincial level would take no action to reduce GHG emissions. A more recent economic modelling analysis conducted by Environmental Defense found that if government takes no further action on climate change and continues to develop and export its petroleum resources, the Canadian economy would be expected to grow 39 percent by 2030, or 3.3 percent per year (Environmental Defense 2018, 6). Shorter term projections also indicate the Canadian economy will show stable growth; the 2017 IMF Fall Report predicts Canada's GDP will grow by 2.3 percent in 2018, and 2.0 percent in 2019 (IMF 2017, 8).

While these projections vary, they indicate a strong likelihood of continued growth at least in the short-term, on par with OECD growth rates over the past 20 years. The unpredictable nature of Canada's petroleum industry makes the future economic trajectory of the petroleum-centered vision highly uncertain, however. The decline in oil prices since 2014 has clearly demonstrated the instability and volatility of Canada's oil sands industry. Employment rates, investment, royalty and tax payments have all declined significantly since 2014. Further, there is mounting evidence that the global trend towards clean energy could seriously threaten the economic viability of the oil sands. Harvey and Miao argue that "expected improvements in the performance and reductions in the cost of electric vehicles, combined with across-the-board improvement in the efficiency of cars and trucks, could see a permanent collapse in the price of oil by 2030, if not sooner, rendering oil sands oil a permanent money loser" (Harvey and Miao 2018, parag. 4).

A study by McGlade and Ekins at the University College London further strengthens this argument. The study concluded that if the world is to limit global warming to less than 2°, the majority of worldwide fossil fuel reserves would have to remain underground. Only 7.5 billion

barrels of bitumen could be burned by 2050. This constitutes only 15 per cent of Canada's proven reserves; a fraction of the planned extraction under new oil sands developments (McGlade & Ekins 2015, 190). In a scenario where the world actively works to achieve the 2° target there would necessarily be a dramatic reduction in worldwide consumption fossil fuels, especially Alberta's capital and energy-intensive oil sands, which would be unlikely to compete with lower-cost producers in a world of low oil prices (Harvey and Miao 2018, parag. 17). Despite claims that the oil sands will continue to generate positive economic outcomes, evidence suggests the foundations on which these claims are based - that there will be a continued global market for Canada's oil – are increasingly uncertain.

Importantly, the economic benefits of the energy sector in general are contested and some claims about the oil sands economic importance appear exaggerated (Livesey 2018, parag. 32). As noted above, NRCan estimates that the oil sands represent approximately 2.6 percent of Canada's GDP, and approximately 67,000 people are directly employed in the oil sands. Comparatively, the finance services sector accounts for nearly 7 percent of GDP, and generates nearly 800,000 direct jobs (Livesey 2018, parag. 33-34). What is interesting is how low the GDP and employment contributions of the oil sands are compared to the amount of political attention the industry receives. The oil sands industry in Canada has become synonymous with Canadian prosperity and jobs even though, as Climate Action Network points out, it is not actually responsible for the majority of Canadian GDP or jobs (Livesey 2018, parag. 34). Even in Alberta, the province receiving the greatest benefit from oil sands development, the economic impact has been overstated; the province currently collects more in taxes from gaming and alcohol sales than it does oil royalties (Livesey 2018, parag. 35).

### *Environmental criteria*

Canada's current emissions reductions target is 30% below 2005 levels by 2030. Economy wide emissions in 2005 were 736 Mt, and the government's current target would see that reduced to 517 Mt by 2030 (NRCan, 2018b). Projections as of April 2018 indicate Canada will emit 583Mt of emissions in 2030, even if the Government of Canada's current climate change policies – including a nation-wide carbon tax and an increase in funding for green innovation – are fully realized (Sawyer & Bataille, 2018). This leaves Canada 66Mt short of its target.

Canada's national carbon price is \$20 per tonne as of January 2019, and will rise to \$50 per tonne in 2022. Economic modelling conducted by Sawyer and Bataille found that for Canada to meet its target, a carbon price would have to reach between \$96-\$150 per tonne by 2030 (Sawyer & Bataille 2018, 8). Another report by economist Mark Jaccard from 2016 estimates that for Canada to meet its Paris target, carbon prices would have to begin at \$30 per tonne in 2018 and reach \$200 per tonne by 2030 (Jaccard et al. 2016, 1). Taken together, these numbers suggest that not only will Canada fail to meet its own emissions reduction target, but that the target itself does not constitute a fair share contribution to the 2° Paris Accord goal. Indeed, Climate Action Tracker (CAT), an independent scientific analysis that tracks countries' progress towards the global 2° target ranked Canada's current policies "highly insufficient" (CAT, 2018).

In March 2018, the Government of Canada reiterated its intentions of meeting the 2030 emissions reductions target. Minister of Environment and Climate Change Catherine McKenna has claimed Canada is "all in" for meeting the target, blaming the failure to this point on Canada's growing economy (Weber 2018, parag. 3). Interestingly, this statement runs counter to the government's usual emphasis on economic growth and environmental protection going hand-

in-hand. McKenna added that there is still ample time for Canada to boost its efforts on addressing climate change to meet the 2030 target. At time of writing however, the government has given no indication of what these policies might be. As noted in chapter 2, analysis from Harvey and Miao show that only a complete phase-out of oil productions from the oil sands, combined with a host of other transformative policies would enable Canada to plausibly meet its 30 percent target (Harvey and Miao 2018, parag. 3). The government of Canada has no plans to phase-out the oil sands; quite the opposite, it is actively pursuing expanded development and made huge investments in pipeline infrastructure. Jaccard notes that Canadian governments have missed emissions reductions targets in 2000, 2005, 2010, and are very likely to miss the 2030 target by a wide margin. In fact, the 2030 target may be “even more ambiguous than previous targets” given the uncertainty surrounding the rate of oil sands development (Jaccard et al. 2016, 6). Further, some analysts have noted that while there have been some steps taken to improve action on climate change in recent years, “Canada has a history of governments committing to climate targets and failing to implement policies that make real progress towards those goals” (Hastings-Simon and Riehl 2018, parag. 4). Based on these observations and the Government's own data indicating it will not meet its 2030 target, it can be argued that Canada stands next to zero chance of reducing emissions at a level consistent with global efforts to limit warming to 2°C, that target, barring an immediate change in policy direction.

### *Political criteria*

The economic benefits of Canada's oil sands are far from certain, especially in the long term. Further, under a petroleum-centered vision, Canada stands little chance of meeting its 2030 emissions reductions target. Although the government of Canada maintains that strong action on climate change can co-exist with expanded oil sands development, evidence suggests otherwise.

The following section will examine the political challenges associated with the petroleum-centered vision.

### *Regional interests and values*

Vastly different regional interests and values create inter-provincial conflict in the realm of energy and environmental policy making. Indeed, cooperation is rendered even more difficult in a complex federal state where provincial differences in interest are "real, large, and unavoidable" (Gibbins 2010, 74). These conflicts pose a significant challenge to the political viability of a petroleum-centered vision for national energy development. Arguably most glaring in the context of the Canadian energy debate, is the discrepancy between Alberta and Saskatchewan's economic interest in developing their oil sands and the relative unimportance of oil sands growth in other parts of the country. There has been some cooperation among provinces on broad energy principles, evident in the unanimous support of a CES in 2015. The ongoing inter-provincial dispute between Alberta and B.C. over the Trans Mountain pipeline is perhaps a more telling example of the current state of provincial union on issues of energy development, however.

Soon after the Trans Mountain pipeline received approval from Ottawa in 2016, the B.C. provincial NDP began campaigning on a promise to block its construction at all costs, citing their responsibility to "defend B.C.'s vulnerable coastline, our inland waterways, our economic and environmental interests" (Morgan 2018, parag. 5). The provincial government under Premier John Horgan remains committed to blocking the pipeline, which comes as little surprise since they remain in power only so long as they maintain the support of the Green Party in the legislature. A move to support the pipeline would surely anger B.C. voters and risk an already shaky hold of power. The government has introduced a plan to consult with residents on a

strategy to restrict crude oil being transported into the province either by pipeline or by rail, and to establish an independent scientific advisory panel that would determine whether crude can safely be transported and cleaned up in the event of a spill (ibid). This move can be seen as a direct attack against the Trans Mountain pipeline. The Alberta government called B.C.'s obstruction of the pipeline expansion "illegal and unconstitutional" and have threatened a trade war with the province, even cutting off oil supply, if attempts to block the pipeline continue (ibid, parag. 7).

Ottawa has responded with firm promises to do anything in its power to see the project come to fruition, explicitly stating that the pipeline is "in the national interest and that it [is] going to get built" (Dangerfield 2018, parag. 25). In the same interview, Trudeau went on to state his government's belief in the importance of getting Alberta oil to market in Europe and Asia, and that after what he called rigorous environmental assessment, determined the Kinder Morgan pipeline is "not a danger to the B.C. coast" (ibid, parag. 6). He went on to state that while it is normal for provinces to disagree, is it up to the federal government to "oversee national interests [and to] step up for the interests of all Canadians" (ibid). The meaning here is clear: exporting Canada's oil sands is a top economic priority.

The federal government's highly controversial decision to purchase the Trans Mountain pipeline from Kinder Morgan prompted the B.C. government to launch a legal challenge on its constitutional jurisdiction over the project, and the matter is currently before the courts. A further blow to proponents of the pipeline came in August 2018, when a Federal Court of Appeal overturned the federal government's decision to approve the project. The court found that the NEB failed to adequately assess the environmental impacts of marine shipping on resident orcas in its report, and that the federal government breached the constitutional duty to consult



indigenous peoples (MacKinnon 2018, parag. 8-9). The NEB will now have to redo the report, and the federal government must open a new round of consultations with indigenous groups to see work on the pipeline continue (Ibid, parag. 1-22). Of course, this does not rule out any future court challenges, and there is a very real possibility that the pipeline will be tied up in legal battles for years to come. It is clear then, that competing regional interests remain a challenge for the petroleum-centered visions' key goal of getting a pipeline to the Canadian coast. Still, as will be discussed in the section below on veto interests, the constitutional power of the federal government to push the pipeline through may be an opportunity for the petroleum-centered vision.

### *Distributional effects*

A national energy strategy, by definition, would involve the prioritization of some objectives over others (MacDonald and Lesche 2012, 20). Put another way, a national energy strategy prioritizes some energy sources more than others. Distributional effects refer to the real and perceived environmental, economic and social impacts that affect a province given a particular policy focus. MacDonald and Lesche argue that all actors in the energy debate are motivated to support or oppose energy policies because of the distributive effects they experience. Whatever the future holds for energy policy in Canada, some provinces will likely benefit more than others, especially in the short-term. A key political challenge for both the petroleum-centered and green economic visions will be determining how to minimize the real and perceived negative impacts a region may experience.

In the short-term, the distributional effects of a petroleum-centered vision would in all likelihood positively impact petroleum-producing provinces like Alberta. The distributional effects in other parts of the country are less certain. While policymakers in Alberta use the oft-

cited argument that revenue from the oil sands funds programs such as health care and education that benefit the entire country, the reality is that from both an employment and GDP perspective, Alberta is the clear winner (Lemphers and Woynillowicz 2012, 47). It has previously been estimated that over the next 25 years, Alberta will receive 94 percent of GDP associated with oil sands development; 6 percent will go to Ontario, 1.3 percent to B.C., and 0.66 percent to Quebec (ibid). Furthermore, the Conference Board of Canada has estimated that Alberta receives 70 percent of the supply chain effects, or indirect employment benefits, from the oil sands (Conference Board of Canada 2012, 19). The next closest is Ontario, which receives 14.8 percent of the supply chain effects (ibid). With Alberta receiving the vast majority of benefits, some critics argue that other areas of the country are subject to negative impacts (Blue Green 2012, 8). One example of this is the Dutch Disease phenomena, which will be discussed further in the following chapter.

According to MacDonald and Lesche, the historic refusal of Alberta to consider any form of wealth redistribution from energy or climate change policy, and instead a focus on collaboration and coordination to reach “national goals”, has been an influencing factor in Canada’s inability to reach a national agreement on energy (MacDonald and Lesche 2012, 20). For a nationally coordinated energy strategy to be achieved, Ontario and Quebec “must be given something to make them think their efforts to develop green electricity will be aided, rather than hurt” (ibid, 17). Such a compromise was reached by the provinces when they agreed to include stipulations on addressing climate change in the final draft of the CES. Without these provisions, Ontario and Quebec refused to sign on to the strategy. Oil producing provinces are realizing that they must concede to some action on climate change to bring provinces on board who would otherwise take on more environmental risk and less economic gain. This is again apparent in the

B.C.-Alberta dispute over the Trans Mountain pipeline, with B.C. refusing the pipeline as they view themselves as taking on all the environmental risk, with minimal economic reward.

### *Veto actors*

Pal and Weaver define a veto actor as “an individual or collective actor whose agreement is required for a change in policy (Pal and Weaver 2003 in MacDonald and Houle 2012, 11). In a sense all provinces could argue veto power over energy projects so long as they cross provincial boundaries, because of their constitutional rights over land and resources. Such is the case with B.C.’s attempt at blocking Trans Mountain through a court action that would test the province’s ability to restrict any increase of bitumen moving across its border. The federal government also has a few ambiguous yet constitutionally-based powers available that give it veto power over energy related matters.

The declaratory power, contained in section 92 (10) (c) of the British North America Act (BNA) is one, and gives the federal government the authority to transfer jurisdiction of an entire ‘work’ from a province onto itself, even if constitutionally the ‘work’ falls under the jurisdiction of the province (Quebec 2002, 65). The declared ‘work’ must be for the general advantage of Canada or the advantage of two or more provinces, although what constitutes ‘work’ or ‘for the general advantage of Canada’ is left to the discretion of the federal government (ibid).

University of Saskatchewan professor Dwight Newman has stated that declaring ‘paramountcy’ over the Trans Mountain pipeline is the strongest legal case available to the federal government (Hunter 2018, parag. 9). The doctrine of paramountcy states that if there is a conflict between federal and provincial laws, federal law will prevail (ibid). The federal government has since announced that it will intervene in the B.C. constitutional court challenge stating they are “confident in Parliament’s jurisdiction and [will] intervene on the question in

order to defend our clear jurisdiction over interprovincial pipelines” (Judd and Zussman 2018, parag. 4).

The Government of Canada has a clear interest in seeing the pipeline built, and the decision to purchase it was a risky but strategic move. On one hand, the decision threatens Liberal seats in B.C. during the next federal election. On his government’s decision to fight the pipeline expansion in court, B.C. premier John Horgan expressed his dissatisfaction with the federal government, stating they were “making decisions that affect taxpayers and [that they would be held] accountable for that” (MacLeod 2018, parag. 4). On the other hand, powerful oil sands interests, with their continued influence in mainstream energy politics, ensures the federal government is attuned to the political risk of failing to see the pipeline built. One could argue that the federal government ultimately holds veto power over inter-provincial energy projects that will shape the future energy trajectory in Canada. However, the federal court of appeals decision to quash the government’s approval of the project demonstrates the limits of federal power in this regard. The reality may be that when it comes to inter-provincial energy projects, no order of government, be it provincial, federal, territorial, or indigenous, holds ultimate veto power.

#### *Competition in contemporary energy federalism*

According to MacDonald and Lesche, it is “regional conflict amongst constitutionally-empowered states that has prevented the development of a national climate policy in Canada” (MacDonald and Lesche 2012, 8). The same can easily be said about the creation of a national energy strategy. In her paper *A National Energy Strategy for Canada: Golden Age or Golden Cage of Energy Federalism*, Monica Gattinger examines the likelihood of a national energy strategy coming to fruition given historical tensions in intergovernmental energy relations. In

Gattinger's view, historical tendencies for "hyper-competitive federalism in the [energy] sector" make the development of comprehensive national approaches very difficult, and that its capacity rests on government's ability to move beyond competitive energy federalism to more collaborative forms of energy relations (Gattinger 2013, 2). Gattinger points to the failure during the 1960s, 1970s and 1980s to reach an agreement on the development of a national electricity grid as being unsuccessful largely due to "competitive political dynamics between provinces" (Gattinger 2013, 7).

According to Gattinger, Canadian governments at both the federal and provincial levels face four demanding policy imperatives when it comes to energy: markets, environment, security and social acceptability - what she refers to as the energy "MESS" (Gattinger 2013, 2). While each of these imperatives play a role in the successful implementation of a CES, Gattinger argues that it is the first imperative, markets, which are the main driver propelling plans for national energy development (ibid). For example, between 1940-1970 intergovernmental relations could be described as collaborative or at least, there were numerous attempts at collaboration. This period was also focused on the 'market' and 'security' imperatives mentioned above, examples being the 1961 National Oil Policy which divided Canada into two markets for oil (a western supplied west, and an import-supplied east), and the creation of the NEB in 1959 (ibid, 9-10).

It was not until the 1990s, when the 'environment', and 'social acceptability' imperatives came into play that interprovincial conflict and competition began to overshadow efforts of collaboration. One example is Alberta and Saskatchewan's opposition to Kyoto, and their insistence that any national climate policy not interfere with a province's right to develop their energy resources (ibid, 10). Gattinger points to the rift between B.C. and Alberta in 2013 over the Northern Gateway Pipeline as being part of the "competitive dynamics" challenging the

development of a collaborative strategy (ibid, 13). More recently, the same could be said about the refusal of Quebec and Ontario to give their approval to the Energy East pipeline unless implications for climate change were considered, resulting in scathing criticism from former Saskatchewan premier Brad Wall. The current dispute over the Trans Mountain pipeline is a further example; B.C.'s environmental imperative to protect its ecologically sensitive waterways is at odds with Alberta and the federal government's imperative of expanding oil sands to new markets. In short, the overarching need for market diversification in the realm of energy may in fact trump environmental and social imperatives.

### *Historical rigidities*

Brendan Haley uses the work of influential political economist Harold Innis and his writings on staples theory to understand and explain what he calls Canada's carbon dependence. According to Haley, Canada is currently locked into a "dominant development trajectory" that is dependent on increasing global demand for unconventional oil and that "suppresses efforts to promote sociotechnical changes consistent with a green energy future" (Haley 2011, 97). Historically, Canada has played the role of a margin economy in a centre-margin relationship; Canada's resource economy has long supplied the more advanced and innovative centre economies of the U.S. and the U.K. This relationship has "generated a series of self-reinforcing social, technological, and institutional rigidities" that can include overhead costs, infrastructure, vested interests, bounded knowledge fields, and fixed policy mentalities (ibid, 108-122). According to Haley, Canada is currently in a form of systemic resource lock-in that is exacerbated by historical rigidities which threaten to lead Canada down a path of increased dependence on petroleum resources at a time when Canada ought to be moving away from carbon intensive industries.

History has demonstrated that Canada's resource development "required the extension of transportation networks over wide areas in short spans of time" (ibid, 100). A very similar situation is happening today, with petroleum-centered advocates urging the rapid development of pipeline infrastructure to supply emerging economies with crude oil. Harold Innis maintained that centre-margin rigidities were intensified during periods of significant global expansion and diffusion; periods when Canada's resources were in high demand from the centre economies (ibid, 99). Petroleum-centered advocates now maintain that mass growth in Asia is leading to a significant increase in demand for oil, including Canadian crude.

Margin economies like Canada have a "tendency to support the continuation of existing paradigms due to the problems of adjustment faced when new economic systems emerge that demand new staples and diffuse new technologies" (ibid, 111). Furthermore, the staples trap tendency suggests that dominant Canadian interests, which currently lie in the fossil fuel industry, will "promote existing centre-margin relations and persistence in existing economic paradigms, especially during periods of instability and crisis" (ibid, 111). Indeed, historic staples trap patterns have demonstrated that when faced with uncertainties and vulnerabilities, Canada will push even harder to maintain its dominant staple sector. This can be seen in the frantic efforts by industry leaders and government to find ways to transport oil out of Alberta, despite the highly uncertain future and vulnerabilities associated with the fossil fuel industry. These vulnerabilities will be discussed in detail in Chapter 4.

According to Haley, staples-trap rigidities harden even further within the bitumen industry (ibid, 113). Oil sands projects are capital intensive and require a high degree of technological sophistication resulting from decades of government funded research (ibid). These investments and high overhead costs create an unwillingness on the part of industry and

government to accept the obsolescence of previous investments and crystallizes rigidities (ibid). Haley maintains that the policies of provincial leaders in Alberta and Saskatchewan, industry leaders and some policymakers at the federal level continue to be influenced by these rigidities and the need to maintain the centre-margin relationships at all cost. This is evidenced by the fact that petroleum-centered advocates have attempted to sustain their developmental trajectory by touting the merits of oil sands at home and abroad, and stalling momentum towards a green economy (ibid, 118-19).

Petroleum-centered advocates have been successful to a certain degree in this regard. Efforts to introduce environmental reform have repeatedly stalled or failed at the federal level, and long-awaited climate change policy through the PCF faces significant opposition from governments in Ontario, Saskatchewan and New Brunswick. Without the influence of petroleum-centered advocates, momentum towards a green economy would arguably be much stronger, especially at the national level. Still, federal policies on climate change are stronger than they have ever been, and governments in Ontario, B.C., Quebec, and even Alberta have made considerable progress in implementing their own climate change mitigation policies. Importantly, petroleum-centered advocates have been unsuccessful in stopping the acceleration of renewable energy and clean technology, systems that threaten the market for fossil fuels in the long-term and may create a more attractive option for investors and consumers. This will be discussed further in the following chapter.



## **CHAPTER 4 THE GREEN ECONOMY VISION: CHALLENGES AND OPPORTUNITIES**

Canada is locked into what Brendan Haley calls a carbon-intensive economic structure; a petroleum-dominated economy. This is due to the diffusion of previous innovations such as the automobile, oil refining, and business strategies promoting mass consumption (Haley 2016, 4). Chapter 3 discussed how deeply the oil sands have become entrenched in Canadian politics and the great emphasis placed on their contributions to the economy and job creation, especially in Alberta. Recently, however, political economists like Haley and others have challenged the conventional wisdom of exploiting Canada's oil sands resources, highlighting major economic, environmental and social risks involved with the industry. Environmental organizations, think tanks, academia and political groups have put forth alternative proposals calling for greater diversification of energy sources and legislation to help Canada transition into what is thought to be the beginning stages of a new, low-carbon global economy. While the petroleum-centered approach maintains that continued and expanded development of Canada's oil sands is necessary to maximize the country's economic potential, proponents of a new, green economy advocate policies that aggressively reduce greenhouse gas emissions and phase out fossil fuels (Flanagan 2015, 3). Like the petroleum centered approach, the green economy vision claims to hold the answers to reconciling economic growth and environmental obligations.

### **Defining a green economy**

The term 'green economy' has been defined as “the production of goods and services that have obvious environmental benefits and that are intended to reduce consumption and environmental impacts” (Sustainable Prosperity 2012, 6). More specifically, a green economy is “low-carbon [and] resource efficient...growth in income and employment are driven by public

and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services” (UNEP 2011, 16). The green economy is also one that is just and inclusive. It would endeavour to ensure that there are transition programs for workers and communities most affected by the transition to a low-carbon economy and that the social costs and benefits of transition are spread evenly across Canadian society (ibid, 9).

Importantly, a green economy would create a society that continues to experience growth in economic activity, but generates only a fraction of the current levels of carbon dioxide and other GHG emissions (Macdonald & Houle 2012, 1). Blue Green Canada, a group whose membership includes labour unions, environmental and civil society organizations, recognizes the green economy as being driven by an environmental imperative, but that it also opens new possibilities for jobs and growth (Blue Green Canada, 2017). They elaborate that “we cannot choose between the environment and the economy” and that the realization of that concept is at the heart of the term ‘green economy’ (ibid). This is important because while the green economy is driven first and foremost by what many view as urgently needed environmental reform, it is also driven by an imperative to ensure the Canadian economy continues to grow and thrive. Equally important among proponents of the green economy vision, is the belief that maintaining a business-as-usual approach to energy - that is, one focused on the development and distribution of petroleum resources - is both environmentally and economically unwise.

Most proponents of the green economy maintain that Canada requires a nationwide energy and climate change plan that will reduce carbon emissions and restore our international reputation on climate change (Environmental Defense, 2015). The Trottier Energy Futures Project notes Canada must “define and effect the transition of our energy systems to an optimal

mix of energy sources, distribution, efficiency, and conservation that delivers a truly sustainable (technologically, economically, environmentally, and socially) energy system that positions Canada as a global role model” (Raynolds 2010, 13). In many ways, the green economic vision favours a more globally-minded approach to policy-making, focused not solely on the creation of economic growth within Canada but also our global environmental commitments, including the downstream impacts of burning Canada's oil elsewhere in the world. The Pembina Institute for example, suggests that the NEB be amended so that pipeline reviews consider the full scope of environmental impacts, including downstream impacts (Flanagan 2015, 8). This is important because of the global nature of climate change and Canada's commitment to lowering global emissions. Indeed, the IPCC 5<sup>th</sup> Report notes that climate change is a "collective problem at the global scale and that effective mitigation will not be achieved if individual agents advance their own interests independently (IPCC 2014, 5).

Most groups in the green economy camp see a strong, leading role for government as critical to the success of any energy strategy (Sawyer & Bataille, 2018). It is government that can create and enforce sustainable energy policies through legislation and government that can offer incentives for clean energy operational practices in the private sector. Brendan Haley argues that escaping the carbon staples trap requires government policies that “intervene more directly to reorient Canada’s economic trajectory and encourage the build-up of industrial capabilities” (Haley 2011, 121). Environmental Defense agrees, maintaining that the federal government should be involved in three ways. First by showing strong leadership to ensure its climate action is adequate to meet international 2° targets. Second, setting a level playing field by ensuring federal investment in renewable energy matches that in non-renewable sector and third, by acting in areas where it has jurisdiction (Environmental Defense, 2015; 2018). Key here is the belief

that if Canada wishes to compete in the changing global economy, the federal government ought to use energy *and* environmental policy to position the economy for long-term success. Further, a 2018 report from Environmental Defense advocates a strong coordination role for the federal government among provincial governments to maximize policy coherence across the federation (Sawyer & Bataille 2018, 3). As the Trans Mountain pipeline dispute has demonstrated however, this is far easier said than done.

Other areas for government leadership includes setting ambitious fuel efficiency standards in vehicles and energy efficient standards for appliances and equipment, undertaking a robust national public transit strategy, and phasing out federal subsidies for oil production (Environmental Defense, 2015). The Liberal government under Justin Trudeau has pledged a 10-year \$60 billion infrastructure plan, of which a sizeable portion will be dedicated to improving public transportation in Canadian cities. While this is not necessarily a dedicated public transportation plan, it is certainly a major step in reducing the number and necessity of personal vehicles in Canada's urban centres. The Trudeau government has been applauded by groups such as the Federation of Canadian Municipalities for their collaborative approach to creating the infrastructure plan. Previous Minister of Infrastructure, Amarjeet Sohi, travelled across Canada meeting with provincial infrastructure ministers, and met with Canada's Big City Mayors in January 2016 to get their input on what the plan should include. This collaborative, multi-government approach is precisely the type of policy planning advocated by green economy supporters, and was sorely lacking under previous federal administrations.

The Pembina Institute has argued that government leadership is a critical component to the technological development needed to transition to a green economy. They argue that without government involvement, market failures will keep clean energy technologies from succeeding

(Hastings-Simon 2016, para. 4). There is a significant gap, for example, between the research and development phase and the commercialization phase of promising clean technology. This is the challenge faced by all new technologies; the only way to make them financially viable is to deploy the technology at scale (ibid, para. 7). The problem is that the only way to deploy technology is to lower costs, and “this deployment is critical for clean technologies that have higher upfront costs, but lower lifetime costs than conventional alternatives” like oil from the oil sands (ibid). Governments, it is argued, play a key role in reducing deployment costs, and there is historical precedent for government support in the diffusion of new energy systems. The Alberta Oil Sands Technology and Research Authority (AOSTRA) was set up by the Alberta government in 1974 to unlock oil sands resources with a roughly \$1 billion investment. It was this large upfront investment by government that ultimately led to massive private market investment – over \$80 billion dollars in 2014 alone (ibid, para. 10).

Despite this core set of beliefs, perspectives within the green economic camp vary, particularly on the issue of oil sands utility in the short term. Moderate groups like the Pembina Institute maintain that a responsible amount of oil sands development may be appropriate, especially in the short-term while Canada transitions to a low-carbon economy. Revenue raised by the federal government could be used to fund green energy technology, as is currently the case in Alberta. And while Pembina does not advocate shutting down current oil sands projects, the organization does explicitly argue against approving new developments “until a comprehensive GHG management framework exists to ensure Canada will cut emissions in 2020 and beyond” (Flanagan 2015, 9). This framework does not currently exist. The former National Round Table on the Environment and the Economy (NRTEE) did not view the immediate cessation of oil sands extraction as either feasible or desirable in the short or medium term, given

the continued global dependence on fossil fuels (NRTEE 2012, 70). Others however, like Environmental Defense, are clear that oil sands development and the expansion of pipelines is entirely incompatible with the need for deep emissions reductions. Their website clearly states that Canada must "completely phase-out polluting fossil fuels and reduce our carbon pollution to zero by mid-century" (Environmental Defense, 2018). Further, there is academic research suggesting that the only way for Canada to achieve its international climate promises and ensure continued economic well-being is to "plan an orderly phase-out of oil sands oil production" (Harvey and Miao 2018, parag. 4). Otherwise, external forces such as the decline in oil prices or dwindling global demand for oil could force a phase-out in a much less desirable scenario.

### **Provincial initiatives**

In practice, it is provincial governments that have embraced components of the green economy and initiated the strongest action on climate change. Provinces like Ontario, B.C., and even Alberta have embraced the core principle of EM: that there is no necessary conflict between the environment and the economy. The Ontario Liberal government under premier Dalton McGuinty introduced a plan to close all coal-fired power plants in the province, a target achieved in 2014 along with an emission reduction target of six percent below 1990 levels – the most significant reduction in GHG reductions in Canada to date (Ontario, 2017). Ontario's cap-and-trade system was introduced in 2017 under the Wynne Government's Climate Change Action Plan, and was intended to fund things like subsidies for electric vehicles, rebates for making homes and business more energy efficient, and investments in renewables like wind and solar (Globe and Mail 2018, parag. 3). Many of the previous government's environmental policies were deeply unpopular in Ontario however, and contributed to the Liberals' defeat to the Conservatives in June 2018. This will be discussed further below.

B.C.'s carbon tax, the first of its kind in North America, was introduced in 2008 and currently sits at \$35 per tonne and will increase \$5 per year until reaching \$50 in 2021. The carbon tax has been shown to be effective in reducing gasoline consumption, and importantly, lowering emissions. Research by Brian Murray at Duke University's Energy Initiative found that GHG emissions have dropped between 5 and 15 percent since the tax was implemented, and that it has had a negligible impact on the economy overall (Murray 2015, 679). And, while there is some evidence that emission intensive sectors such as cement have felt some negative consequences since the tax was implemented, "the positive impacts in other sectors appear to compensate for those losses" (Murray 2018, 680).

Nova Scotia has also made significant climate change progress, cutting emissions by 33 percent since 2005, the equivalent of approximately 7.6 Mt (ECCC 2018, 14). The province accomplished this by implementing policies aimed at reducing emissions in the electricity sector and investment in renewable energy. As of 2016, 26.6 percent of Nova Scotia's energy mix comes from renewable sources like hydro, tidal, and wind (Nova Scotia Power, 2016). For context, only 9 percent of Nova Scotia's electricity was renewable in 2007 (ibid).

As discussed in the previous chapter Alberta, the largest oil producing province in the country, has also taken comparatively strong action on climate change as opposed to other, non-oil producing provinces. Alberta's pledge to phase out all coal-fired power combined with a target of 30% renewable electricity by 2030 can certainly be considered progressive by North American standards. These examples of climate action by provincial governments are very much in line with green economic thinking. Still, there remains staunch support for Canada's fossil fuel industry across the country, particularly in Alberta, and few have questioned the economic viability of Canada's oil sands.

## **Criticisms of the petroleum-centered vision**

### *Lack of environmental foresight*

The negative environmental impacts from oil sands development have been well-established. The IPCC 5<sup>th</sup> report gave the direst warnings to date, leaving virtually no doubt of the irreversible changes of climate change if emissions are not drastically reduced by the end of the century (IPCC 2014, ES). If the world has a hope of avoiding the most catastrophic impacts of climate change, reductions in worldwide emissions must begin immediately. These impacts include sea level rise, increase in ocean acidity, loss of biodiversity, and more extreme weather patterns.

Locally, the oil sands have been shown to contribute to deteriorating air quality and health, the loss of biodiversity, significant land disturbances, tailings pond growth, and the contamination of surface and groundwater sources from intensive water use and pollution (Dobson and Amin 2014, pp. 22-23). The clear-cutting of boreal forest for the establishment of new and expanded oil sands projects is destroying one of the world's most important carbon sinks. Oil sands infrastructure such as pipelines run high risks of leaks and spills that could devastate ecosystems in both land and water and threaten habitats and wildlife. On a global scale, the extraction of oil from Alberta's oil sands will undoubtedly contribute to a rise in global GHG emissions - exactly the scenario the IPCC and international scientific community are urging world leaders to avoid (Clarke et al. 2013, 13). The next section will examine the lesser known but arguably equally dangerous economic impacts of oil sands development.

### *The cost of inaction*

There is compelling evidence to suggest the cost of doing nothing to mitigate climate change far outweighs any costs associated with transitioning to a cleaner economy. Sea level



rise, forest fires and extreme weather such as hurricanes and flooding all have a cost and have all been on the rise in recent years (Sawyer & Bataille 2018, 10). The Stern Review is perhaps the most comprehensive examination of the economics of climate change to date, and found that the costs associated with strong, early action on climate change are far lower than mitigating the impacts later (Stern Review 2006 ES, I). Reducing atmospheric CO<sub>2</sub> to 450-550 parts per million for example, would cost 1 percent of global annual GDP. Doing nothing and dealing with the consequences, however, would cost a minimum of 5 percent of GDP annually, upwards of 20 percent in the worst cases (ibid). Climate change is already resulting in real, significant costs in Canada; the 2017 wildfire season was the worst in B.C.'s history, and cost more than \$550 million (Canadian Press 2018, parag. 2).

### *Green energy revolution*

Another reason for the increase in attention being paid to the negative economic impacts of the oil sands is a perceived shift within the global economy. According to a 2015 report by Clean Energy Canada, an initiative of the Centre for Dialogue at Simon Fraser University, the world is in the midst of a global energy revolution that has “kicked into high gear” (Clean Energy Canada 2015, 1). The IEA agrees, making note of the “unmistakeable signs that the much-needed global energy transition is underway” in its 2015 World Energy Outlook (WEO). In their 2017 WEO, the IEA identifies the rapid development and falling costs of clean energy technology, especially solar energy, as being one of four large-scale shifts in the global energy system (IEA 2017 ES, 1).

The global demand for clean technology was an estimated \$1.1 trillion in 2012, and is estimated to grow to \$2.5 trillion by 2022 (Flanagan 2015, 1). The government of Canada estimates that the global market for low-carbon goods and services is worth over \$5.8 trillion,

and is expected to continue growing at a rate of 3 percent annually (ECCC, 2016). With its vast renewable energy potential in the form of hydropower, solar, wind energy, and biomass, as well as its skilled workforce, Canada is ideally positioned to be a leader in this changing energy landscape (Torrie et al 2013, pp. 10). Even further, some see the green economy as the only way forward for Canada. Environmental Defense, for instance, states "Canada's economy depends on taking full advantage of the opportunities associated with the transition to clean economy" (Sawyer & Bataille 2018, 6).

Economies around the world have begun to make a concerted effort to reduce their consumption of carbon-intensive fuels, as early signs of climate change become more apparent and warnings from the scientific community become increasingly dire (Flanagan 2015, 1). Clean energy is no longer considered a bonus in the world of energy, but a critical component of a vast sector. In 2016 for example, renewable energy accounted for two-thirds of new power capacity globally, led by a strong solar PV market (IEA 2017, 1). Notably, rising economic powerhouses China and India are both rapidly deploying solar photovoltaics (PV) (IEA 2017 2). EU-based think tank Sandbag and Agora Energiewende conducted economic analysis based on data from EUROSTAT, the EU's official statistics agency, and found a sharp increase in wind, solar, and biomass power generation in 2016 (Sandbag and Agora, 2016). That year, renewable technologies not including hydro accounted for 18.8 percent of the EU's electricity, while coal accounted for 21.5 percent. In 2017, that number was 20.9 for renewables, and 20.6 for coal. This was the first time that renewables overtook coal as a total share of electricity in the EU, and was mostly due to policy decisions to close coal plants (Sandbag and Agora, 2016). In 2014, global investors moved USD\$295 billion into renewable energy generation projects - an increase of 17 percent over 2013 (Flanagan 2015, 1).

In the three years before 2017, global GHG emissions held steady while the economy as a whole continued to grow (IEA, 2018). EM theorists might take this as evidence of the power of innovation; in this case, an argument can be made that the steady growth of renewable energy and an increase in energy efficiency led to a decoupling of economic growth from its environmental impacts. In 2017 however, global emissions from the use of fossil fuels rose by 1.4 percent (IEA 2018, 1). It is therefore too soon to speculate whether the global economy is truly decoupling from its environmental impacts. Still, there is compelling evidence that the global economy is changing, bringing with it new opportunities to invest in up-and-coming clean energy technology.

Energy policy in Canada continues to be dominated by the fossil fuel industry, however. There is little regard from policymakers in preparing for the possibility that the bitumen industry could decline rapidly due to changing continental market conditions and concerns about climate change. As previously noted, McGlade and Ekins (2015) found that in order to limit the most serious consequences of climate change, most global fossil fuels would need to remain underground. In this scenario, there would necessarily be a worldwide decline in high-cost oil sources like the oil sands. Because of this, some groups argue Canada is woefully unprepared to compete in a global clean energy economy.

#### *Missed economic opportunities*

Environmental Defense maintains Canada is missing out on its share of the trillion-dollar global clean technology market because Canadian clean technology companies are struggling to grow (Sawyer & Bataille 2018, 6). Clean Energy Canada estimates that Canada missed out on \$8.7 billion in the global clean energy industry in 2013 alone (Clean Energy Canada, 2015). The OECD has advised governments to bolster their renewable energy investments as a source of

jobs and growth, given that current BAU policies are "unsustainable in relation to environment, energy security, and economic development objectives" (OECD, 2018). If the Canadian government continues to favour the fossil fuel industry through subsidies and pro-pipeline policies at the expense of promising renewable energy systems, proponents argue Canada is not only missing out on economic opportunities in a new clean energy era but its economy will be left highly vulnerable to outside market forces.

According to research by Harold Innis and the subsequent work of Brendan Haley, 'margin' economies like Canada are subjected to "booms, busts, and constant vulnerability" since they are dependent on the 'centre' economies of the U.S. and the E.U. (Haley, 2011). More recently, these centre economies have expanded to include countries in Asia. Since the late 1960s, oil sands expansion has been driven by high oil prices, lucrative tax and royalty terms, and an approval process that has prioritized rapid development, grounded in the belief that "prices will remain high, if not continue to increase" (Dobson et al. 2013, 10). Proponents of the green economy vision reject this notion, citing data that indicates the demand for unconventional oil could taper off dramatically in the coming decades.

In 2015 Jeff Rubin, former chief economist at CIBC World Markets published a book titled *The Carbon Bubble* in which he posits that the looming threat of climate change will end the demand for high-carbon fossil fuels and drive down the value of these resources. He goes on to argue that in this scenario, the oil sands sector will not survive, and the economic trajectory put in place by the Harper administration will "turn to dust" (Rubin, 2015). The same year, Bank of England governor Mark Carney warned that investors could face "potentially huge" losses from climate change action that would make worldwide reserves of fossil fuels "literally unburnable" (Clark 2015, parag. 1). He went on to warn that if scientists like McGlade and Ekins

are correct, it would render the “‘vast majority’ of reserves stranded... which itself alters fossil fuel economics” (Clark 2015, parag. 11). Warnings from highly regarded mainstream economists like Carney have seriously called into question the economics of oil sands development and has arguably given more legitimacy to the findings of McGlade and Ekins. Even five years ago, the Alberta Premiers’ Council on Economic Strategy noted that “we must plan for the eventuality that oil sands production will almost certainly be displaced at some point in the future by lower-cost and/or lower-emissions alternatives. We may have oil to sell, but few or no profitable markets wishing to buy” (Lemphers & Woynillowicz 2012, 15). So, if the oft-cited argument that revenue collected from the oil sands funds essential social programs like health care and education is taken at face value the question then becomes, what happens to these programs if oil revenues dry up or vastly diminish without a plan to replace them?

Commodity prices, particularly oil, are notoriously volatile. In 2008 alone, the price for a barrel of oil ranged from \$60-\$140. Although these extreme fluctuations were brought on by the global financial crisis, it presents a clear picture of just how vulnerable the Canadian economy is to outside forces. The risks are further heightened in Canada as Alberta crude is much more expensive to produce than conventional oil sources and require a much higher market price to break even. A 2012 report from Bank of America Merrill Lynch found that Canadian oil sands need an average price of \$113 a barrel to break even (Blue Green 2012, 5).

Alberta workers are particularly vulnerable to swings in oil prices and the effects are reverberated through the entire province. The unemployment rate in Alberta rose from 4.7 percent in January 2014, and peaked at 9% in November 2016 (CERI 2017, 3). Even in 2009, amid high oil prices, the Alberta Federation of Labour questioned the unchecked pace of oil sands development stating that “we’re not questioning the wisdom of developing the oil sands.

What we're questioning is the current wild-west model for development - the pace of development. Surely, we all benefit when we can have a thoughtful discussion about pace" (Blue Green 2012, 6).

Proponents of the green economy vision argue that once infrastructure capacity to export Alberta oil to market is constructed, there is no guarantee that international oil prices will remain high enough to support the fixed costs of building them, or that environmental policies will not result in restrictions on export markets (Haley 2011, 117). To return to the earlier question of what happens to important social programs if global demands for oil dries up, former federal cabinet minister David Emerson has noted that "the more government spending relies on such revenues [as oil sands], the more fiscal volatility and instability becomes embedded in fiscal frameworks" (Lemphers & Woynillowicz 2012, 63). So, while it may be impossible to determine exactly how much demand there will be for unconventional oil in the future, the amount of uncertainty over the economics of the Alberta oil sands merits a degree of economic diversification (Haley 2011, 116). It is becoming increasingly apparent that in today's global economy, any country that allows its innovative and productive capacity to diminish while becoming more dependent on a non-renewable resource, is left highly vulnerable once the resource inevitably runs out or markets shift against the resource being exported (Clarke et al. 2013, 62).

### *Regional disparity and "Dutch Disease"*

The uneven distribution of natural resources among the provinces and the federal government's preference for developing oil resources in Alberta and Saskatchewan has created a situation characterized by dramatically disproportionate levels of relative wealth (Lemphers & Woynillowicz 2012, 52). Historic manufacturing economies in Ontario and Quebec have fallen

well below oil-rich Alberta in terms of GDP. The oil and gas sector has created a clear set of winners and losers across different economic sectors and regions and the impact of the oil sands boom in Alberta over the last decade has led to a “reorientation of Canada’s entire economy toward non-traded goods and services production” (Clarke et al. 2013, 53). This has prompted some economists to question whether Canada is suffering from Dutch Disease; a phenomenon when a resource boom within a particular industry leads to the downfall of other industries due to an artificially inflated currency.

Some economists have attributed the decline in Canada's manufacturing sector to a so-called petro-loonie – an artificially inflated Canadian dollar associated with the oil sands. In 2005, during peak oil sands performance, a Bank of Canada report surveyed firms in several manufacturing sectors including wood, print, chemicals, plastics, rubber and electronics. The report found that 77 percent of those surveyed had experienced lower profit margins on foreign sales because of a high-valued Canadian dollar (Lemphers & Woynillowicz 2012, 29). At the same time, Industry Canada estimates that between 33 and 39 percent of the decline in manufacturing employment in Canada could be attributed to a high dollar (Beine et al. 2012, 487). Compared to other OECD economies, Canada’s manufacturing sector has declined much more rapidly as a share of total employment (ibid, 63). A prime example of such a dramatic decline in the manufacturing sector of the Canadian economy is the rise and fall of Canada’s auto industry. In 1999, at its peak, Canada was ranked the fourth-largest automobile assembler in the world, and boasted a \$15 billion-dollar trade surplus in automotive products (ibid). By 2006 Canada had run its first automotive trade deficit, and by 2011 it had been experiencing a \$15 billion-dollar deficit for several years (ibid).

Throughout the period of mass oil sands expansion in the early 2000's, huge employment gains in the petroleum industry sat in stark contrast to the job losses experienced in other export-oriented and goods producing industries (ibid, 42). For every new job created in the petroleum sector between 2003-2013, 30 were lost in manufacturing (ibid, 43). Manufacturing jobs declined in every province including Alberta during the same period, the heaviest hit regions being Ontario and Newfoundland which saw an almost 25 percent decline (ibid, 44). Although the manufacturing industry has been hit hardest, other classes of Canadian exports also declined during the period from 2002-2012, including tourism and exports of tradeable services. The combined result was deterioration in Canada's overall balance of payments, "considering merchandise trade, services trade, tourism and other current flows" (ibid, 52). Despite the accelerated pace of resource extraction and export Canada is, on balance, a much less successful exporter than at the turn of the century, when the bitumen boom started to accelerate (ibid, 52).

The concept of Dutch Disease has been criticized for being far too simplistic a diagnosis for the complex factors affecting the Canadian economy (Gerson 2012, parag. 2). Whether the decline of the manufacturing sector can be attributed to oil sands development or the increase of cheap manufactured goods from China, for instance, is difficult to discern. It is also worth noting that it has been widely acknowledged that many advanced economies around the world are facing declining manufacturing sectors (Dobson et al 2013, 14). Still, the argument can certainly be made that an economy too tightly linked to one particular resource is threatened by external risks and vulnerabilities.

#### *Pipelines: deepening our carbon dependence*

The development of new oil sands projects and pipeline infrastructure will be in place for decades, exacerbating an already poor environmental record and "locking in high pollution levels



at a time when we need to be cutting back” (Environmental Defense, 2015). From an economic perspective, adding new pipeline infrastructure encourages long-term expansion of the oil sands, further entrenching Canadians into petroleum dependence and a carbon-dependent development trajectory (Haley, 2011). Groups like Environmental Defense and activists across the country have questioned the legitimacy of the Trudeau administration's commitment to addressing climate change while it champions pipeline infrastructure deemed to be in the national interest.

The Energy East pipeline provides a good example here. In 2016, Montreal Mayor Denis Coderre and other Quebec municipal leaders condemned the proposed cross-Canadian pipeline as being an unacceptable environment risk (Taber, McCarthy and Fife 2016, parag. 7). There is evidence to support this. According to a 2014 preliminary report from the Pembina Institute on the GHG impacts of the Energy East pipeline, the project would have created an estimated 30 - 32 million tonnes of annual emissions (Flanagan and Demerse 2014, 2). This is equivalent to the annual emissions of adding over 7 million cars to Canada’s roads, or the total number of cars in the province of Ontario (ibid). Importantly, Pembina’s estimate only included emissions resulting from the production of crude oil travelling in the pipeline, and not emissions occurring from refining or burning the finished product. In this sense, Pembina's is a very low estimate of the potential GHG emissions that could have resulted from Energy East (ibid, 2). When the downstream impacts of pipeline infrastructure are factored into assessments, future emission increases become even higher.

Still, the Trudeau administration supported the project in principle. Speaking at a press conference on the Energy East pipeline in 2016, Mr. Trudeau used the opportunity to reiterate his belief that there is no necessary conflict between pipelines and environmental protection, stating that “Canadians believe that a strong economy goes hand in hand with a strong and protected

environment...I'm feeling very good about our capacity to get our resources to market in a responsible and environmentally sustainably way” (Taber, McCarthy and Fife 2016, parag. 5). Ultimately, the Energy East project was abandoned by TransCanada Corp., with some commentators citing regulatory hurdles as the cause. Others however, such as Benjamin Dachis, associate director of research at the C.D. Howe Institute, maintain it was the loss of a strong business case, impacted by declining oil prices and the high cost of converting natural gas pipeline to transport bitumen, that ultimately decided the pipelines’ fate (Dachis 2017, parag.1-9).

#### *Failure to consider First Nations*

To say the relationship between energy, government and Canada's indigenous peoples is complicated would be an understatement. In 2004, in the Haida and Taku River decisions, the Supreme Court of Canada ruled that federal and provincial governments have a duty to consult First Nations groups when the crown contemplates conduct that might adversely impact potential or established Aboriginal treaty rights (AANDC 2011, 1). This duty arises most often in major resource development projects such as mining, oil sands development, and energy generation and transmission (ibid, 25). The legal duty to consult is designed to ensure Canada’s indigenous peoples have a say over resource projects that could adversely affect their traditional land and customs. Although provinces hold the constitutional right to develop resources within their borders, “in the era of modern treaties, land claims, and growing awareness of legal rights, aboriginal communities are key players in the energy sphere” (Gattinger 2014, para. 14). Beyond the legal duty to consult, indigenous groups are positioned to offer a unique perspective on land and how large scale industrial projects might impact natural ecosystems.

Still, there have been several well-documented cases of the oil industry and government failing to fully involve indigenous communities, or completely ignoring their duty to consult on the construction of pipelines crossing through traditional territory. In January 2016, the B.C. Supreme Court ruled that the province had failed in its duty to consult First Nations communities on the Northern Gateway pipeline. As mentioned above, a federal court of appeal reached a similar conclusion in August 2018 when it ruled the NEB and federal government had breached the constitutional duty to consult First Nations on the Trans Mountain pipeline. For the most part, First Nations groups maintain that Canada's approach to the duty to consult has been at worst a dismal failure and at best, a minimalist, one-size -fits-all approach that is less concerned with reconciliation and more with doing the minimum legal requirements (Munson, 2017). Industry, too, sees the duty to consult's lack of clarity and guidance as a serious hindrance to resource development; a Canadian Chamber of Commerce report from September 2016 found the lack of clarity to be "unacceptable, unfair, and potentially harmful to all concerned" (Munson 2017, parag. 16). The Trudeau government has committed to working more closely with First Nations leaders and including them in discussions surrounding energy, noting the government recognizes that "reconciliation requires sustained government-wide action and needs to be at the centre of our consultation and accommodation activities" (Canada, 2017). However, significant challenges remain in integrating First Nations rights and perspectives into decision-making around energy development within a BAU approach (Sawyer & Bataille 2018, 9).

A green economy approach would endeavour to engage indigenous peoples and include indigenous voices in any national energy project. Many indigenous communities have already aligned with green economy proponents because it is seen as a better way to generate wealth in a manner that is "consistent with [their] cultural and environmental values" (Ireland 2016, parag.

11). Not all indigenous groups are opposed to pipeline development, however. In January 2019 over 130 First Nations, represented by the Indian Resource Council (IRC), met to discuss a plan to purchase the Trans Mountain pipeline from the federal government (Bakx 2019, parag. 1-2). The IRC, which represents First Nations with oil and gas resources on their land, maintains a pipeline owned and operated by First Nations would be a significant economic development opportunity that would be balanced with strong environmental oversight (ibid, parag. 8). According to the IRC, those indigenous groups opposed to the pipeline project are holding back other First Nations who are counting on it for economic gain (ibid, parag. 5). At time of writing, it appears likely the IRC will submit a proposal to purchase the project in the coming months.

### **Recommendations from green economy proponents**

So far, this chapter has examined key contributing factors to the growing momentum of green economy dialogue in Canada, and highlighted the economic risks of oil sands as pointed out by proponents. The next section will examine several policy recommendations that have been brought forward with the aim of transitioning Canada to a low-carbon economy. These recommendations include the elimination of fossil fuel subsidies, the introduction of a nationwide price on carbon, stringent regulations, and the creation of financial incentives to encourage clean-energy entrepreneurs.

#### *Eliminating subsidies*

One of the main criticisms of oil subsidies is that they encourage over-consumption by creating lower oil prices than there would be otherwise, thus unfairly distorting markets. Oil subsidies have been called wasteful, expensive, environmentally destructive, and unnecessary (Bloomberg, 2016). Toshiyuki Shirai, a senior energy analyst at the IEA, notes that most subsidies “encourage consumers to waste more energy, putting added pressure on energy

systems and the environment and often straining government budgets” (Shirai 2017, parag. 2). At the 2009 G20 meeting, world-leaders affirmed their commitment to phasing out inefficient fossil fuel subsidies and the IEA has been a strong supporter of these reforms (ibid, parag. 4).

Most proponents of the green economy support the immediate phase-out of oil sands subsidies, or at the very least believe they should be restructured. Environmental Defense advocates for subsidies to be phased out by 2020 at the latest (ibid). Similarly, NRTEE previously stressed that to transition to a low-carbon economy, fossil fuel subsidies would need to be phased out, arguing that “subsidies that encourage pollution of the over-extraction of resources ultimately place a drain on the public purse and need to be discontinued” (NRTEE 2012, 84). The Pembina Institute recommends completely phasing out the CDE and reclassifying eligible expenses under the CEE to reduce the environmental and financial cost of the oil sector (Pembina 2014c, 2).

Importantly, studies have shown that phasing out Canada’s oil sands subsidies would likely result in a significant reduction of GHGs; the International Institute for Sustainable Development (IISD) modelled the likely impact of a full provincial and federal phase-out of fossil fuel subsidies by 2020 and found that it would decrease national GHG emissions by 2.1% (Dobson and Amin 2014, 23). In Alberta alone, emissions would be expected to fall by 4.6% overall, and 12% in the oil sands sector (ibid, 24). Current estimates put federal and provincial subsidies to oil producers at \$3.3 billion annually (IISD 2018, parag. 7) and despite election promises from the Trudeau government to phase them out in the medium term, at time of writing government has taken no action in this regard.

### *Carbon pricing and regulations*

A nation-wide carbon price that accounts for the global cost of carbon pollution is widely viewed as one of the most efficient policy tools for driving emissions reductions (Dobson and Amin 2014, 3). The Pembina Institute notes that a carbon price not only ensures that polluters are paying a real cost for the toxins they emit, but can help to change individual and business behaviours and incentivize innovation at the production level (Hastings-Simon 2018, parag. 3). Pembina further maintains that an economy-wide carbon tax would help ensure that “Canada’s economy remains resilient and competitive as the world moves to low-carbon energy” (Flanagan 2015, 2). An equal, nationwide price on carbon would serve to even the playing field by ensuring "equity between the provinces and between economic sectors meaning everyone must play by common rules" (Environmental Defense, 2015).

As discussed in chapter 3, carbon pricing is also a policy priority among some proponents of the petroleum-centered vision because it is seen as a mechanism to gain social license for continued oil sands expansion and added pipeline infrastructure. This group tends to support lower taxes ranging from \$10-\$50 per tonne of CO<sub>2</sub>. Taxes in this range have proven to be politically viable in provinces like B.C. and Alberta; the national carbon price, too, will reach a maximum of \$50 per tonne by 2050. Proponents of a green economy, however, are driven by a much clearer environmental imperative and advocate a significantly higher carbon price ranging between \$100-\$200 per tonne by mid-century to keep global warming below 2°. And although this range has been shown to reflect the true cost of carbon pollution, prices in the hundreds of dollars per tonne are not being seriously considered in political discourse (Haley 2016, 15).

Economist Mark Jaccard agrees it is unlikely that government would entertain a carbon price high enough to meet its emissions target, given the severe political consequences it would

face (Jaccard et. al, 2016, 1). The issue of carbon pricing illustrates the uneasy mix of BAU and green economy thinking among Canadian policymakers. Governments are willing to impose carbon taxes only so long as they are low enough to be politically acceptable. The problem is that what is politically acceptable may not be sufficient for meeting minimum reductions targets. Because of this, there are some who question the effectiveness of a carbon tax in meeting environmental objectives as a stand-alone measure.

Brendan Haley maintains that while a carbon price is integral to the transition from a petroleum-centered energy trajectory to a low-carbon economy, this mechanism alone will only encourage incremental sociotechnical changes (Haley 2011, 122). Without other forms of government intervention, a carbon price alone would be insufficient to achieve the systemic changes required to make the transition to an innovative, green economy. To truly change the trajectory of energy development, it is thought that structural changes challenging the legitimacy of the oil sands development and encouraging the momentum of alternative technological systems must be made (Haley 2011, 122-23). Innovation requires the use of a more comprehensive set of policy tools to “redirect social and technological systems towards a green economic future” (Haley 2016, 11). And, because of the considerable time it takes to fully develop, implement and diffuse a new energy technology, Haley recommends “developing technologies in sequence...developed in parallel, with policy actions tailored to each technology’s stage of development” (Haley 2016, 13).

Groups like Pembina and economist Mark Jaccard advocate for flexible regulations in key sectors such as transportation, electricity, and industry, along with a moderate carbon price reaching a maximum of \$40 by 2030. According to them, “experience in leading jurisdictions indicate that this type of method is less politically difficult” (Jaccard et al., 2016, 1). The most

successful policy in reducing GHG emissions in Canada thus far has been Ontario's regulatory decision to ban coal-fired power plants, leading to an annual reduction of 27 Mt (ibid, 2). The authors refer to this as the "implicit carbon price" of non-price policies; in other words, the estimated carbon price needed to achieve the same levels of reductions as one or a combination of other types of climate policies (ibid). They point to the example of a CCS coal-fired power-plant in Saskatchewan as equating a \$60-\$80 carbon price, or the closing of coal-fired power plants in Ontario as being equal to a \$80-\$100 carbon price (ibid). They argue that a carbon price is not necessary, although it is often presented as such. The Canadian target could be met by regulations alone, and the federal government does have the constitutional power to regulate industry. It has done so by phasing out the use of traditional coal-fired electricity by 2030, for example. Still, the Canadian government is hesitant to force regulations when they will encounter political resistance. In the case of phasing out coal-fired electricity, the federal government allowed for some flexibility in permitting coal plants in Nova Scotia to stay open longer so long as the province achieves equivalent emissions reductions elsewhere, for example.

### *Green energy technology and innovation*

One of the key objectives for proponents of the green economy is to bring about the technological and behavioural changes necessary to achieve a low-carbon economy. This means Canada must actively pursue new, clean energy technologies and improve its research and development capabilities. The OECD notes that technological innovations are the key driver in the transition to a green economy. According to Sustainable Development Technology Canada (SDTC), a federal arms-length organization that funds cleantech projects, Canada's cleantech sector consists of 800 companies and employs more than 55,000 people across the country (SDTC, 2018). Further, it is estimated that the cleantech sector in Canada generates more than



\$17 billion in revenue annually (ibid). Still, the organization notes that while Canada is strong in producing cleantech research, it lags far behind other industrialized nations, particularly the U.S., on a per capita basis in securing venture capital and debt financing that help companies scale up their operations and bring their technology to commercial scale (SDTC 2016, 6).

Government-led R&D into clean tech is also viewed as a critical component to escaping Canada's carbon lock-in. This is what Haley calls the "entrepreneurial state", a term first coined by economist Mariana Mazzucato, in which governments play a fundamental role in transforming their economies by promoting innovation (Haley 2016, 4; Mazzucato, 2013).

Governments around the world, including Canada, play an entrepreneurial role in that they "manage training and education institutions, produce information, set regulations, supply funds with conditions attached, purchase goods and services, and set targets" (Haley 2016, 4).

Governments can also invest directly in green technology, similar to the procurement provisions in the Ontario Green Energy Act (GEA). In this sense, governments have a direct role in changing economic direction by creating and shaping markets (Haley 2016, 4). Currently, there is no comprehensive policy framework that exists for supporting Canada's cleantech exports at either the national or provincial level (Comette et al 2015, 1). This is viewed as a missed opportunity both environmentally and economically.

### **Economic, environmental, and political criteria**

To test EM's assumption of a win-win scenario for the environment and the economy under a green economy approach, the following section will examine the economic and environmental risks and benefits associated with implementing the necessary policies to achieve a new kind of energy strategy, followed by an examination of the political challenges associated with a green economic vision for energy development.

### *Economic criteria*

A 2018 report by leading environmental economists Dave Sawyer and Chris Bataille found it was possible for Canada to meet its emissions reductions target with minimal impact on national GDP. Indeed, the economy would continue to “grow and prosper” (Sawyer & Bataille 2018, 3). The report concluded that if Canada were to enact the necessary policies to meet its target, the Canadian economy would grow 38 to 38.5 percent between now and 2030 (or 3.1 - 3.2% per year), compared to 39% (3.3% per year) if no additional action were taken. Even this minor difference in GDP is projected to be offset by the money saved in avoiding costly impacts of climate change (ibid, 6). Although somewhat dated, the results of the 2009 M.K. Jaccard and Associates economic modelling study are also useful in demonstrating that, with appropriate policy measures, Canada could still have a “strong growing economy, a quality of life higher than Canadians enjoy today, and continued steady job creation across the country” while meeting the internationally accepted 2° target (Bramley et al 2009, iii). The report found that Canada's economy would grow steadily at 2.1% per year to 2020 while meeting the 2° target (Bramley et al. 2009, 4). This is compared to the 2.4 percent annual growth rate that was predicted under a BAU approach to energy development, where governments do not implement new policies to cut emissions. It is important to note that neither of these economic modelling studies consider the costs associated with climate change, and what those costs could mean to Canada's overall economic performance. Job creation under a green economy is more difficult to predict as research on the topic is sparse. However, the 2016 Government of Canada Clean Technology Industry report estimated that the clean energy sector employs 55,600 Canadians, and could reach 76,000 by 2022 (ibid).

Despite these economic projections, in practice the introduction of large scale green economic initiatives has been fraught with difficulty. Ontario's GEA was launched in 2009 by the McGuinty government and intended to "promote the large-scale deployment of low-impact renewable energy technologies such as wind, solar PV, small scale hydro-electricity and biogas-based generation" with a feed-in-tariff (FIT) program at the centre of the legislation (Winfield and Dolter 2014, 423). The government claimed the GEA would create 50,000 direct and indirect jobs in its first three years (ibid, 425). However, the province's two-year review of the FIT program in 2012 estimated only 2,000 "direct manufacturing jobs" had been created since the program launched in 2009 (Ibid, 426).

Critics such as Ross McKittrick, a professor of economics at Guelph University, argued the GEA would not "create jobs or improve economic growth in the province... [and] its overall effect would be to increase unit production costs, diminish competitiveness... reduce employment and make households worse off" (McKittrick 2013, iv). McKittrick's views are in line with many neo-classical economists that see renewable energy technologies as inherently more expensive than conventional, non-renewable alternatives. These higher costs, it is claimed, "feedback into the wider economy, reducing economic growth and overall employment" (Winfield and Dolter 2014, 431). In the case of the GEA, a non-market surcharge on electricity called the Global Adjustment (GA) was levied to fund long-term guaranteed contracts to generators with renewable energy sources at a fixed price above market rates (Aliakbari et al 2018, 38). Between 2008 and 2016, the GA grew more than 70 percent, contributing to a drastic increase in electricity prices and costing consumers \$9.2 billion more than they would have paid under the previous program (ibid). Further, in 2016, renewable sources generated less than 7 percent of electricity in Ontario while accounting for almost 30 percent of the GA (ibid). The

FIT program under the GEA was ultimately cancelled in late 2016 due to extreme backlash from residents and businesses angry over the cost of electricity. In 2017, then Ontario Energy Minister Glenn Thibeault said policies under the GEA ultimately led to “sub-optimal outcomes” for consumers and admitted the strategy was at least partly to blame for the rising cost of electricity in the province (Hill 2017, parag. 2-3).

Green energy proponents, however, are quick to point out the problems with using classic economics to model renewable energy initiatives. For one, renewable energy systems are intended to “correct market failures where the damage caused by GHG emissions and other environmental impacts and risks are not reflected in the price of non-renewable electricity generation” (Winfield and Dolter 2014, 428). In other words, classic economics do not factor in the true cost of non-renewable energy production, and “the loss of market welfare may be offset by the social welfare gains from environmental improvements” (ibid). Still, the unpopularity of environmental policies under previous Liberal governments played a big role in the election of Conservative premier Doug Ford in 2018, who campaigned aggressively against the GEA and the Wynne government’s cap-and-trade program. Many political commentators have maintained that the Ontario provincial election was in fact a rejection of Wynne’s cap-and-trade system, repeatedly referred to as a ‘carbon tax’ by the Conservatives (Gilmore 2018, 5). Ford’s plan to replace the Wynne government’s Climate Change Action Plan, introduced in late 2018, included cancelling the cap-and-trade program and represents a significant scaling back of the province’s previous climate change targets. Ford’s plan instead focuses on industry regulation and incentives rather than carbon pricing. Some commentators have noted that Ford’s plan “will make it harder for Canada to meet commitments made under the Paris accord” (McCarthy & Stone 2018, parag. 1). Federal Environment Minister Catherine McKenna also noted her

disappointment in seeing “Premier Ford undo Ontario’s climate action progress” (ibid, parag. 13). For their part, the Ford administration is adamant that they will grow the economy while still meeting an emission reductions target of 30 percent below 2005 levels by 2030, which at time of writing is already three-quarters of the way achieved (ibid). It is important to note however, that these emissions cuts are the result of policies enacted by previous Liberal governments – policies Ford himself campaigned aggressively against.

The economic challenges associated with implementing a green economy, as evidenced by the high cost of electricity in Ontario under the GEA, reflect a significant obstacle to the green economy vision. Further, the policies necessary to meet Canada’s targets and still maintain steady economic growth would need to be transformational, not marginal (Sawyer & Bataille 2018, 5). They would include building exclusively net zero homes, the electrification of transportation powered by renewable energy in cities and rural communities, and importantly for the context of this project, the wholesale shift from fossil fuels towards renewable energy (ibid, 5). And, as will be discussed below, there are serious doubts as to whether the political will currently exists for these immediate, transformative changes.

#### *Environmental criteria*

Canada is not on target to meet its emissions reductions target. In chapter 3, it was noted that even with the government of Canada’s national carbon pricing and increase in funding for green technology, Canada’s emissions will be 66Mt short of meeting its emissions reductions target of 30% below 2005 levels by 2030. Many however, including Jaccard and Sawyer and Bataille, have conducted economic modelling that projects Canada could indeed meet its target given the transformative policies required for a green economy. According to the authors, a ‘Paris-compliant’ scenario would allow the Canadian economy to prosper, while at the same time

meeting or even exceeding the 2030 target. For this to happen, policies within the PCF would need to be implemented “with urgency and a high level of ambition” (Sawyer and Bataille 2018, 3).

### *Political criteria*

The vision of a green economy for Canada faces significant political challenges. Fossil fuels, and in particular the oil sands, have defined the energy landscape in Alberta and have been a key economic priority for Canada at the federal level in recent decades. As noted in chapter 2, the resource reality in Alberta and Saskatchewan have made them suspicious of the green economy and the vulnerabilities, uncertainties, and instabilities it may create for oil sands interests (Haley 2011, 115). Until the Trudeau government introduced the PCF in 2016, efforts at a national plan to limit GHG emissions were unsuccessful because of provinces arguing over how to share the burden (Haley 2016, 1). National attempts to lower emissions were viewed as an attack on Alberta’s energy industry and for over a decade during the Harper era, very little progress was made. The reality is that the current energy playing field is unevenly skewed in favour of the oil sands, which hold “a number of advantages including subsidies and tax credits” (Hastings-Simon 2016, para. 10), and continued support from the federal government.

At the same time, several provinces are making a concerted effort to decarbonize the economy. GHG emissions in Ontario and Quebec, for example, were lower in 2015 than in 1990 by 24 Mt. Saskatchewan, Alberta, and B.C. however, were higher in 2015 than in 1990 by 30Mt (ECCC, 2017). In fact, Manitoba, Saskatchewan, and Alberta were the only provinces whose emissions increased between 2005-2015. B.C., Ontario, Quebec, New Brunswick, and Nova Scotia have all decreased their emissions since 2005. Of course, this can be attributed to higher emissions in oil producing provinces, but still illustrates the difficulty Canada faces as a whole in

lowering its emissions. And although Alberta's environmental efforts have significantly improved under the NDP government, "efforts to fight climate change led by some sub-national governments are being undermined by others" (Flanagan 2015, 4).

### *Distributional effects*

The policies needed to achieve a green economy, including carbon pricing, strategic investment in clean technology, and strict regulations would have distributive effects that would ultimately affect its political viability. And, while a low carbon economy might "hold the promise of enormous economic benefits from the burgeoning clean-tech and renewable-energy industries" it also threatens to disrupt sectors that have historically been the foundation of the Canadian economy (McCarthy, 2016). Under the green economy vision, renewable energy industries would flourish while fossil fuel industries decline (ibid). Indeed, proponents of oil sands development have maintained that because the country's immense fossil fuel energy resources are concentrated mostly in one geographic area, moving to a carbon-constrained future would impose greater costs on oil producing provinces (MacDonald and Lesche 2012, 10). According to the Alberta Premier's Council for Economic Strategy in their 2011 report "the creation of an affordable, environmentally friendly alternative to oil would be a great thing for the world. It could be economically devastating for Alberta because when it happens, we are still heavily dependent on oil exports" (Alberta 2011, 14). If a high carbon price were implemented by the federal government, provinces with renewable infrastructure already in place and whose economies are not financed by oil sands would likely fare much better in the short term.

MacDonald and Houle maintain that those on the losing side of a policy programme, which in this case would be petroleum producers, are motivated by a perceived lack of fairness and are much more likely to use political power to block or stall the policy initiative, making it

difficult for a government or group to achieve its policy objective (MacDonald and Houle 2012, 2). In the case of efforts to introduce meaningful environmental reforms, “by far the strongest distributive-effect influence to date has been the stalling of the attempt to develop national climate-change policy large due to resistance from the oil producing provinces” (MacDonald and Houle 2012, 13). It is true that Alberta may have, at one point in time, been the greatest source of resistance to national climate policy. The governing NDP later came to support the federal PCF, however, and implemented some of the most significant climate and energy efficiency policies in the country, before qualifying its support in the context of delays in starting new pipeline construction. At time of writing, the main source of opposition to national climate policy are the opposition UCP in Alberta, and provincial governments in Ontario and Saskatchewan; two oil producing provinces, and an anti-tax populist administration.

Still, the concept of fairness remains an important concept among those opposed to robust carbon pricing mechanisms. Macdonald and Houle argue that perceptions of unfair distributional effects may be even more salient in the political debate than actual effects (ibid, 2). Jaccard et al. similarly note that in Canada, "perception can matter more than reality when it comes to public support for an interest groups resistance to climate policy" (Jaccard et al. 2016, 17). Lobbying campaigns can also lead policy makers to use “less effective or efficient policy instruments - for example voluntary programs instead of law” (ibid, 2). And while the financial cost of a policy instrument like a carbon tax can be the most “visible and influential of distributive effects”, there can also be non-financial costs, such as western alienation (MacDonald and Houle 2012, 9). Despite their climate policy progress, carbon pricing remains deeply unpopular among Albertans. In an interview with Globe and Mail reporter Gary Mason, UCP leader Jason Kenney stated that he has never heard so much support for Alberta separatism since the Liberal party was



elected in 2015 and that the government was "driving a level of alienation [in Alberta] that I haven't seen in my whole life" (Mason 2018, parag. 15-16). So, while Alberta has supported the federal government's carbon pricing plan, this support is fragile at best and could change if a new government is elected in 2019.

### *Veto actors*

Without the support of oil producing provinces, a green economy approach on a national-scale faces significant obstacles. For one, any emissions reductions progress made in Ontario and Quebec in recent years could be cancelled out by emissions resulting from new oil sands projects. As noted in chapter 3, Alberta policy-makers, with the support of the federal government, are committed to finding a way to ship oil overseas, with or without the support of non-oil producing provinces. This is not to say that other parts of the country could not flourish under a green economy, but it is made more difficult by powerful petroleum industry working against it.

At the same time, Canada's diverse geography, decentralized political structure and regionalism has produced a variety of sociotechnical systems that are relatively disconnected from the oil sands trajectory (Haley 2011, 125). While this has discouraged national coordination in one sense, Haley maintains that it also allows for the potential to create "sub regimes within the Canadian federation that will provide an environment for the growth of different industries that could gain enough strength to challenge the oil sands-dominated trajectory" (Haley 2011, 125-26). So, while the continued expansion of Alberta's oil sands may cancel out emissions reductions made in other provinces, petroleum-centered interests have little influence over the development of a green economy in other parts of the country. Quebec's hydroelectric developments and the growing demand for lower-cost electric vehicles are examples of this.

### *Historical rigidities*

Canada has a strong tendency to support the continuation of existing paradigms due to the problems of adjustment when faced with demands for new staples and the diffusion of new technologies (Haley 2011, 111). During the Harper era, Canada resisted and rejected international attempts at environmental reform thought to threaten the continued consumption of fossil fuels. The current Trudeau administration has taken a significantly more aggressive stance against climate change and GHG emissions. Still, Canada is actively pursuing oil sands expansion and its climate targets fall well below what is needed to achieve meaningful emissions reductions. Indeed, “the natural resource dependence of the Canadian economy is a major challenge in its transition to a green economy “(Krechowicz, 2012).

The historical rigidities argued to be driving the petroleum-centered vision as described in chapter 3 could also lead to its demise, however. Haley argues that oil sands infrastructure depends on high international prices to support fixed costs, and there is no guarantee that prices will be high enough to sustain the industry over the long term, or that international environmental policies will not result in “quantitative restrictions on production or export markets” (Haley 2011, 118). In recent years, there have been several high-profile instances of international attempts at restricting Canadian oil, such as the EU Fuel Quality Directive (FQD). The FQD proposed assigning higher emissions value to oil sands than conventional crude oil. Recognizing that a ‘dirty’ label on Canada’s oil could have resulted in major restrictions or even a ban on Canadian crude in the EU, industry and government embarked on an aggressive lobbying campaign against the FQD. And while lobbying campaigns were ultimately successful against the FQD there is no guarantee that deteriorating environmental conditions or changing political climates will not lead to bans or restrictions in the future.

Haley maintains that the existing centre-margin relationship has the “weight of historical rigidities on its side” and that any successful implementation of a green economic approach to energy development will require “building enough momentum through self-reinforcing expectations, sociotechnical developments and political power to break the lock-in inherent in existing energy systems” (Haley 2011, 119). In addition to the political challenges associated with implementing a national energy strategy, the green economy approach faces an additional challenge, a lack of precedent. The reality is that there currently exists no truly green economy at a state level to base itself on. Where oil sands proponents can point to previous economic data like revenues from taxes and royalties, along with the creation of entire towns devoted to oil sands development, proponents of the green economy must rely on projections or examples from European nations with much-different geo-political realities than Canada to make their case.

## CHAPTER 5 CONCLUSIONS

This thesis has examined two visions of energy development in Canada in an attempt to determine the overall likelihood of each in overcoming economic, environmental, and political challenges. The following sections will compare the challenges and opportunities of the two visions, and draw final conclusions as to the usefulness in framing the debate through the lens of EM.

### **Comparing economic challenges and opportunities**

Chapter 3 discussed how under a petroleum-centered vision of energy development, the Canadian economy is expected to experience continued growth, at least in the short term. The IMF predicts the Canadian economy will grow 2.3 percent in 2018, and 2.0 percent in 2019 (IMF, 2018). Longer term economic modelling found that under a petroleum-centered scenario, the economy would grow 39 percent by 2030, or 3.3 percent per year (Sawyer and Bataille 2018, 6). Importantly, these projections are based on the assumption that global demand for oil will remain high, and that prices will continue to rise. Proponents point to data from the IEA predicting global demand for energy will grow 30 percent by 2040, and that “oil demand [will be] on a rising trajectory to 105 mb/d by 2040” led by petrochemical, trucking, aviation, and shipping industries (IEA 2017, 5). By 2030, China is predicted to overtake the U.S. as the world’s largest importer of oil with demand rising to 13 mb/d by 2040, and after that, demand in India will be even higher (IEA 2017, 4). These projections form the basis of the petroleum-centered vision’s claim that developing the infrastructure capacity to ship Canadian oil to these markets ought to be a key economic priority.

There is also much uncertainty surrounding the future of global oil prices and demand that challenge the conventional economic wisdom of further developing Canada’s oil sands. The

IEA's 2017 WEO, for example, also notes a large-scale shift towards renewables in the global energy mix. Rapid deployment and falling costs of clean energy technology are making renewables increasingly attractive to global energy consumers. In 2016, growth in solar PV capacity was larger than any other form of energy generation and, since 2010, the cost of new solar PV has declined by 70 percent; wind-powered generation has declined 25 percent (IEA 2017, 1). In the EU, renewables will constitute 80 percent of new generation by 2030. China, too, is investing heavily in renewable energy; a full one-third of global solar PV capacity will be installed in China by 2040 (IEA 2017, 3). Importantly, the IEA has noted that "China's choices will play a huge role in determining global trends, and could spark a faster clean-energy transition" (IEA 2017, 3). Key here is that global economies are starting to take seriously the threat of climate change and are adjusting their energy consumption accordingly.

There is mounting evidence to suggest global demand for oil could taper off dramatically in the decades ahead and if that happens, high-cost producers like those in Canada's oil sands would no longer be economically viable (See Lemphers and Woynillowicz, 2012; Rubin 2015, 2017; Harvey & Miao, 2018). It has been well established that Canadian bitumen is among the most carbon intensive fuels in North America and the most expensive to produce (Israel, 2017). Since the decline in global oil prices from the \$100/barrel range in 2014, oil sands producers have struggled to cope. Major companies like Shell, BP, Chevron, ConocoPhillips and Statoil have sold off their investments in the oil sands, and some analysts predict global oil prices will never again reach triple digits (Rubin 2017, 1). The global fight against climate change could also negatively impact demand for Canadian oil. Economist Jeff Rubin posits that "recent international commitments to reduce global carbon emissions over the next three decades will significantly reduce the size of future oil markets" (ibid). This is especially bad news for

Canada's oil sands. In a scenario where the world takes seriously its Paris Accord commitments, carbon-intensive and high-cost oil from the oil sands would be one of the first to fall (Harvey & Miao 2018, parag. 17). These factors have gone largely ignored by industry and government, yet seriously call into question Canada's efforts to continue rapidly developing its oil sands and invest in pipeline infrastructure in hopes of breaking into new overseas markets.

Highlighting the lucrateness of the oil sands is one of the most effective strategies proponents use to overcome dissent. Chapter 3 examined industry and government claims that the oil sands create significant revenue for the province of Alberta and federal government, providing funding for programs like healthcare and education across the country all while supporting hundreds of thousands of direct and indirect jobs. In reality, however, the oil sands contributions to the overall Canadian economy are surprisingly low – just 2.6 percent of national GDP and 67,000 direct jobs - when compared to other sectors. The finance services sector for example, contributes 7 percent of GDP and generates nearly 800,000 jobs (Livesey 2018, parag. 32). One of the key economic challenges to the petroleum-centered vision is squaring widely held assumptions that the energy industry is “synonymous with Canadian prosperity and jobs – even though [the industry] is not actually responsible for the majority of Canadian GDP or jobs” (Livesey 2018, parag. 32). The reality may be that the oil sands are much more important to Canada politically than they are economically.

Alternatively, shifting to an economy that is less carbon and resource intensive has the potential to create new economic opportunities for Canada. The economic and job-creating potential of renewable energy systems like solar, tidal, and wind coupled with a decline in oil prices has helped create political momentum for the green economy vision. Chapter 4 discussed how under a green economy vision, the Canadian economy is projected to grow steadily while

still meeting or exceeding its climate change commitments. Sawyer and Bataille found that under a ‘Paris Compliant’ scenario where Canada meets or exceeds its 2030 reductions target, the economy would be expected to grow between 3.1 and 3.2 percent per year to 2030 (Sawyer and Bataille 2018, 6). A less recent but still relevant economic modelling study by leading energy economist Mark Jaccard, commissioned by the David Suzuki Foundation in 2009, found the Canadian economy could grow 2.1 percent per year to 2020 while still meeting a GHG reduction target consistent with global efforts to limit warming to 2°C (Bramley et al. 2009, 9). Shifting to a green economy could create jobs domestically and open the door to greater participation in the trillion-dollar global market for clean energy technology.

The domestic market for renewable wind and solar power in Canada is expected to grow significantly over the next decade, driven by a federally mandated phase-out of coal-fired power by 2030 (Rubin 2017b, 5). Growing markets for electric and hybrid vehicles are also expected to drive demand for renewable energy (ibid). Meanwhile, the opportunities for Canada to generate more of its electricity from renewable sources are significant and promising. This is especially true for wind and solar energy in the prairies, as well as hydroelectricity, which currently accounts for approximately 60 percent of generation in Canada. The Canadian Electricity Association estimates that there is more than 160,000 MW of undeveloped hydro potential nation-wide (Rubin 2017b, 5). This could mean increased opportunities for export to the U.S., especially northern and midwestern states that have committed to significant reductions in GHG emissions (ibid, 6).

Despite these opportunities, the vision of a green economy is not without challenges. Perhaps the most significant economic challenge is the relatively high-cost of renewable electricity compared to non-renewable sources. Chapter 4 examined the Ontario GEA’s failure to

create the number of jobs promised, as well as the high cost of electricity placed on consumers as a result of the FIT program. The GEA was among the best examples of green economic policymaking in Canada to date, yet faced serious backlash from Ontario consumers and contributed to the defeat of the long-reigning Liberals in the provincial election in 2018. It may be true that the green economy has the potential to create jobs and generate wealth through the diffusion of new renewable energy systems and green products. The fact remains, however, that until the relatively high-cost of renewable energy and ‘green’ job creation is on par with conventional industries, the green economy vision faces significant economic challenges. That said, the very low cost of recent renewable energy projects in Alberta, made possible by the falling costs of green technologies and auction-based policies designed to procure power at the lowest cost means this day may not be far off. In 2017, after a competitive international auction to build four wind energy farms, Alberta was able to secure the lowest price for wind energy in Canada to date, at \$37 per megawatt-hour (Ward 2017, parag. 3). For context, when the GEA was introduced in 2009, wind power in Ontario cost between \$100 and \$150 per megawatt-hour (ibid, parag. 10).

### **Comparing environmental challenges and opportunities**

There are significant environmental challenges associated with a petroleum-centered vision for energy development in Canada, most glaringly the ability to meet GHG emissions reductions targets. The government of Canada’s own data indicates it will be 66Mt short of its 2030 emissions reduction target (NRCan, 2018). Analysis from Harvey and Miao shows that only a complete phase-out of oil production from the oil sands, combined with a host of other transformative policies, would enable Canada to plausibly meet its 30 percent reduction target (Harvey and Miao 2018, parag. 3). At time of writing, the government of Canada’s climate



change policies, while more robust than under previous administrations, include no plans to phase out oil sands development and can hardly be described as transformative. Canada's ability to make a "fair share" contribution to the 2° Paris Accord goal is even less likely; CAT has ranked Canada's current policies "highly insufficient" to meet the 2° target (CAT, 2018). Taken together, these projections indicate Canada stands virtually no chance of meeting even weak emissions reductions targets under a petroleum-centered vision. The inability of oil sands proponents to meaningfully address the need for immediate and significant emissions reductions is a considerable obstacle for the industry, especially as countries around the world take action to meet or in some cases exceed their own climate change commitments.

For their part, the federal and provincial government in Alberta continue to fund technology aimed at 'greening' the oil sands and proponents often point to technological innovation as justification for the industry's continued environmental shortcomings. Technological advances however, have so far been unable to keep pace with growing emissions and other negative environmental impacts. Massive investments in CCS technology, once touted by the province of Alberta and Harper administration as the answer to the oil sands environmental woes, have failed to meet expectations. Despite efforts by industry associations like CAPP and COSIA to position themselves as improving environmental performance, in practice little has changed. The oil sands remain among the world's most carbon intensive crude oil operations, and emit approximately 30 percent more emissions than the average North-American crude from point of extraction to end use (Israel 2017, parag. 1). And while the industry has made some improvements in the areas of waste and water reduction, emission intensity from oil sands extraction increased 9 percent between 2004 and 2015, and will in all likelihood continue to rise as producers access deeper bitumen (Ibid, parag. 4). Overall, GHG

emissions from oil sands production increased 367 percent between 1990 and 2016, due to a sharp increase in production (ECCC, 2018, 8). Barring a major technological breakthrough in reducing emissions from the production and consumption of oil from the oil sands, a key challenge for the petroleum-centered vision will be the use of technology to legitimize continued and expanded development.

In Alberta, there is an obvious disconnect between provincial climate change policies and the bitumen industry's planned growth and steadily rising emissions. As noted in chapter 3, a key plank in the Alberta government's Climate Leadership Strategy includes a 100 Mt 'hard cap' on oil sands emissions per year; a cap that represents a nearly 50 percent increase in oil sands emissions from 2014 levels. (Hussey 2017, parag. 8). While the province is keen on promoting its action on climate change, the result of rising emissions from oil sands development undoes the progress made in other areas. In reality, Alberta's policies may do more to increase the social license of the oil sands industry than protect the environment. Whether or not this is a calculated strategy on the province's part is debatable, but it demonstrates the complexity of promoting a BAU petroleum-centered economic strategy while still trying to institutionalize meaningful environmental reforms.

Neither the government of Canada's PCF nor the Alberta government's Climate Leadership Plan factor in global emissions resulting from the export of fossil fuels. In other words, these strategies do not consider the emissions from carbon that is extracted in Canada but burned elsewhere (Hussey 2017, parag. 20). Indeed, while the Paris Agreement holds countries accountable for reducing GHG emissions within their own borders, it does not impose "sanctions or limits on exporting fossil fuels to other countries" (Hussey 2017, 23). Economist Marc Lee calls this the 'green paradox' of the Paris Agreement and argues oil exporters like Canada are

incentivized to export “as much oil as possible in the near future before more stringent global agreements are proposed as a result of the worsening of global warming” (Hussey 2017, parag. 23). This highlights the problematic nature of Canada and other signatories of the Paris Agreement failing to account for GHG emissions as a fundamentally global problem.

Importantly, the petroleum-centered vision’s goal of new pipeline capacity is threatened by intense and high-profile public protests at home, particularly in B.C. near the proposed Trans Mountain expansion site. Since March 2018, more than 200 activists have been arrested for demonstrations against the project. Extreme weather brought on by climate change could also change the conversation in favour of a greener economic strategy. The last two years are the worst on record for B.C. wildfires, for example. These types of costly, extreme weather events are becoming increasingly common in Canada and around the world, and fuel growing dissent from activists who maintain building pipelines is incompatible with action on climate change. Environmental activist group Sum of Us has noted the hypocrisy in claiming to be both a climate leader and a champion of pipelines. Overcoming this dissent and getting pipelines built is a real and significant challenge to those in the petroleum-centered camp and should not be understated.

A green economic energy strategy, on the other hand, would prioritize immediate and significant reductions in GHG emissions that would ensure Canada meets, and ideally exceeds, its 2030 target. This strategy would be driven by the need for significant environmental reform, but also an economic imperative ensuring the Canadian economy would continue to grow. As noted above, two separate economic modelling studies have projected that the Canadian economy would show similar growth to that under a petroleum-centered vision, all while meeting emission reductions targets.

The green energy revolution noted by the IEA (2015, 2017) and others is also creating momentum for the green economy in Canada. As discussed in chapter 4, many provinces including Ontario, Quebec and B.C. have actively worked to decarbonize their economies by phasing out carbon-intensive industries, investing in renewable energy and providing incentives to incorporate more green energy and efficiency measures in homes and businesses. And there is evidence to show these measures are working. As noted in chapter 4, B.C.'s carbon tax has been successful in lowering GHG emissions by 5-15 percent since it was implemented in 2008, and has had a negligible impact on the economy overall (Murray 2015, 679). The green economy is no longer a fringe concept, but an emerging policy direction. Further, deteriorating environmental conditions and increased instances of extreme weather as noted above could ultimately be an opportunity for the green economy as those most affected pressure their elected officials to take action.

The continued domination of fossil fuels in the energy sector despite claims of meaningful action on climate change by industry and government poses one of the greatest challenges to the green economy, however. Environmental groups and policy analysts argue the federal government's PCF has very little teeth. The proposed carbon tax of \$20/tonne in 2019 to \$50/tonne in 2022 has been shown to be far too low to incentivize sufficient emissions reductions; economic modelling by Environmental Defense and others suggests a carbon price would need to reach \$96/tonne by 2030, at minimum (Sawyer & Bataille, 2018, 8). A weak carbon price helps to improve the image of both industry and government and increase the social license needed to encourage oil sands investors and expand pipeline infrastructure. At the same time, it may do more environmental harm than good because it discourages the creation of an effective carbon tax at a time when warnings from international climate scientists become

increasingly urgent (IPCC 2018). What has been demonstrated by the Alberta and federal governments is a desire for both continued expansion of the oil sands, and strong action on climate change; a position that has had some political success, but ultimately fails to meet Canada's environmental targets.

### **Comparing political challenges and opportunities**

Despite the fossil fuel industry's proven environmental and economic short-comings, it continues to dominate the Canadian energy landscape and is afforded far more attention and political support than other sectors. Unsurprisingly, the most vocal support comes from politicians in Alberta where the vast majority of Canada's fossil fuel reserves are found. Despite introducing the most robust climate change policy in the province's history, NDP premier Rachel Notley is an adamant proponent of pipeline infrastructure and oil sands expansion. Speaking to the Empire Club of Canada in Toronto in November 2017, Notley gave an impassioned plea for support in getting a pipeline built to the coast for the sake of both the economic and environmental health of Canadians. Going further, she claimed new pipeline infrastructure would work to "complement and support the far-reaching action we are taking to tackle climate change" (Notley, 2017). She bases her claim on a modified version of an argument popularized by right-wing commentator Ezra Levant, which posits the world's best hope is to buy oil from an 'ethical' source such as Canada, where human rights are protected. In her version, "demand for oil will continue to rise" and the world "can either buy its oil from Alberta, where [climate change is] taken seriously, or buy it from places with runaway emissions like Venezuela and Russia" (ibid). And while it is true that Alberta has taken action on climate change in recent years, it is also true that the province's emissions are projected to be nearly the same as they are today in 2030

because of a continued rise in GHG from oil sands development. This stands in stark contrast to the kinds of deep emissions cuts advocated by scientists and those in the green economy camp.

Despite her government's efforts to better balance the environment with oil sands interests, many expect the UCP to easily defeat the Notley administration in the next provincial election in 2019 (Mason, 2018). Opposition leader Jason Kenney has been extremely outspoken against the governing NDP and is tapping into the sentiment that Albertans feel betrayed by the introduction of a provincial carbon tax (ibid). This could have important ramifications for the Climate Leadership Plan, which the UCP has promised to do away with. Ontario, which has made perhaps the most considerable progress on climate change in recent years, has a new leader who has dramatically shifted the conversation on the environment and climate change. Doug Ford, who is unapologetically anti-carbon tax and pro-industry, sees "climate change as a secondary issue in comparison to basic bread and butter economic priorities" and has made it clear the environment is far down a long list of priorities (McKittrick 2018, parag. 1). As noted above, one of Ford's first orders of business was to introduce legislation to repeal the Wynne Government's Climate Change Action Plan and cancel the province's short-lived cap-and-trade program. In the Maritime provinces, New Brunswick and Nova Scotia have openly expressed support for an east-bound crude oil pipeline, despite also embracing the expansion of renewable energy. Both provinces claim crude oil from Alberta would bring a welcomed boost to the regional economy.

Federally, the Trudeau government faces a considerable challenge in the next federal election. At time of writing, Conservative leader Andrew Scheer has begun campaigning against Trudeau's national carbon pricing plan and the government's supposed mishandling and failed leadership on pipeline projects including Energy East and Trans Mountain. Scheer has blamed

Trudeau for the regional divisions and ongoing jurisdictional battles over pipelines, calling him the ‘most divisive prime minister in the history of Canada’ (Rabson 2018b, parag. 1). It is likely that pipeline politics and related climate change mitigation policies will be among the key issues at the centre of the federal election in October 2019.

A change in leadership in the U.S. has been a further blow to the environmental movement, and presents both challenges and opportunities for the petroleum-centered vision. While the previous Obama administration demonstrated its commitment to environmental reform through emissions reductions strategies and its rejection of the Keystone XL pipeline, Donald Trump has since withdrawn from COP21, approved the Keystone pipeline, and committed to reviving the U.S. coal industry. Some experts predict the U.S. will be the world’s largest producer of crude oil in the next five years, surpassing Russia and Saudi Arabia (Seskus, 2018). While some could argue Trump’s protectionist trade policies pose a challenge to crude oil exports south of the border, others maintain the administration’s backpedalling on environmental reform is a win for industry in Canada. The federal government has historically mirrored its emissions reductions policies with those of the U.S. to ensure the oil industry remains competitive, and Canada could benefit from riding the coattails of newfound U.S. energy dominance by forming an energy coalition based on fossil fuel development (Seskus, 2018). On the other hand, U.S. energy independence could be a major threat to the petroleum-centered vision as it could mean a dramatic decline in U.S. demand for Canadian oil. As noted in chapter 1, approximately 99 percent of Canada's oil exports currently go to the U.S. (NRCan, 2018).

If the petroleum-centered vision fails to meet minimum environmental objectives and creates risk for the Canadian economy, why does the industry continue to receive such a prominent place in Canadian discourse? Some, like Greenpeace Senior Energy Strategist Keith

Stewart, claim the oil industry in Canada constitutes a “deep state”; a government that has been captured by corporate or military interests (Livesey 2018, parag. 7-9). Stewart and others like former Alberta Liberal Party leader Kevin Taft, point to how “political elites, whether Liberal, Conservative, or NDP – from Justin Trudeau to Stephen Harper to Rachel Notley – go to bat for the industry, even if it means Canada’s GHG emissions rise... or how Canada has never forced the oil industry to curb emissions – even as the impacts of global warming become more catastrophic” (ibid, parag. 15). Despite rising GHG emissions and cues from the international community that an energy revolution is well-underway, Canada’s oil sands have been encouraged to grow (ibid, parag. 38).

The development of the oil sands in the 1970’s and 80’s was due in large part to huge investments by the provincial government under then-Premier Peter Lougheed. At the time, industry was encouraged to rapidly create and expand the technology required to separate bitumen from sand (Steward 2017, 8). For a period, the investment paid off and the oil sands boomed, creating massive population growth, jobs, taxes and royalties for the province and the federal government. Both the federal and Alberta government are extremely resistant to seeing their investments in the industry falter. The oil sands industry employs an army of powerful lobbyists in Ottawa, and also helps shape public opinion by funding think-tank research (such as the Fraser Institute), advertising heavily in newspapers, television and online, and research funding for universities (Livesey 2018, parag. 45-55). Indeed, some critics argue the oil sands lobby and PR machine has “reached into every aspect of society – from the entire political system, to the media, academia, and Bay Street” (ibid, parag. 39). It is becoming increasingly clear that despite some progress towards environmental reform from federal and provincial governments, policymakers across the country continue to place great value on the oil sands as a



purveyor of economic growth. The continued political influence of the oil sands represents the greatest challenge to the green economy vision.

### **EM: Reconciling economic, environmental and political agendas?**

Both the petroleum-centered and green economy visions promise an environmental-economic win-win scenario where Canada's growth imperative can co-exist harmoniously with sustainable environmental policy. This is the core principle of ecological modernisation: that with the appropriate technological advancements in the industrial sector, the economy can be decoupled from its negative environmental impacts. This thesis finds both useful linkages and worrisome challenges in framing the Canadian energy debate around EM.

EM is a useful theoretical concept in understanding how environmental considerations have firmly established themselves within national and international energy discourse. Climate change, for example, has moved from the periphery to the centre of decision-making within political and economic institutions. It has become virtually impossible to leave environmental issues like climate change out of discussions around Canada's energy future. Industry association CAPP devoted an entire section of its 2018 Oil Sands Fact Book to environmental considerations, and commit to "developing solutions for a cleaner energy future" (CAPP 2018, 32). The complete neglect of the environment and the "fundamental counter positioning of economic and environmental interests" are no longer accepted as legitimate positions (Mol and Sonnenfeld 2000, 7). Those who do ignore environmental concerns altogether have been relegated to small, fringe groups.

EM has been successful in identifying changes in actors within environmental governance, from primarily polluting industries and national governments to include NGO's, scientific organizations and the media (Janicke 2008, 561). This is demonstrated by how

government and business have adopted, to a limited degree, an environmental lens when making policy decisions. At the very core of EM theory, is a belief that environmental reform can be achieved by working within the current system. This is key for many moderate environmental groups, who see working within the system – rather than against it – as being a more productive and effective means achieving policy change. Some, however, have become frustrated with the slow pace of policy implementation and the ineffectiveness of weak environmental legislation. These actors question the degree to which true environmental reform can be achieved by working within the confines of a capitalist economic system that prioritizes unending growth and consumption.

To be successful, EM requires wide-spread commitment to and action on its principles (Dryzek 2005, 171). Achieving consensus on issues of energy and the environment is a big challenge in a federalist state like Canada, where competing interests and values have so far come at the expense of strong national policy. Further, the pursuit of an EM framework for energy development has typically involved a “consensual and interventionist policy style” that is in stark contrast to the neo-liberal market style of English speaking industrialized nations, including Canada (ibid, 177). In contrast, EM thinking has taken a greater hold in countries in Europe, whose interventionist governments often work closely with business, labour and environmental groups (ibid, 169). And while there are increasing opportunities for non-traditional actors to participate in environmental governance, such as the duty to consult with Canada’s First Nations, energy and environmental policy-making in Canada remains a bureaucratic and hierarchical structure. EM requires political commitment, “enlightened long-term rather than narrow-minded short-term and holistic analysis of economic and environmental processes” (ibid,169). Dryzek maintains that environmental policies have a better chance of

success in a country where they can be linked back to that country's core political imperatives, which include economic expansion, security, and legitimization (Dryzek 2005, 77). This represents a significant challenge to the green economy strategy; to institutionalize the link between strong environmental policies and Canada's core political imperatives.

Globally, the door has been opened to understanding how environmental risk impacts economic prosperity (Sustainable Prosperity 2012, 7). EM has been an important part of that understanding, by framing environmental degradation as economically inefficient. As noted in the literature review, at the core of EM is the idea that "pollution prevention pays" (Hajer 1995, 3), and using the language of business to position environmentally harmful industrial practices as a cost-benefit analysis has been useful in bringing industry and government on board with the concept of sustainable development. Janicke notes that EM has been successful as a market-based approach when compared to more radical environmental reform proposals. It is more acceptable, for example, for oil sands producers to work towards 'greening' their industrial practices because it saves money, rather than shutting down production altogether because it harms the environment. Industry leaders claim to have taken great strides to make their operations more efficient; oil sands producers recycle 80-95% of water used in drilling and mining, reducing the need to withdrawal fresh water for example (CAPP 2018, 42). The reality is however, that efficiency in the oil sands is not improving rapidly enough to keep up with the volume of output and the result has been a worsening of environmental impacts.

Importantly, theorists of stronger EM like Janicke, note that ultimately the "low hanging fruit" or easiest solutions will be insufficient in achieving long-term environmental sustainability (Janicke 2008, 564). So, while some have argued that EM has helped to institutionalize environmental governance, others maintain the discourse of EM has been used primarily as a

form of “green washing”, or a way to legitimize environmentally harmful policies and practices (Connelly and Smith 1999, 57-59). By focusing on methods to ‘green’ the oil sands rather than making a concerted effort to move away from them, Canada is deepening its own domestic as well as global dependence on oil. In Haley’s words, “low-carbon futures are unlikely to evolve if the petroleum industry’s core business continues to be export to the oil-based consumption systems of the present paradigm” (Haley 2011, 123). While investment in technology to ‘green’ the oil sands may result in some incremental environmental improvements, this strategy may ultimately harm the Canadian economy by further deepening its dependence on a resource that, if the world takes seriously the global commitment to limit warming to no more than 2°C, could face a significant decline in the coming years. In this sense, EM can be seen to be blocking progress towards meaningful environmental reforms. Importantly, Alberta’s Climate Leadership Plan and the federal government’s PCF are framed in the language of EM: both promise ambitious action on climate change, clean growth, and a thriving economy. In practice however, little has changed from the energy status quo. EM, then, has also been unsuccessful in accounting for how the actions of government have fallen short of living up to the rhetoric of environmental governance.

Proponents in the strong EM camp are likely to encourage more robust environmental reforms and the modernization of Canada’s energy system by actively phasing out the oil sands. The political reality in Canada at time of writing, however, is not favourable to phasing out oil sands. Quite the opposite, the federal government has gone to unprecedented lengths to see the expansion of Canada’s oil sands into overseas markets realized. There is growing support for the principles of a green economy as evidenced by the introduction of EM policies provincially, and in the growing dialogue of achieving both economic prosperity and environmental sustainability.

Still, Canada has had incredible difficulty introducing even weak environmental protection legislation. What is clear is that while the petroleum-centered approach is dominated by BAU thinking, social and political pressure is forcing government and industry leaders to adopt the language and narrative of EM. The result is a complex dialogue, a messy mix of BAU and EM discourse that ultimately acts as a form of legitimization for the petroleum-centered vision's primary goal of market diversification.

Using the lens of EM theory, which assumes no necessary conflict between the environment and the economy, this thesis has examined two paths of energy development. Under a green economy approach, it may be theoretically possible to reconcile environmental and economic agendas. With its regional diversity, skilled workforce and abundance of renewable energy assets, there is enormous potential for Canada to harness the \$8.5 trillion global market for low-carbon goods and services, and to create tens of thousands of green jobs. At the same time, economic modelling projects the Canadian economy would achieve steady growth while meeting its emissions target. Implementing robust, green economic policies at the provincial and national levels have proven difficult, however. The staples trap tendency suggests dominant Canadian interests will “promote existing centre-margin relations and persistence in existing economic paradigms, especially during periods of instability and crisis” (Haley 2011, 111). As we have seen, changing geo-political landscapes, stagnant oil prices, and inter-provincial fights over landlocked oil resources have led to the country's most urgent resource crisis in decades. And in Canada, dominant interests lie within an industry that is vocal, powerful, and have history on their side. The real challenge a green economy faces in Canada, is a political climate favourable to the continued and expanded development of an industry proven to be contributing to global climate change.

Jaccard et al. argue that Canadian politicians have a long history of sacrificing policy effectiveness for political acceptability, and the transition to a low-carbon economy is no different. The Canadian public appears increasingly ready to accept and vote for low-carbon change – so long as it does not severely constrain their standard of living and lifestyle (Jaccard et al. 2015, 5). Effective emissions reductions policies would mean a high cost now, high benefit in the future. This is a problem for politicians who would rarely see benefits realized while in office and “given the global nature of the challenge, the benefits are uncertain anyway” (Jaccard et al. 2016, 8). Effective climate policy comes with a cost, and barring a deep personal conviction or willingness to forgo politically-safer policies, most elected officials opt for the politically safe route.

EM is a good starting point; it has done much in terms of deconstructing how environmental considerations have been factored into the energy debate. It is also useful in reconciling some environmental and economic challenges in the energy sector. Technological innovation in the areas of water usage and filters in smokestacks within the oil sands industry have undoubtedly led to improvements in both environmental performance and economic output, for example. EM is less useful as a framework for addressing larger, global challenges such as climate change and the continued domination of fossil fuels as the world's primary energy source, however. Persistent, complex, and wide spread environmental problems demand coordinated and continuous action. In the case of climate change this means deep and immediate emissions cuts and, going further, moving away from polluting industries altogether. The majority of literature on EM contends that even the most harmful industries can be made compatible with environmental objectives, but in the case of the fossil fuel industry this has so far proven impossible. Escaping what Haley calls the “carbon trap” requires interventions aimed

at shifting Canada's entire economic structure, as well as uniquely strategic and aggressive climate strategies. So, while an energy strategy based on a strong EM framework might have the potential to satisfy both economic and environmental agendas, the scope of change required under such a framework is not politically viable in Canada at time of writing. As noted in chapter 1, the bulk of the literature on EM remains weakly ecological, focused mostly on techno-administrative reforms in the industrial sector. An energy strategy based on a weak EM framework might achieve some political and short-term economic success, but fails on environmental grounds.

For these reasons, this thesis finds EM's promise of an environmental-economic 'win-win' scenario in the context of the Canadian energy debate to be outweighed by political challenges. Despite the environmental and economic risks associated with oil sands development, a petroleum-centered energy framework accompanied by weak environmental reforms appears to be the more politically feasible option at time of writing. Still, the political discourse surrounding energy and climate change in Canada is constantly evolving, and there is reason to be optimistic about Canada's ability to balance its economic imperative and climate change responsibilities in the future. The argument can certainly be made that factors such as shifting economics towards lower-cost renewable energy, changing global consumption patterns and the worsening impacts of climate change could change the trajectory towards a green economy in Canada.

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