Balancing Interests in Regulatory Institutions: A Comparison of the Northern Gateway and Keystone XL Pipelines

by

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A thesis
presented to the University of Waterloo
in fulfillment of the
thesis requirement for the degree of
Doctor of Philosophy
in
Geography

Waterloo, Ontario, Canada, 2021

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Author's Declaration

This thesis consists of material, all of which I authored or co-authored: see Statement of Contributions included in the thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Statement of Contributions

In the Department for Geography & Environmental Management, a thesis may be presented by manuscript. This type of thesis consists of a set of manuscripts meant for journal publication (at least three for which the Ph.D. candidate is first author) and accompanied by an introductory and concluding chapter. Following the guidelines set forth by the University of Waterloo, any co-authored work must be dominated by the intellectual effort of the student.

Janetta McKenzie was the sole author of Chapters 1 and 5 which were not written for publication. Janetta McKenzie was the sole author of Chapters 3 and 4, and lead author of Chapter 2 which will be submitted for publication. The dissertation has been reviewed and edited in its entirety by supervisor Dr. Sarah Burch and committee members Dr. Paul Parker, Dr. Jason Thistlethwaite, and Dr. Angela Carter. Exceptions to sole authorship are as follows:

Chapter 2: McKenzie, Janetta and Sarah Burch. "Utilizing pipeline regulation to manage the diffuse risks of climate change" (To be submitted 2021, *The Extractive Industries and Society*).
Janetta McKenzie was responsible for conceptualization, study design, data collection and analysis, and writing and editing of the draft manuscript. Supervisor Dr. Sarah Burch drafted a short portion (5%) of the manuscript and provided ongoing guidance and editorial advice.

Abstract

Canada and the United States are facing crucial decisions about the future of their energy resources. The severity of climate change, increasing salience of the social impacts of fossil fuel development, and mounting calls to rapidly decarbonize energy systems have left these two fossil fuel giants at the forefront of international debate. Both countries struggle with balancing these complex socio-environmental problems with the economic benefit that fossil fuels have historically afforded. Ideally, regulatory mechanisms are meant to find this balance through the setting and enforcement of rules. However, these mechanisms have increasingly come under fire in the last twenty years, ostensibly for privileging the economic benefit of a few over the socio-environmental impacts borne by many. The universe of interests has expanded considerably as environmental activists, consumer safety groups, and average citizens become aware of the impacts of this multi-billion dollar industry. These groups and individual citizens have altered the landscape of energy governance as they call for more socially conscious, less environmentally damaging industrial activities. As a result, energy regulation has become increasingly politicized and controversy consistently plagues fossil fuel projects, especially pipelines, in both Canada and the United States.

Questions remain regarding the ability of regulatory mechanisms to address an ever-expanding and increasingly complex universe of interests. The overarching objective of this project was to examine how national regulators address cross-jurisdictional issues with broad and diffuse socio-environmental impacts in the context of pipeline governance in Canada and the United States. This thesis compares the regulatory processes for two major, controversial oil pipeline proposals (Enbridge's Northern Gateway and TransCanada's Keystone XL), examining public comment data and regulatory compliance documents for both projects. This thesis investigates the characterization and interpretation of three topics by regulators—climate change, energy security, and the public interest—which epitomize the nuance and complexity of contemporary socio-environmental impacts from oil pipelines and how regulatory institutions in Canada and the United States have interpreted these impacts.

The first empirical paper asks how climate change is interpreted in regulatory processes for oil pipelines. This chapter concluded that pipeline regulators in Canada and the United States interpret the risks of climate change in extremely narrow and site-specific contexts, despite the global nature of climate impacts. While both regulatory institutions accept that climate change does not respect national borders, both processes assess climate change in a vacuum, focusing mostly on the direct greenhouse gas (GHG) emissions from constructing and operating pipelines. The extent to which climate change is considered for the approval or rejection of these projects is largely left to final executive decision-makers, rather than embedded in regulatory procedures. Ultimately, there is a lack of regulatory certainty and continuity to assessing climate change in both Canada and the United States which renders these institutions incapable of assessing complex global problems like climate change.

The second paper asks how energy security is interpreted by these regulatory mechanisms, regarding the public interest, private interest, and government. This paper utilizes the 'Four A's' framework of energy security to compare the characterization of energy security in both cases. Relying on public

comment data and industry compliance documents, this paper explores the characterization of energy security in both projects and discusses the broader implications for regulatory governance. Ultimately, it is concluded that regulators are (for the most part) emphasizing overly narrow and oil-centric interpretations of energy security, focused on maintaining continuity of a relatively inexpensive supply of oil, and are not integrating more complex energy security issues into their standard assessment procedures.

Finally, the third paper investigates how the concept of 'the public interest' is characterized and represented in the governance of oil pipelines in the United States and Canada. Several trends concerning the public interest/public participation are identified: first, that the impact assessments required by regulators tend to be very localized in terms of tangible effects, but an increasingly broad perception of social, cultural, and environmental risk that is not well captured by current regulatory mechanisms. Second, that there is a significant lack of understanding of the regulatory requirements and the mandate of regulators, particularly with regards to explicit industry planning and development. Lastly, there is a lack of trust from a significant portion of the general public that believes that regulatory processes are at least partially captured by industry or have no power to make and enforce decisions. These trends all point towards regulatory processes that are out of step with contemporary challenges and problems, and institutions that rely on a narrow interpretation of the public/national interest.

This thesis finds that oil pipeline regulators began as market-based institutions, coordinating with industry and the relevant government department to set tolls, tariffs, and other pricing rules. As the universe of interests expanded, encapsulating a wider range of social and environmental impacts, these institutions were equipped with a broader assessment toolkit focused on public safety and environmental protection. However, the fundamental structures of these institutions encourage oil development in support of economic growth, and the evolution of these institutions has not kept pace with the expansion of interests and subsequent impacts. As a result, there are substantial gaps in regulators' ability to appropriately evaluate complex issues like climate change and energy security, which have diffuse but significant impacts on a wide variety of stakeholders.

Acknowledgements

I would like to thank the following people, without whom I would not have been able to complete (or enjoy) this research program.

First, I must express my deepest gratitude to my advisor, Dr. Sarah Burch, whom I cannot thank enough for her guidance. This project would not have been possible without her tireless support and encouragement. Thank you for asking tough questions, for the wonderful opportunities in the last four years, and for steering a steady ship in the SPROUT lab.

I would like to thank my external examiner, Dr. Matthew Hoffman, for his very insightful comments and close engagement with this work. I would also like to express my deepest appreciation to my committee members, Dr. Paul Parker, Dr. Jason Thistlethwaite, and Dr. Angela Carter. This project was made enormously better by their advice. Special thanks to Dr. Angela Carter, who opened the door to so many interesting opportunities and whose support has been invaluable.

I gratefully acknowledge the support of the Energy Council of Canada and the Waterloo Institute for Sustainable Energy during this research.

I am incredibly grateful to the friends and colleagues that have contributed to this project and enriched my university life over the last four years. To my colleagues past and present at the Faculty of Environment and the SPROUT team, thank you for your camaraderie and sunny dispositions. Working alongside you has been a pleasure. And Chris and Julie—thank you for your kindness in welcoming me to Waterloo.

To Jess, Stephanie, Lizzie, Ariel, Kate, and Coretta: thank you for being sounding boards, for listening to my gripes and grumbles, and for reminding me about life outside the Ph.D.

Last, but certainly not least, I'm deeply indebted to my parents, whose unwavering encouragement is the foundation for this whole journey. This is the last degree, I promise!

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Chapter 1
Introduction

1.1 Research Objective

Canada and the United States are at a crossroads in energy development. Increasing attention to climate change, the social impacts of fossil fuel development, and the need to rapidly decarbonize global energy systems has left these two fossil fuel giants at the forefront of international debate. Both countries struggle with balancing these complex socio-environmental problems with the economic benefit that fossil fuels have historically afforded. Ideally, regulatory mechanisms (like the Canada Energy Regulator or the Federal Energy Regulatory Commission in the United States) are meant to find this balance through the setting and enforcement of rules. However, these mechanisms have increasingly come under fire in the last twenty years, ostensibly for privileging the economic benefit of a few over the socio-environmental impacts borne by many. As opposed to their initial mandates which were largely concerned with market regulation (setting tolls and tariffs, anti-monopoly rules), these institutions are now operating in a world where socio-environmental issues are increasingly complex, technical, and international in scope. The universe of interests has expanded considerably as environmental activists, consumer safety groups, and average citizens become aware of the impacts of this multi-billion dollar industry. These groups and individual citizens have altered the landscape of energy governance as they call for more socially conscious, less environmentally damaging industrial activities. As a result, energy regulation has become increasingly politicized and controversy consistently plagues fossil fuel projects, especially pipelines, in both Canada and the United States. Governance mechanisms require more attention from both scholars and policymakers; despite initial mandates, they now have a significant role in steering energy development that has long-term impacts both global and national.

Various interest groups and scholars take issue with the way that fossil fuel infrastructure like pipelines have been governed in Canada and the United States (U.S.); from lack of Indigenous consultation, sub-standard environmental assessment processes, and perceived rubber-stamping of infrastructure projects by regulatory institutions (Carroll 2020; A. Carter and Zalik 2016; Snyder 2018; Grasso 2019; Taft 2017; McBeath 2016; M. T. Huber 2011; Espen Moe 2010). Obligatory environmental impact assessments and community consultations are useful mechanisms for evaluating the environmental and social implications of energy projects, but there is much room for

improvement, particularly in terms of maintaining long-term consistency in impact assessments, further articulation of Indigenous rights, and the possibility of integrating downstream environmental impacts into project decisions(Bond et al. 2014; J. Green and Newman 2017; J. M. Baker and Westman 2018).

Further study into the regulation of pipelines is crucial and timely for several reasons. First, there is increasing attention, both scholarly and otherwise, that supply-side policies (including stricter regulation) for a managed decline of fossil fuel production must work hand-in-hand with demand-side measures like taxes or emissions quotas(F. Green and Denniss 2018; Lazarus and van Asselt 2018; Piggot et al. 2018; A. V. Carter and McKenzie 2020). Second, civic resistance against fossil fuel infrastructure, especially pipelines, has been steadily increasing in both frequency and intensity in parts of Canada and the United States and has had an effect on regulatory approval of pipelines in both jurisdictions(MacLean 2017; Gravelle and Lachapelle 2015; Ramseur et al. 2014). Lastly, there have been significant differences in the ways that energy regulators have operated in Canada and the United States over the last several decades. Of major pipeline projects proposed since 2006, only two of six have been approved in Canada, whereas seven of nine have been approved in the United States. Despite the entwined nature of the US-Canada energy market, these two nations have significantly different regulatory experiences.

The overarching objective of this project is to investigate how effectively national regulators address complex, cross-territorial problems with diffuse socio-environmental impacts in the context of pipeline governance in Canada and the United States. In pursuit of this analysis, diverging experiences of institutional governance in both cases will be examined, uncovering what this means for addressing complex, cross-jurisdictional, long-term issues like ecosystem degradation, climate change, and global supply chains. Two pipeline projects will be compared in depth: the Keystone XL (KXL) and the Northern Gateway project (NGP). Given the analytical focus on institutions, the theoretical foundations of this thesis are grounded in the international political economy of energy and regulatory capitalism (Kuzemko, Keating, and Goldthau 2018; Kuzemko, Lawrence, and Watson 2019; Jordana and Levi-Faur 2004; Braithwaite 2008). In addition, given the importance to these countries of maintaining affordable supply and continuous demand of energy, theories of energy security will be addressed (Asia Pacific Energy Research Centre 2007; Chester 2010; Benjamin K. Sovacool 2011b).

Table 1: Research Questions

	Questions	*Corresponding Paper*
RQ1	How is climate change interpreted in regulatory processes for oil pipelines, with regards to the public interest, private interest, and government? Why do these processes rely on such narrow interpretations of large, complex problems, and what does this tell us about the policy goals of these regulators?	Chapter 2: Utilizing pipeline regulation to manage the diffuse risks of climate change
RQ2	How is energy security interpreted in regulatory processes for oil pipelines, with regards to the public interest, private interest, and government? What is the influence of this interpretation on the development of oil pipelines?	Chapter 3: Cheap, Local, Ethical: Addressing energy security through pipeline regulation
RQ3	How is the public interest characterized and represented in regulatory institutions in the United States and Canada? What does this characterization tell us about the institutional capacity of these regulators?	Chapter 4: In whose Interests? Interpreting the Public Interest in Pipeline Regulation

Pipeline regulators generally began as market-based overseers, concerned mostly with setting tolls and tariff rates and ensuring continuous supply and demand of fossil fuels. Beginning in the 1970s and continuing to the present day, these mechanisms were asked to take on a much broader mandate—including environmental protection, social inclusion, and broadly representing the 'public interest'—without a sufficiently reformed foundation for assessment and decision-making. Comparatively, Canadian and American regulators undertake extensive assessment of environmental risk and public consultation. Most fossil fuel regulators do not require the extent of assessment as the federal processes in Canada and the U.S.; even subnational regulators in both countries are considerably streamlined. However, both Canada and the U.S. are the best of an inadequate bunch, as pipeline regulators around the world fail to address cross-jurisdictional social and environmental issues.

Keeping in mind that the bar is set relatively low, American and Canadian federal regulators have increased their scope and compliance requirements in the last several decades. These regulators now assess environmental and engineering specifications, and solicit significant public consultation, but these new mandates are built on top of a narrow foundation of market-based rules. Fundamentally, these institutions have not evolved at the same pace or to the same extent as their mandates would require. The universe of interests surrounding these large pipeline projects has expanded—but these regulators still rely on outdated and vague frameworks to assess increasingly complex issues like climate change, energy security, and the public interest.

1.2 Regulating Oil Pipelines in Canada and the United States

Any investigation of pipelines requires an understanding of the logistical aspects of the sector, which impacts disparate communities far beyond the points of extraction or consumption. As of 2020, the United States and Canada are the first and fourth largest producers of oil, respectively; the United States decreased production as reserves dwindled in the 1990s, but recently ramped up production as further reserves were discovered in the Permian Basin (EIA 2019b; Natural Resources Canada 2017a). Since 2010, the United States has regained its spot as the top producer of oil resources. Canada has been a top-five oil producer since the 1950s.

The vast majority of American oil reserves are in Texas, which produced over a third of the U.S. total of 3,413,375 tbu (thousand barrels of oil) in 2017 (EIA 2019b). North Dakota, Alaska, California, New Mexico, Oklahoma, and Colorado all have significant shares of oil production as well. The United States has undergone a 'shale revolution' in the last decade, as hydraulic fracturing techniques have allowed for the extraction of oil and gas from shale rock formations, which are typically much harder and more costly to exploit than conventional crude oil, which has often migrated to more permeable rock like limestone or sandstone. Currently, the US has almost 20% of global recoverable shale oil resources, many of which are located in the Permian Basin, which has seen a dramatic increase in extraction in the last five years (Gaswirth et al. 2018).

Canada has been a major player in the global oil industry since Imperial Oil discovered oil near Leduc, Alberta in 1947, and vast reserves of conventional crude oil were quickly proven in the Western Canadian Sedimentary Basin. Canada has 10% of the world's proven oil reserves, 96% of which are in the Athabasca oil sands in Alberta (Natural Resources Canada 2016c). Saskatchewan also produces crude oil, and Newfoundland and Labrador extracts most of Canada's offshore oil since plans to drill in the Arctic have long been delayed due to environmental concerns. Alberta, however, is the powerhouse of the Canadian oil industry.

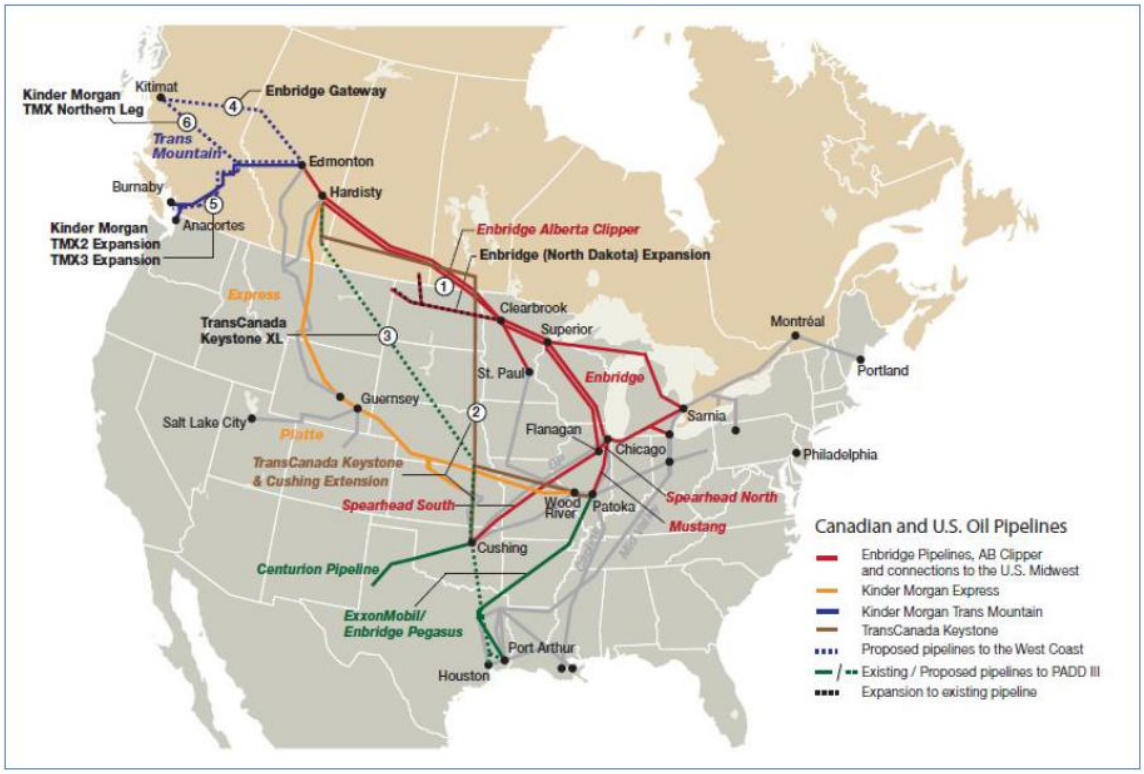

Figure 1: Major Oil Pipelines in Canada and the United States (2014)

After oil is extracted, it is sent to transport hubs for pricing and then on to refineries. One such hub is in Hardisty, Alberta, where Canadian oil is priced. Another is in Cushing, Oklahoma, where the West Texas Intermediate market price is calculated; Cushing is the largest transport hub in North America, and several major pipelines intersect there. From the pricing hubs, oil goes on either to refineries (largely in the United States; Canada has only 14 refineries due to the operations cost and increased transportation involved). The Gulf Coast refineries in Texas and Louisiana are the most productive in North America. The refined oil is then either disseminated to final destinations or moves to a port terminal for shipment overseas. The Burnaby Terminal in British Columbia is one such terminal, and the Houston and Port Arthur terminals in Texas are the largest and busiest in North America.

While trains and trucks are utilized for petroleum transportation, the most popular, efficient, and cost-effective method of shipping oil overland is through pipelines. Canada has more than 840,000 km of oil and natural gas pipelines, almost half of which operate solely within Alberta (Natural Resources Canada 2016a). However, the largest and most controversial pipelines cross provincial or national borders; many smaller pipelines that operate intra-provincially move oil from

an extraction plant to the larger hubs and pipelines. The United States has more than 4.1 million km of pipelines, many of which are concentrated in Texas and Louisiana (United States Department Of Transportation 2019).

The temporal aspect of oil extraction and pipeline operations is also essential to consider both for regulators and long-term policy decisions; building a large pipeline with high daily capacity contributes to carbon lock-in by committing to a certain amount of oil extraction for several decades (Unruh 2000). Pipelines are built to last—upwards of 50 years, if properly maintained, and they require significant up-front investment as well—and they are built with the tacit assumption that they will be utilized for most of that time. While specific oil fields and deposits may have shorter or longer lifespans, the large pipelines analyzed in this project transport oil from a multitude of fields, facilities, and firms. But the decommissioning of pipelines comes with its own risks; since most decommissioned pipelines remain in the ground to reduce soil disturbance, they must continue to be monitored even after the line is retired (Natural Resources Canada 2016a).

The regulatory regimes for the construction, operation, and decommissioning of oil pipelines in the United States and Canada are complex. Both are federal states, requiring a careful negotiation between subnational, national, and occasionally global jurisdictions. Canadian regulatory processes for oil pipelines are more centralized and regimented than the American, which are much more state-controlled and therefore fragmented. However, regulatory processes in both countries are characterized by a lack of continuity between projects, leading to uncertainty and context-specific socio-environmental assessment (McBeath 2016; Doern, Prince, and Schultz 2014).

1.2.1 The United States

The American processes for onshore oil pipeline regulation are patchwork at best, with federal and state authorities sharing responsibilities and jurisdiction. There is no centralized regulator for onshore cross-border oil transportation, although the governance for offshore oil development is centralized with the Bureau of Ocean Management, and natural gas pipelines are largely regulated by the Federal Energy Regulatory Commission (FERC) (McBeath 2016). FERC also deals with regulating the tolls and tariffs for oil pipelines but has no other involvement in their regulation, and FERC approval is generally not necessary prior to commencement of pipeline service (Parfomak 2015).

Generally, the primary regulators for oil pipelines are the relevant state authorities (i.e. the Texas Railroad Commission or the North Dakota Industrial Commission), which deal with leasing,

environmental impact assessment, land use, and compliance determinations (McBeath 2016). Other state departments, generally responsible for health and environment, also have some regulatory responsibilities (McBeath 2016). The State Department is responsible for international energy policies and pursuing American energy security. The State department is also responsible for "receiving applications for Presidential permits for cross-border pipelines and advises the Secretary if the infrastructure would serve the foreign policy interests of the United States" (Bureau of Energy Resources 2020).

There are some federal agencies with regulatory responsibilities other than FERC. Any time a pipeline crosses a federally-managed area (approximately one-third of land in the US) the relevant federal agency steps in to steer the regulatory process, which may (but not necessarily) include environmental impact assessments or in-depth compliance requirements (McBeath 2016). To reiterate, these agencies are only responsible for the portion of pipeline that crosses land under their jurisdiction. In particular, the Bureau of Land Management (BLM), the United States Forestry Service (USFS), the Environmental Protection Agency (EPA), and Army Corps of Engineers (ACE) are often involved in pipeline approval.

The role of the EPA in pipeline regulation is of particular interest in this thesis, given the emphasis on climate change in **RQ1**, as well as the role of environmental concerns more generally in delineating the public interest. The EPA is often involved in the regulatory processes for oil pipelines, under the auspices of the National Environmental Protection Act of 1969 (NEPA) (Dillon et al. 2018; McBeath 2016). NEPA is the central piece of federal environmental legislation and requires federal agencies to prepare an Environmental Impact Statement (EIS) for all actions that significantly affect the human environment on federally governed land. There are two points to emphasize with regards to NEPA's jurisdiction, and how it has been applied to oil pipeline regulation. First, NEPA is only invoked for *federal agencies to assess activities on land under their jurisdiction*; private companies usually do not draft the EIS (unlike in Canada) and NEPA has less authority over activities that occur on privately-owned land. Second, the definition of 'significant' impacts on the human environment is vague at best; there is no standard threshold for significance, and this is evaluated on a case-by-case basis (McBeath 2016; Council on Environmental Quality 2019). Importantly, NEPA evaluation does not require the decision-making authority to choose the least environmentally destructive action, only that they be aware of the potential consequences. NEPA implementation is managed by the President's Council on Environmental Quality (CEQ), the members of which are appointed by the President and confirmed by the Senate (Council on Environmental Quality 2019). Outside of NEPA,

there is a wide spectrum of socio-environmental assessment conducted in oil pipeline projects, depending on the state; some states require an EIS, which are generally short, broad statements that the environmental impacts of a pipeline are negligible within the state borders; some projects trigger a more detailed Environmental Impact Assessment (EIA) which is much more in depth and requires engineering and environmental surveys, and sometimes public consultation, to be conducted. Some states require little compliance documentation for intrastate pipelines beyond a submission of the pipeline route and dates of construction.

On the human impacts side, regulation is also piecemeal. The federal Pipeline and Hazardous Materials Safety Administration (PHMSA) is responsible for setting and monitoring safety standards and accident response, both pre- and post-construction, although operationally this tends to take the form of field inspections and incident investigations rather than the evaluation of projects as a whole (Office of Pipeline Safety 2021). Municipal authorities also have some jurisdiction over oil pipeline routing, but this is usually coordinated through the relevant state agency. Indigenous communities have a unique and contested relationship with the federal and state governments as well as private sector entities that propose pipeline routes through tribal land; this land is sovereign and therefore not subject to eminent domain. Some tribes have a degree of off-reservation authority with regards to traditional land jurisdiction, under the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act, but in practice this jurisdiction is murky and not well-defined, and requires consultation but not acquiescence of the tribes involved (McBeath 2016; Mengden 2016). [1]

Ultimately, assessments of environmental and human impacts of oil pipelines are dispersed to a variety of state and federal agencies, and a great deal of inter-departmental coordination is required between and within states to make any sort of grand determination of the public interest and the socio-environmental impacts associated with these large and disruptive infrastructure projects. As per Executive Order 13337, issued in 2004 by President George W. Bush, in cases where the proposed pipeline project crosses international borders and is considered 'significant'—like KXL—the State

[1] An example of the murky waters of tribal jurisdiction is the Dakota Access natural gas pipeline (DAPL), subject to significant controversy for its route through the traditional lands of the Standing Rock Sioux tribe in North and South Dakota. DAPL was legally challenged under the Native American Graves Protection and Repatriation Act, due to a lack of meaningful consultation and discovery of ancient burial sites. This pipeline was also challenged for its potential impacts to the upper Missouri River (the only water supply for the Standing Rock Reservation,)which was not situated on reservation lands and therefore not under tribal jurisdiction, but rather the Army Corps of Engineers.

Department administers the regulatory process and manages all the relevant departments and stakeholders, resulting in a more coordinated process that sometimes allows for a more centralized assessment of the pipeline.

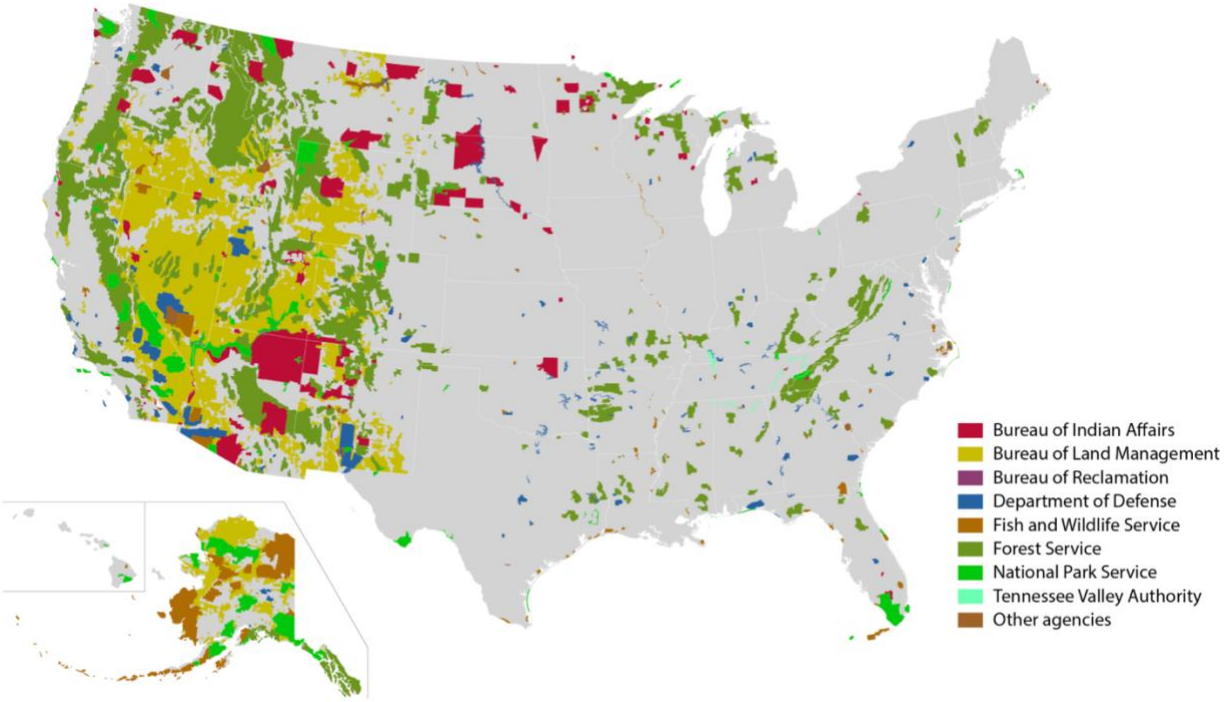

Figure 2: Federal and Native American Lands in the United States. Credit: U.S. Geological Survey

A crucial characteristic of the American regulatory regime is that only in exceptional circumstances does one regulatory entity assess the entirety of a pipeline project. Rather, regulation is piecemeal, with several different departments, both state and federal, responsible for a small portion of the pipeline. There is rarely an in-depth Environmental Impact Assessment conducted for whole pipeline projects, and projects are often given blanket permits in an effort to streamline the regulatory process (Arkfeld 2017).

This type of regulation emphasizes local and specific impacts over broader socio-environmental effects, and ultimately favours pipeline approval over rejection. Rarely has there been one entity assessing the socio-environmental impacts of the entire pipeline, let alone diffuse global impacts of issues like climate change; therefore, there has rarely been an outright rejection of a whole

pipeline project (Keystone XL was an exception to this trend), but rather directives to make routing changes or undertake smaller, site-based environmental impact assessments.

1.2.2 Canada

The Canadian process is more standardized and regimented; pipelines that do not cross provincial borders are dealt with by provincial authorities, and all interprovincial/international pipelines are regulated by the Canada Energy Regulator (CER). In 2020, the CER was established and its predecessor, the National Energy Board (NEB) was dissolved; however, this thesis is focused on the evolution of regulatory institutions, and on the Northern Gateway pipeline (NGP) in particular, which was regulated under the NEB. Therefore, the regulator under scrutiny here is the NEB, although the CER will be referred to where appropriate.

To build and operate an interprovincial or international oil pipeline in Canada, pipeline companies submitted an application to construct with the NEB, which included (but was not limited to) a commercial justification for the project, details of land rights/acquisitions, technical specifications, health and safety protocols, accident response measures, comprehensive summaries of consultation with municipalities and Indigenous communities, and a variety of relevant socio-environmental impact assessments (National Energy Board 2013). After this application was submitted, an independent review overseen by the NEB Board was initiated. This review included a public hearing which allowed 'intervenors'—individuals and groups who were considered to have a direct interest in the project, with a special emphasis on affected Indigenous communities—a chance to speak on the record as well as the company itself (National Energy Board 2013). After the hearing concluded, the NEB Board issued a finding, which approved the project as is or required specific conditions to be met before construction began. Pipelines were rarely rejected outright at this stage; however, companies could withdraw applications if the burden of conditions was too high, or if the commercial environment had changed. Legal challenges could also take place at any time during the review process, but typically were not filed until after the NEB issued a ruling. There was also an opportunity for executive involvement; until 2012, NEB project approvals had to be ratified by Cabinet, but rejections could not be overturned and no additional conditions could be submitted. In 2012, amendments to the NEB Act conferred more power to the Cabinet, and the role of the NEB was relegated to make a recommendation to Cabinet, rather than issue a decision itself (Harrison 2013). The NEB underwent further evolution in 2019, where the controversial Bill C-69 created the Canada Energy Regulator (CER) in place of the NEB, but the decision-making power of Cabinet from the

2012 amendments was retained. The advent of the CER was an attempt to clarify the regulatory process for industry shareholders, increase Indigenous consultation, and introduce more rigorous environmental assessments; but as the Northern Gateway project is one of the cases selected for this project, and was under the auspices of the NEB, the CER will be discussed only in the context of Canadian regulatory evolution more broadly.

So the NEB, until 2019, was the central energy regulator in Canada for interprovincial/international pipelines. Intra-provincial pipelines are solely under the jurisdiction of provincial authorities (ie. the Alberta Energy Regulator). The NEB's powers were established by several acts and regulations: the National Energy Board Act of 1959, Canadian Oil and Gas Resources Act, and the Canadian Petroleum Resources Act. The NEB was also responsible for sections of the Canadian Environmental Assessment Act and the Species at Risk Act, among others. However, in contrast to the United States, the NEB had jurisdiction over all relevant pieces of all of these acts and regulations, where in the US different departments are responsible for different pieces of legislation.

1.2.3 Northern Gateway and Keystone XL

This thesis will compare the regulatory processes of two large, controversial pipeline projects in Canada and the United States, both from the last 10 years, and both cancelled (or likely to be, in the case of KXL). In order to situate the analysis, a brief overview of both pipelines is useful.
The Northern Gateway pipeline project was initially announced in 2005 by Enbridge Inc., a major player in North American energy infrastructure. NGP would have carried diluted bitumen (dilbit) 1170 kilometres from the Athabasca oil sands in Bruderheim, Alberta to a new port terminal in Kitimat, British Columbia, where approximately 220 VLCCs would have shipped 525,000 bpd, largely to Asian markets (Natural Resources Canada 2016e). The NEB and Canadian Environmental Assessment Agency suggested the creation of a Joint Review Panel (JRP) which would allow the project to be subject to a single set of socio-environmental assessment/public hearing requirements, which was approved by the Minister for Environment. In 2006, Enbridge prioritized other projects and NGP was paused until 2008, when Enbridge informed the JRP that it had re-invigorated the regulatory process.

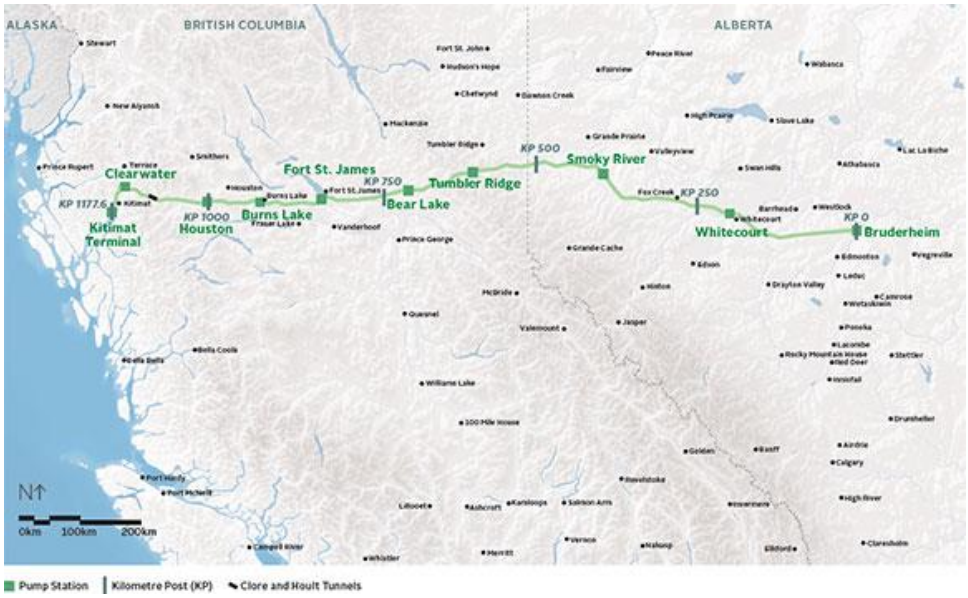

Figure 3: Proposed Northern Gateway Route (Natural Resources Canada)

Enbridge began the regulatory process in earnest in 2010, with the filing of the NGP proposal which included:

- project justification and alternatives
- economic feasibility and contractual arrangements
- land requirements/land rights & acquisition
- detailed engineering specifications and routes
- records of public consultation (with municipalities/groups directly affected)
- aboriginal engagement, consultation, and traditional knowledge (TK)[2]
- environmental and socio-economic impact assessments (ESA), which include impacts on:
    - atmospheric environment
    - acoustic environment
    - soils
    - terrain
    - vegetation
    - wildlife

[2] For decades in the NEB process, 'Aboriginal' was the widely-accepted term to refer to Indigenous, First Nations, Inuit, and Métis communities. However, in 2015, the term 'Indigenous' began to be adopted by governments and organizations, largely due to calls within Indigenous communities in Canada and internationally. Therefore, while the term 'Indigenous' (including reference to First Nations, Inuit, and Métis communities) will be generally utilized, the term 'Aboriginal' will be used only in direct reference to the Northern Gateway NEB application, where it appeared in text.

    - surface water resources
    - freshwater fish and fish habitat
    - hydrogeology
    - paleontology
    - effects of the environment on the pipelines and tank terminal
- human environment, a portion of the ESA which includes impacts on:
    - national and provincial economies
    - human health
    - non-traditional land use
    - heritage resources
- risk assessment and spill management protocols
- ESA and risk assessment for the Kitimat marine terminal (under the TERMPOL review process, administered by the Department of Transportation specifically for marine transport, but with many of the same requirements as the pipeline itself)

After this initial application, and several clarifications sought from the JRP and officially designated intervenors, the NEB held a public hearing and the JRP issued a certificate of approval in December 2013—subject to 209 conditions, which had to be addressed by Enbridge before construction could begin (Joint Review Panel and National Energy Board 2014a). Most of these conditions required additional engagement with Indigenous communities, further due diligence with regards to watercourse crossings, and additional details on marine spill mitigation and cleanup; in particular, Enbridge had to commit to a remediation fund of $950 million for any accidents (Joint Review Panel and National Energy Board 2014a). In 2014, Prime Minister Stephen Harper approved NGP (subject to these conditions) despite opposition from a variety of stakeholders, including Indigenous groups, environmental activists, municipal authorities, and the government of British Columbia.

In late 2015, the Federal Court of Appeal presided over a legal challenge from a coalition of eight Indigenous groups, four environmental organizations, and Unifor (the largest private sector trade union in Canada), which alleged that Enbridge had failed to meaningfully consult with Indigenous communities along the pipeline route, and that the 209 conditions were insufficient in correcting this failure. The courts ruled in their favour, and overturned Cabinet approval of NGP. In January 2016, shortly after his election, Prime Minister Justin Trudeau confirmed the rejection of NGP and after a long, contentious regulatory process, the project ultimately failed.

The KXL process has concluded in a similar manner, with President Joe Biden cancelling the project in January 2021(after it was conditionally rejected by President Obama in 2012, rejected again

via Presidential veto in 2015 and reinvigorated by President Trump's executive order in 2017), although the regulatory journey is quite different. Proposed in 2008 by TransCanada Pipelines Limited (Now TC Energy), KXL would have been an expansion of the current Keystone pipeline system which ships crude oil from Hardisty, Alberta to several shipping hubs in the United States (including Cushing, Oklahoma; Pakota, Illinois; and Port Arthur, Texas). The KXL expansion would run through Montana, South Dakota, and Nebraska to its terminus in Steele City, Nebraska. In 2010, TransCanada submitted its regulatory application to the NEB for the short Canadian portion of the pipeline, which was approved with relatively little fanfare or controversy. TransCanada also submitted a similar project proposal to the State Department to pursue a Presidential Permit. Due to Executive Order 13337, which places international pipelines under the auspices of the State Department, the KXL process is more centralized than many other domestic American pipeline projects.

Figure 4: Proposed Keystone XL Route- 2019 (TC Energy)

In 2010, the State Department released a draft EIS with input from multiple federal agencies; the ACE, Department of Agriculture, Department of Energy, Department of the Interior, PHMSA, and the EPA (Ramseur et al. 2014; Denchak 2021). Relevant state agencies also participated (the Montana Department of Environmental Quality, certain county authorities in Nebraska, and two Natural

Resource Districts in Nebraska), and an open call for public comments was held. The environmental review covered many of the same topics as the NGP process:

- Geology/ geologic hazards
- Paleontological resources
- Soils and sediments
- Potential erosion and impacts to soil productivity
- Water resources (including groundwater and surface water)
- Wetlands
- Terrestrial vegetation
- Wildlife and endangered species
- Fisheries
- Land use, recreation and visual resources
- Socioeconomics
- Environmental justice
- Cultural resources
- Air quality and noise
- Accident response protocols
- Cumulative impacts

The 2010 draft EIS, which included an assessment of alternative options, stated that the project would have a limited impact on the environment (State Department 2010). In response to the 2010 EIS, opposition to the project began to coalesce, with landowners in Nebraska wondering about the appropriateness of the route, the EPA questioning the justification for the project, and activists interrogating the EIS process and demanding further environmental oversight (Denchak 2021). In response, the State Department extended its environmental review until 2011, which further reiterated the finding of limited environmental impact. In response, protests were staged at the White House and Parliament Hill; in Washington, D.C. more than 1200 protestors were arrested (Beinecke 2011). One outcome of the new 2011 EIS was a State Department request that TransCanada reroute KXL away from the ecologically sensitive Sand Hills region in Nebraska, to which TransCanada agreed. In December 2011, Congress imposed a 60-day deadline on the Obama administration to issue a decision on the project; in January 2012, President Barack Obama rejected the proposal on the grounds that this accelerated timeline did not leave enough time to properly review the new route, and invited TransCanada to submit another application (Denchak 2021).

In 2012, TransCanada submitted a new route to Nebraska state authorities and in turn submitted a new application for Presidential Permit. Nebraska Governor Dave Heineman approved the new route

in 2013 despite landowner resistance, but opponents filed a legal challenge claiming that the state law used to approve this new route was unconstitutional; in 2014, a Nebraska county district judge ruled in the opponents' favour, stalling the regulatory process. In 2015, the Nebraska Supreme Court struck down the county decision, allowing the State Department process to move forward. The Republican-controlled federal Congress announced that it would make KXL a priority, but at this point the Obama administration has increasingly turned against the project due to environmental concerns and public opposition; during a 30-day public comment period in 2014, over two million comments opposing the project were submitted (Swift 2014). In January 2015, the U.S. Senate approved a bill to approve KXL, but President Obama vetoes the bill, and eventually rejects the project.

In January 2017, newly-elected President Donald Trump, acting on campaign promises, signed a memorandum inviting TransCanada to re-submit their application. By March 2017, Trump has issued a Presidential Permit for KXL. In November 2017 the Nebraska Public Service Commission approved the project as well, but required additional reroutes from TransCanada which they submitted; in August 2019, the Nebraska Supreme Court approved the reroute and upheld the Public Service Commission decision (M. Smith 2019). In November 2018, a U.S. District Judge blocked the Trump Administration permit, citing the need for more environmental review. In 2019, a Supplemental EIS was released and another period of public engagement was opened, soliciting another 120,000 comments. By December 2020, the KXL pipeline was set to begin construction and become operational by 2023. However, several significant legal challenges were still in progress, issued by cohorts of environmental activist organizations and tribal councils.[3] In 2020, a federal judge invalidated the water crossing permits issued by the Army Corps of Engineers on the grounds that utilizing Nationwide Permit 12 ("nation-wide permits" are high-level, fast-tracked review processes that allow one permit to be issued for a whole project without rigorous, site-specific environmental assessment), for the entirety of KXL violated the Endangered Species Act. Finally, President Joe Biden cancelled the project upon his inauguration in January 2021, and it is very unlikely that the pipeline will be built.

[3] See: Northern Plains Resource Council et al. v. U.S. Army Corps of Engineers et al. and Bold Alliance et al. v. U.S. Department of the Interior et al.

1.3 Literature Review

This project is examining the efficacy of regulatory mechanisms in characterizing and interpreting complex socio-environmental problems that cross jurisdictional boundaries. Each empirical chapter (II, III, and IV) will focus on a different problem—climate change, energy security, and the public interest—and so will utilize a different area of scholarship to frame and analyze the interpretation of that problem by regulators. The three main areas of scholarship presented here are

- theories of regulation, with an emphasis on regulatory capitalism
- international political economy of energy
- energy security, in particular the Four A's framework

These areas of scholarship are not always explicitly related to each other, but they all relate to the idea that regulatory mechanisms have neither the mandate nor the capacity to properly interpret the impacts of complex socio-environmental problems. These areas of scholarships will be discussed in depth in this section, and specific theories utilized in each empirical chapter (as seen below).

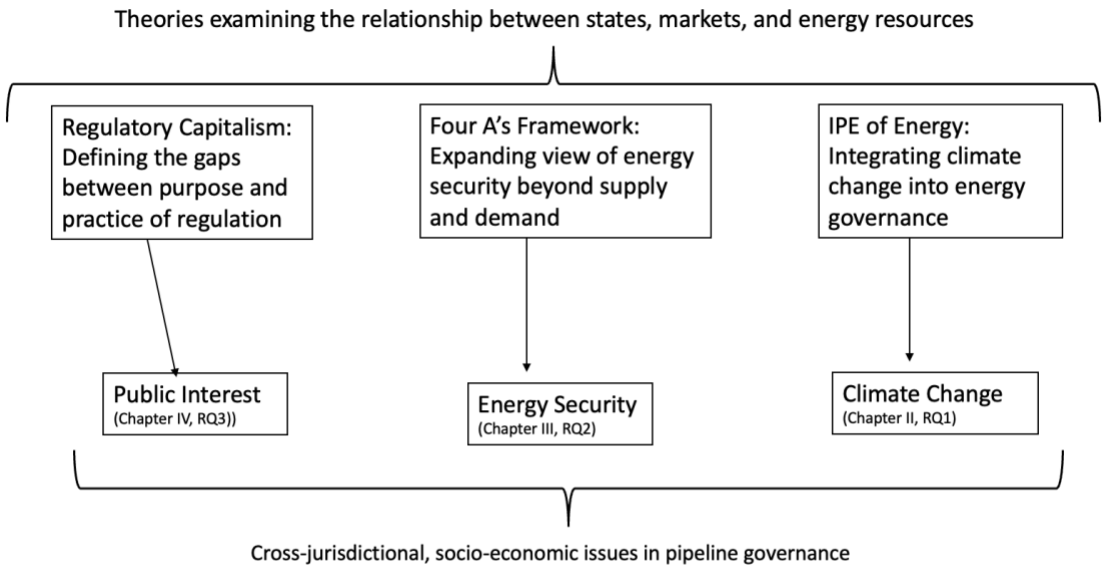

Figure 5: Theories utilized in empirical chapters

1.3.1 Theories of Regulation

The need to regulate certain industrial activities is ancient, but most modern regulatory agencies were created in the aftermath of the Second World War(Lodge 2012; Walby 1999). As these agencies grew, so did the idea of the "regulatory state"—that state power in democratic, industrialized countries was more often deployed via regulation (Walby 1999; Braithwaite 2006). Regulatory theory has undergone significant shifts since the 1950s, but largely focuses on the relationships between regulators, the regulated, and the public. Entrenched power structures, broader socio-political pressures, and increasingly complex externalities are significant variables in proposing theories of regulation(Carrigan and Coglianese 2011; Balleisen and Brake 2014; Feintuck 2010; Moran 2002). Theories of public interest regulation, regulatory capture, and regulatory capitalism examine these power structures and pressures in different ways, and will be explored in the following sections.

Public Interest Regulation

The contemporary regulatory state largely rests on the concept of the 'public interest'—the idea that state-sponsored regulation is meant to protect social welfare as opposed to private stakeholder interests—known as the public interest theory of regulation (Posner 1974; Feintuck 2010; Huntington 1952). Beginning in the 1960s but becoming popular in the 1970s in most wealthy industrialized nations (including Canada), consumer safety was given serious consideration in sectors like agriculture, and environmental site assessments and hazard assessments were integrated into the regulatory compliance process for large projects like energy infrastructure (Doern, Prince, and Schultz 2014; Quirk and Derthick 1985). The broad trend was towards regulatory agencies that were more inclusive of consumer safety, environmental sustainability, and measures to reduce vulnerability in an effort to both protect the public and encourage economic growth (Levine and Forrence 1990). Public interest regulation typically emerged in the creation of new regulatory agencies, like the Canadian Environmental Assessment Agency, and through new powers given to older agencies like the NEB, which originated largely as an economic regulator in 1959, but grew to manage all facets of interprovincial/international pipeline regulation in the 1970s (Doern, Prince, and Schultz 2014).

Public interest regulation theory forms the basis of most contemporary discussions about regulation, because it explicitly deals with regulation as a tool to achieve positive public outcomes that would not occur without intervention of some sort (Feintuck 2010; Bartle 2009). Notions of 'market externalities' are crucial to understanding public interest regulation; meaning that markets can produce negative results because certain factors that are not considered in the market transaction

are considered ‘external’ (Hood et al. 1999). Regulations are one tool utilized to ‘internalize’ these externalities. Environmental issues are often considered negative externalities, as they are not generally accounted for by the market. As a result, environmental protection has become one of the largest regulatory issues in the 21st century, not just regarding oil and gas development but across industrial activities (Bartle 2009; Castree 2008b; Vormedal, Gulbrandsen, and Skjærseth 2020). There has been a huge increase in environmental, social, and consumer safety regulations since the 1970s; in the context of energy regulation, these protections make up the bulk of compliance for firms (Carrigan and Coglianese 2011). But these additional regulations were largely added on to existing institutional scaffolding; the concept of the public interest, which is the foundation of most contemporary regulatory institutions, tends to be understood in narrow economic/financial terms (King, Chilton, and Roberts 2010).

Public interest regulation is appealing; it promotes a normative ideal of what regulation could and should be. However, a lack of clarity over what constitutes the public interest—how it is to be operationalized within regulatory decision-making, and how it functions in practice—mean that a more refined notion of regulatory governance is needed. Social protection and environmental assessment now constitute the bulk of regulatory requirements in Canada and the United States, but we need to engage with the concept of the public interest more purposefully. Without fundamentally altering the interpretation of the public interest by regulators, these mechanisms will fall back on conventional framing that privileges economic growth. The decisions that regulators made decades ago have implications for industrial development today; the choices they make today will influence the future of energy development in Canada and the United States.

Regulatory Capture

Capture theory, (also referred to as the economic theory of regulation) is fundamentally the idea that regulatory mechanisms may evolve to emphasize private interests over public. Crucially, much of capture theories applications focus on regulatory mechanisms that may have been created in the public interest, but whose mechanisms can be manipulated by powerful private sector actors—leading to a condition of ‘regulatory capture’(M. H. Bernstein 1955; Huntington 1952).

Capture theory grew out of the work of economic theorists like Anthony Downs, Mancur Olson, Richard Posner, and George Stigler. Downs applied economic models for utility maximization to firm behaviour, positing that private sector actors are no different than individuals in that they will support policies that are friendly to their actions, and in turn regulators pursue policies that will garner

the most support from the most powerful actors (these private firms) (Downs 1957; Posner 1974). Olson elucidated the challenges of collective action which privilege a small, powerful group of actors who can coordinate to further their own interests over the broader but more chaotic public interest (Olson 1965). George Stigler made the claim that regulation is the same as any other product produced in the market and is "acquired by the industry and is designed and operated primarily for its benefit" (Stigler 1971).

All of these threads of scholarship come together to create capture theory, which paints the (admittedly cynical) picture of a regulatory state that is built for, and manipulated by, private sector interests rather than the public good. However, while industry influence on regulatory agencies is at this juncture undeniable in some instances, the strength of this influence ebbs and flows across regimes, administrations, and institutions (Carrigan and Coglianese 2011). For instance, different regimes have unique policy goals, which may change the level of access industry has to both regulators and political representatives, or exogenous shocks like an industrial accident may spur institutional reform and widen the gap between regulator and industry. A clear example of the latter is the 2010 Deepwater Horizon oil rig fire and associated spill, an investigation of which revealed extremely close relationships between industry representatives and regulators and resulted in the dissolution of the Minerals Management Service, replaced by three new agencies in 2011 (Carrigan 2013).

Regulatory capture, after a confluence of scholarly work in the 1970s and 1980s, was largely left aside by political economy scholars. Although economists (including Nobel-winner Jean-Jaques Laffont and Jean Tirole) produced pathbreaking empirical work on principal-agent relations in regulation, they were less concerned with testing the central problematic of capture theory— that regulation is essentially for sale—than with mathematically understanding the inefficiencies of regulation and asymmetries of information (Laffont and Tirole 1991). On the matter of examining the social and political aspects of interest group-regulator relationships, however, little work was being done. Having said that, the potential of regulatory capture was one variable contributing to deregulatory impulses in Canada and the United States in the 1970s and 1980s (Quirk and Derthick 1985; Doern, Prince, and Schultz 2014; Doern and Gattinger 2003).

It should be noted that capture does not have to be a dichotomous condition, but rather can exist on a scale and in several different forms. David Carpenter and David Moss posit that while claims of capture are often misdiagnosed and misinterpreted, one of the most significant problems with capture scholarship is "its lack of nuance in describing how and to what degree capture works in

particular settings" (Carpenter and Moss 2013). It is not that capture does not exist, but rather that proposing capture as the cause of every regulatory failure suggests an inherent brokenness in contemporary regulation more broadly, which is a very bold claim to make; simply because regulation fails, does not necessarily mean that it is fully captured (Carpenter and Moss 2013; Novak 2013; Shapiro 2011). There is also a question of by whom regulatory mechanisms are captured; the focus is often on industry capture, but regulatory capture can concern concerted shifts away from the public interest in favour of any interest group, including activists, unions, or consumer interest groups(Levine and Forrence 1990; Novak 2013).

Several distinctions must be made within the regulatory capture literature before moving forward, to help situate this thesis, and its case studies, within the regulation literature as well as political economy scholarship more broadly. First, that regulatory capture should be conceived of as 'strong' or 'weak', when it does exist, rather than a strict dichotomy of 'completely captured' or 'completely independent from capture' (Carpenter and Moss 2013). Strong capture, as proposed by Carpenter and Moss, is a state in which institutions are so far removed from the public interest that the public would be better off with no regulation at all or a complete replacement of the institution in question; while this condition may exist at times, the bar is high to prove as such. Weak capture, conversely, occurs when the net benefit of regulation is still positive, but diminished due to external influence.

The second distinction that must be made is between traditional entry-barrier capture and more contemporaneous corrosive capture. Stigler, Olson, Samuel Huntington, and others from the initial wave of capture scholarship were concerned largely with instances in which regulators heightened barriers to entry in certain industries in order to privilege incumbents over new entrants, marking the *appropriation* of regulation as the foundation of capture (Stigler 1971; M. H. Bernstein 1955; Huntington 1952). The remedy to such entry-barrier capture was, as Stigler proposed, *deregulation*; if there were fewer regulatory institutions with less power, then barriers to entry would diminish, encouraging economic growth (Stigler 1971; Olson 1965) . This deregulatory impulse espoused in the 1970s, quickly echoed in policy decisions in both the United States and Canada, suggested an ideological bent to capture theory that the literature has been unable to shake (Quirk and Derthick 1985; Doern and Gattinger 2003). There was opposition to the deregulatory impulses of initial capture scholarship; for instance, historian Gabriel Kolko, a critical theorist whose work would inspire scholars of regulatory capitalism, proposed that the very concept of government regulating business was rooted in what he called political capitalism and not in the public interest (Kolko 1965).

But the overwhelming tendency of capture theory in the 1970s and 80s was in favour of deregulation to mitigate barriers to entry.

However, as the distributive effects of the Cold War-era neoliberal impulses become clear, regulatory capture has largely taken on a very different character in the last few decades. Carpenter and Moss propose "corrosive capture" to explain captured institutions that result in fewer regulatory barriers, rather than more as in entry-barrier capture (Carpenter and Moss 2013). Corrosive capture "dismantle[s] regulation even in the absence of public support or a strong welfare rationale for doing so" (Carpenter and Moss 2013). Corrosive capture could result in reduced entry barriers, as an antithesis of the Stiglerian capture, but is more likely to take the form of reduced compliance requirements, less oversight, and shorter operating procedures in an effort to reduce costs. Lastly, the concept of "cultural capture", proposed by James Kwak, proposes that regulation can be captured through the manipulation of norms, conventions, and discourses that underlie certain industries (Kwak 2013). Cultural capture as a mechanism does not exist on its own, but rather in service of either corrosive or entry-barrier capture. When it comes to environmental and social impacts, which have become major components of energy regulation only since the 1990s, corrosive capture is far more likely as environmental assessments tend to be costly, social impacts can be controversial, and both significantly increase the regulatory burden on the private sector.

Regulatory Capitalism

Both public interest regulation and capture theory seek to analyze the purpose of regulatory mechanisms and the interaction between the regulator, the regulated, and the consumers of the regulated product. As a critical counterweight to both of these theories, the theory of regulatory capitalism suggests that the goal of regulation is not to protect the public good (even under capture theory, regulatory agencies rarely start out captured), but rather as a tool of commodity accumulation (Drahos and Braithwaite 2001). As defined by David Levi-Faur, regulatory capitalism suggests that "regulation made, nurtured and constrained the capitalist system and capitalism creates the demand for regulation" (Levi-Faur 2017). Regulatory capitalism emphasizes the cyclical and interdependent relationship between the state, the market, and society (Levi-Faur 2005). Under a framework of regulatory capitalism, regulatory mechanisms are one of many institutions that constitute the capitalist state and can be manipulated to cultivate strategies of commodity accumulation, the raison d'être of capitalism. Regulatory capitalism extends the concept of the 'regulatory state', where state power is often deployed via regulation, rather than a monopoly on violence or welfare provision (Walby 1999).

In the 1990s, after a period of de-regulation in the 1980s in many liberal democracies, a kind of "regulatory explosion" took place, with a rapid and sharp increase in the number of regulatory agencies(Braithwaite 2008). To some scholars, notably John Braithwaite, David Levi-Faur, and Jacint Jordana, this represented a shift in the way we think about regulation; the concept of the 'regulatory state' seemed to place too much emphasis on state actors, without accounting for broader global social/political/economic forces; but neither public interest regulation nor capture theory could explain this rapid expansion in regulatory services (Braithwaite 2008; Jordana and Levi-Faur 2004; Levi-Faur and Jordana 2005a; Levi-Faur 2017). So the theory of 'regulatory capitalism' was instead proposed; that regulation was increasingly transforming into a part of government, with all its associated ideological accoutrements, rather than an administrator to ensure the provision of public and private services (Jordana and Levi-Faur 2004; Braithwaite 2008).

Regulatory capitalism pushes back against the idea that neoliberalism has been the guiding institutional principle of politics since the 1970s. Neoliberalism as a concept is somewhat contentious in both scholarship and beyond; but broadly, under a neoliberal directive, there is a tendency towards privatization, deregulation, and 'small government' (Castree 2008b; MacNeil 2014a; McCarthy and Prudham 2004). And there were deregulatory impulses in the 1980s across the world; as evidenced by the Thatcher regime in the UK and Reagan administration in the US, the Mulroney Conservatives in Canada in 1984, and beyond in Europe, Latin America, and Australia (Quirk and Derthick 1985; Braithwaite 2008). There were of course exceptions; while the Washington Consensus of neoliberalism had swept much of the world (most dramatically in the disintegration of the Soviet Union), many East Asian countries had economic success despite a resistance towards these broadly neoliberal impulses (although this success was briefly interrupted by the 1997 Asian financial crisis) (Braithwaite 2008). Regulatory economist Joseph Stiglitz pointed to the rapid recovery of Asia from the financial crisis as proof that the Washington consensus, and thus neoliberalism, was no longer the dominant governing principle in the world, if it ever truly was (Stiglitz 2003). As Levi-Faur and Jordana proposed, the regulatory explosion in the 1990s suggests that with regards to regulation in particular, deregulatory impulses were short-lived; we have been in a broad period of re-regulation (in terms of regulatory agencies and rule-setting) for decades (Jordana and Levi-Faur 2004).

In summary, institutional analysis in terms of regulation began in the 'night watchmen' regulatory state, which focused largely on certain constraints on activity as embedded in law pre-World War II; moved to public interest regulation, then to capture theory, then to notions of the 'new regulatory state'. Regulatory capitalism takes this notion of regulation as a tool of state power one

step further, intimating that increased regulation, both from within the state and without, actually further entrenches global capitalist power structures by privileging large multinational corporations (MNCs). These firms are often much better equipped to satisfy a heavy regulatory burden than small and medium enterprises (SMEs), and they have the technical expertise and financial resources to propose regulations that privilege their business development. Regulatory capitalism, and this is borne out by the evolution of regulatory institutions globally, suggests that both markets and the state have become stronger, and regulatory institutions have evolved to strengthen the state-market relationship. The state increasingly shares governance with non-state actors (like industry associations, NGOs, civil society organizations, etc.), but the wealth and market power that is produced under contemporary capitalist structures in turn gives states the capacity to regulate more than ever, therefore maintaining its own power over market forces.

1.3.2 International Political Economy of Energy

Contemporary international political economy (IPE) was borne out of the rapid globalization and subsequent economic shocks of the 1960s and 1970s. Prevailing realist theory (from the international relations literature) was unable to explain events such as the 1973 oil shock as there was little space for economics or non-state actors in the foundation of these theories (Cohen 2008). IPE, intellectually, was meant to examine the inextricable relationship between global market "structures" and the "agents" of political-economic interaction, like states (Van de Graaf et al. 2016). It is in this space of the inherent complexity of interaction that IPE and energy have something to offer one another; energy research is often done under the auspices of economics (trade), natural sciences (technical development), or state-centric international relations (geopolitics & security) (Kuzemko, Keating, and Goldthau 2018). IPE offers an alternative lens with which to view the unique importance of energy and the vast network of actors and institutions involved in its proliferation.

IPE is by no means a homogenous discipline; however, there are some central tenets to the field. In the essential text *The Political Economy of International Relations*, American scholar Robert Gilpin states that "the parallel existence and mutual interaction of 'state' and 'market' in the modern world create 'political economy'"(Gilpin 1987). Despite the intellectual heterogeneity of the field, the foundational assumption underlying IPE is that politics and economics cannot be analytically separate; that economic structures and conventions are directed by political action; and that domestic and international levels of analysis are inherently intertwined (Underhill 2001).

IPE scholarship draws from its intellectual roots in political science to conceive of its central problematique—the state-market relationship—from three broad perspectives: realist, liberal, and critical thought. It is worth noting that as the discipline has evolved, these categories have perhaps become overly simplistic as there is significant diversity of thought within these perspectives. However, they were crucial in defining the discipline's origins, and much of the scholarship still draws from these distinctions (Underhill 2001). The role of energy systems is generally viewed differently from each of these perspectives, depending on the conception of state-market relationship.

Realist IPE

Broadly, realist thought, drawing from international relations, considers the international system to be anarchic with the state as the only legitimate actor. Under this paradigm, markets are ultimately a tool of the state (Gilpin 1987). Operating from this premise realist political economy, while still a foundation of IPE scholarship, has struggled to account for contemporary trends in globalization (Kirshner 2009). In the 1980's, realist political economy attempted to engage with globalization through ideas like hegemonic stability theory—that the international system is more likely to remain stable with the presence of a clear dominant world power (Kindleberger 1986; Krasner 1976). This view was popular amongst realist theorists in the 1980s, but has largely fallen out of favour as contradictory empirical evidence has emerged (Webb and Krasner 1989).

Given that realist political economy emphasizes state structural power over other power relationships and governance mechanisms, the role of energy systems is considered as subordinate to state power. Realist thought tends to consider energy in two ways; first, that energy security—having consistent and reliable access to energy supplies—is paramount for national security (Goldthau and Sovacool 2012; Stoddard 2013). This line of thinking was a response to the 1973 OPEC-induced oil price shock; suddenly, industrialized importing states were forced to confront the impacts of interrupted energy supply (Goldthau and Sitter 2015b; Colgan, Keohane, and Van de Graaf 2012). This gave rise to the energy security and energy independence literature, which drew from neorealist political economy to emphasize the need for states to secure consistent energy supplies through increased domestic production (Cherp, Jewell, and Goldthau 2011; Tugwell 1980). Tangential to the energy security literature is the relationship between energy resources and conflict, which falls largely under the purview of security theorists and international relations scholars rather than IPE (Collier and Hoeffler 2004; Klare 2001; Ross 2006).

The second perspective of energy from the realist political economy perspective conceives energy systems as indistinguishable from any other resource, industry, or global system. IPE scholar Robert Gilpin discussed energy as an important industry, but not fundamentally unique, which suggests that IPE could be applied to energy the same way it could be applied to trade, globalization, or poverty (Gilpin 1987). Many political economists, realist and otherwise, have taken Gilpin's view, arguing that while energy is fundamental to the function of the international system, it is not unique enough to warrant special consideration (Kirshner 2009; Cohen 2008; Morse 1999). However, there has been pushback to this point of view, particularly since the early 2000s and especially from liberal and critical thinkers in political economy.

Liberal IPE

From the liberal perspective in IPE, the state and market operate largely independently, with the primary role of the state to ensure the orderly operation of markets. When the field began to coalesce in the 1970s, the works of Robert Keohane and Joseph Nye heralded the emergence of a distinctly liberal IPE in the United States (Ravenhill 2007; Cohen 2007). The rapid globalization that occurred in the 1980s and 1990s is a direct result of the promotion of liberal IPE ideals; and as a result of that globalization, liberalism is the dominant theory in contemporary IPE (Frieden and Martin 2003). Liberal political economists operate from an individualist ontology, with individual interests the analytical starting point (Keohane 1988; Blyth 1997). Liberal scholars tend to assume that power comes from different sources in different systems, but largely is influenced by the operation of institutions both global and local (Keohane 1988).

Liberal IPE also emphasizes the role of institutions, both domestic and international, as a vehicle for the production of certain power relationships. Institutions are considered the analytical 'building blocks' of IPE (Frieden and Martin 2003). In the early 1980s, liberal IPE scholar Robert Keohane, while operating from a state-centric perspective similar to his colleagues from the realist tradition, posited that international regimes were the key to solving market failures and the lack of state-to-state cooperation (Keohane 1984). There is a lot of space for non-state actors in the liberal conception of IPE; multinational companies (MNCs), international organizations, banks, civil society groups, and individuals all have the capacity to interact and affect the state-market relationship (Van de Graaf et al. 2016). Mainstream emphasis on international regimes has also contributed to an increase in scholarly interest in 'global governance'.

Until the 2010s, the role of energy in the liberal IPE was similar to that of its realist counterparts. Energy was considered a commodity like any other; when scholars did single out energy, it was generally to advocate for the privatization of energy suppliers or to analyze fossil fuel price shocks (Van de Graaf et al. 2016). However, recently energy scholarship has been reinvigorated in liberal IPE. The idea of 'global energy governance', concerned with the global network of energy regimes and institutions, has pushed back against purely technical conceptions of energy to propose that the underlying structures of energy systems influence certain path dependencies (Kuzemko, Keating, and Goldthau 2018). Liberal IPE is still grappling with the 'uniqueness' of energy within the grander IPE paradigm, and scholarship from the last five years suggests a turn to focus on energy resources and systems (Goldthau and Sitter 2015b). While the study of international energy politics has been established for decades (see Keohane 1984, for instance), the liberal-eye view of market supremacy in global energy dynamics has expanded in the last decade, with an emphasis on energy transitions and the volatility of oil and gas markets (Van de Graaf and Colgan 2016).

Critical IPE

Critical theory came to contemporary IPE largely as a response to practical, real-world issues that could not be satisfactorily explained by existing theoretical approaches. In the late 1980s, as the post-war American hegemony began to wane, the practical problems of a globalising world led to increased interest in developing new theories in the field, as theories like HST seemed unable to explain current trends (Strange 1996). Some scholars felt that the fairly homogenous IPE, at that point represented by American scholars like Robert Gilpin, Robert Keohane, Charles Kindleberger, and Steven Krasner, did not fully address social theories or fill the gap between international relations and global economic processes (Strange 1988).

Two major publications signaled the rise of critical theory in IPE, and a major turn towards neo-Gramscian thought; Susan Strange's *States and Markets*, a crucial text for students of energy in particular, and Robert Cox's *Production, Power, and the World Order.* Strange argued that energy markets have proven to be highly vulnerable to political forces (hence the ability of OPEC to disrupt the global economy through a manipulation of fossil fuel production in 1973), and so an exclusive focus on either the economics or the politics of energy cannot fully account for the role that energy systems play in the global economy or in international politics (Strange 1988).

Cox, inspired by Gramsci's concepts of historic blocs of power and hegemony, adapted these ideas as a framework for analyzing global political economy. In this neo-Gramscian IPE, hegemony

is created by the globalization of certain institutions and norms, led largely by the economic power of a superpower and cemented by the normalization of its ideologies and structures (R. W. Cox 1926-1987). This was in direct response to the failure of HST to explain rapid globalization and the role of the United States in the international system. The neo-Gramscian turn in IPE is not without its critics; some critical theorists feel that too much attention is given to concepts of hegemony and historical contingency, to the exclusion of other strands of critical thought (Farrands and Worth 2005).

In 2016, Tim DiMuzio proposed the idea of "carbon capitalism: the notion that the magnitude and universalization of capital accumulation, along with high energy–intensive forms of social reproduction, would have been impossible without abundant, affordable and accessible fossil fuels" (DiMuzio 2016). This explicit integration of carboniferous energy systems into the reproduction of the capitalist world order took energy systems from the periphery of IPE, where critical scholars argue that fossil fuels' centrality to capitalist systems supports and entrenches those systems, allowing for the continuation of a "petro-capitalist" political economy despite the social, ecological, and political crises that such dependence on fossil fuels engenders (Matthew Huber 2009; 2013; Pineault 2018).

1.3.3 Energy Security

The notion of energy security emerged in the 1970s, both in policy and in theory, largely in response to disputes over oil supply in the 1973 oil crisis and led to U.S. President Jimmy Carter infamously declaring in 1980 that efforts to disrupt the supply lines of oil from the Persian Gulf would be considered an attack on the "vital interests of the United States" (J. Carter 1980). As a policy problem, scholarly interest in energy security waned in the late 1980s/1990s, as prices stabilized and embargoes were lifted, and was re-invigorated in the 2000s as energy demand began to rise sharply in Asia while environmental concerns globally put pressure on national governments to begin decarbonizing their energy systems (Cherp and Jewell 2014).

Conceptualizing energy security is difficult; governments, organizations, and firms tend to propose the definition that supports their own economic/political/social interests, and there is little consensus amongst scholars (Benjamin K. Sovacool and Brown 2010). Energy itself is a complex and multifaceted concept; as was discussed above in section 3.2, there is some debate as to whether energy deserves special consideration within the study of international political economy, or whether it is just another commodity. Within the security scholarship, there are some broad categorizations of

notions of energy security, but again these are contested and malleable, and range from narrow and specific to broader and holistic concepts.

The 'economic' aspects of energy security are narrow, focusing on minimizing price volatility and consistency of supply and demand(World Bank 2005). Other scholars focus on the environmental aspects of energy security, which recognizes that certain energy sources are finite and have present and future impacts on planetary and human health; this view prioritizes sustainability, long-term planning, and diversification of energy sources (Indriyanto, Fauzi, and Firdaus 2011). However, there are some points of convergence when we talk about energy security. For example, the International Energy Agency defines energy security as "adequate, affordable, and reliable access to energy fuels and services, it includes availability of resources, decreasing dependence on imports, decreasing pressures on the environment, competition and market efficiency, reliance on Indigenous resources that are environmentally clean, and energy services that are affordable and equitably shared" (International Energy Agency 2019). This definition elucidates the 'four As' of energy security, which is a common and widespread approach as can be found in the scholarship and was explicitly proposed by the Asia Pacific Energy Research Centre (Asia Pacific Energy Research Centre 2007).

The 'Four A's' approach to energy security proposes that there are four main aspects to energy security: availability (of fossil fuels, unconventional energy sources, and renewable energies); accessibility (regarding economic, political, or physical barriers to accessing energy, as well as energy poverty); affordability (concerning price volatility and costs of infrastructure); and acceptability (largely concerned with the social and environmental impacts of resource extraction and consumption, including climate change) (Asia Pacific Energy Research Centre 2007; Benjamin K. Sovacool 2011b).

These are commonly cited aspects of energy security within the literature; in 2010, 80% of the energy security literature mentions availability, 50% discuss affordability, and 25% discuss acceptability in terms of sustainability and other environmental impacts (Benjamin K. Sovacool and Brown 2010). In the last decade, significant attention has been paid to the accessibility facet, largely in terms of energy poverty(Benjamin K. Sovacool 2012b; González-Eguino 2015; Ali et al. 2020; Delina and Sovacool 2018; Abramovay 2014; Herington and Malakar 2016). Availability and affordability feature prominently in two classic treatises on energy security (Deese 1979; Yergin 1988), and have been included in most organizational/state definitions since the 1980s (Benjamin K. Sovacool 2011b). Accessibility and acceptability were not explicitly proposed as aspects of energy

security until the 2007 APERC report, which put forward the full "Four A's" framework (Asia Pacific Energy Research Centre 2007). The Four A's framework was quickly taken up by energy security scholars (Kruyt et al. 2009; Chester 2010; Winzer 2012; Goldthau and Sovacool 2012; Vivoda 2010; von Hippel et al. 2011b). However, this framework is often altered or modified, reinforcing the idea that energy security scholarship, as Lynne Chester proposed in her own seminal article on conceptualizing energy security, as "slippery and multi-dimensional"(Chester 2010).

However, there has been pushback against relying on this 'four A's' conceptualization of energy security. While these aspects of energy security worked for issues in the 1970s/1980s, which were largely concerned with ensuring stable supplies of inexpensive oil for the West, contemporary energy security is much more complex, multifaceted, and critical of fossil fuel-centric analysis (Cherp and Jewell 2014; Benjamin K. Sovacool and Brown 2010; Matt Huber 2016; Proskuryakova 2018; Bradshaw 2014; Proedrou 2018).

Cherp and Jewell attempt to overcome the myriad of similar but contested definitions of energy security by proposing a 'vital energy systems' approach (Cherp and Jewell 2014). Working off of the assumption that energy security is not fundamentally different than any other security issue, they begin with David Baldwin's definition of security—ensuring a "low probability of damage to acquired values" (Baldwin 1997). Of course, security as a concept is also contested. Baldwin's definition attempts to detangle the concept of security from normative value judgments and empirical discussions regarding the magnitude of threats (Baldwin 1997). This definition proposes that specific security issues should be oriented at least around these questions (Baldwin 1997; Little and Buzan 2000):

- Security for *whom*?
- Security for *which values*?
- From *what threats*?

The Four A's framework answers these questions only partially or not at all. In classic 1970s/1980s scholarship, the referent object of security were oil-importing Western states, as most of the energy security discussions were circled around the 1973 oil crisis. Today, energy security depends on where you're standing: from the perspective of an oil producing nation, security of demand is paramount. For the energy importer, security and consistency of supply is crucial. Non state-actors like production networks, industrial associations, regional authorities, and individual consumers all complicate analyses of the Four A's, especially with regards to affordability and acceptability(Bridge 2008; M. T. Huber 2011; Benjamin K. Sovacool et al. 2013). Energy security,

like most security issues, is ultimately about managing risk; but concepts of risk and resilience are not overtly discussed in the Four A's framework (although they tangentially appear in discussions regarding attacks on energy infrastructure)(Farrell, Zerriffi, and Dowlatabadi 2004; Lilliestam 2014). Cherp and Jewell propose that, following from contemporary security studies, energy security is about ensuring the "low vulnerability of vital energy systems", which emphasizes a malleable and context-specific approach that emphasizes resilience and allows for energy security to represent political and environmental interests, as opposed to the emphasis on energy markets that the Four A's framework tends to elucidate (Cherp and Jewell 2014).

The Four A's framework has its shortcomings; notably the lack of attention paid to security itself. Cherp and Jewell bring the 'security' back into 'energy security' by focusing on what exactly is being secured. However, there is much to draw on analytically from the Four A's; there has been increasing attention to the accessibility and acceptability aspects in particular, with regards to energy poverty, environmental sustainability, and climate change (Ali et al. 2020; González-Eguino 2015; Naeem Nawaz and Alvi 2018; Proskuryakova 2018; Shah et al. 2019; Herington and Malakar 2016; Delina and Sovacool 2018). Ultimately, the Four As framework provides a conceptual starting point for discussions regarding energy security, although critics are correct in that we need to consider the perspective and direction of *what* is being secured, for *whom*, and against *what threats* in order to properly integrate challenges of sustainability and equity into questions of energy security. In order to consider the scope of energy security challenges, we need to define the boundaries of the threat. The next section, focused on the jurisdictional aspects of resources and their regulation, discusses the dynamic nature of some of those boundaries.

1.3.4 Resource Geographies, Territory, and Sovereignty

This project endeavours to understand how the relationships between states, markets, and non-state actors affect the development and application of oil pipeline regulation. Due to the diffuse geographical nature of pipelines, it is necessary to explicitly integrate aspects of human geography into the analysis. In particular, there needs to be a focus on concepts of territory and space, which are often contested notions with regards to pipeline regulation. Theories of IPE and energy security (which falls under the international relations umbrella) tend to take conceptions of the state for granted; states exercise power via a set of specific institutions over a specific geographical area (J. A. Agnew 2009; Sassen 2008). The question of sovereignty—state control and authority—over certain territories and spaces is embedded in an examination of oil pipelines. These pipelines cross local,

subnational, and sometimes international borders, as well as lands claimed by Indigenous peoples and protected environmental areas. Additionally, the impacts of these pipelines are not solely at the site of construction. Risks to water sources can have downstream effects on human and animal populations far from the pipeline itself; while a single pipeline creates negligible GHGs, the oil flowing through it will contribute significantly to climate change.[4]

Historically, resource regulation has been considered to be state-centric, concerned with managing resource flows to the advantage of that state (Rees 1990). However, there has been an explicit acknowledgement of the political economy of resource management, as it has become clear that firms and markets have significant influence on the way that resources are developed, extracted, and consumed(Rees 1990; Blowers 1998; Peluso and Watts 2001; Le Billon 2001; Bridge 2008). The expansion of resource regulation beyond a narrow, state-centric, administrative role can be seen in: the proliferation of non-state actors, especially market-based assessment mechanisms(Castree 2008b; Bakker and Bridge 2006; McCarthy and Prudham 2004), the expansion of responsibility to include environmental protection (Gunderson and Holling 2001) and new challenges to commodity-centric logics of resource development from civil society, Indigenous communities, youth groups and beyond (Bakker and Bridge 2006; Martínez-Alier 2012; McCauley and Heffron 2018; Strambo and Espinosa 2020).

We can return to IPE scholars for discussions of territory and sovereignty as well. The realist view of state territoriality—that the state has ultimate authority over a specific geographical region with little interaction with outside forces—has waned in recent years, but is still a central feature of both IPE and IR theory (J. Agnew 1994; Underhill 2001; Bridge 2014). Matters of security (including energy security) tend towards these types of strict, closed definitions—when territory (and therefore sovereignty) is not absolute, observations about the relationships between the state and non-state actors become much more muddled, albeit more representative of real-world activities. The classically liberal view of state territory and sovereignty proposes that state power is eroding due to forces of globalization, but is still crucial; however, this argument still draws from strict territorial definitions as it proposes that power is eroding in relation to 'closed' views of territory and sovereignty (Keohane 1984). From the critical perspective, Cox proposed in 1981 that states are

[4] In both Canada and the United States, the direct GHGs associated with the construction and operation of oil pipelines are calculated with reference to land use changes, electricity use, fuels for construction-related vehicles, and an approximation of possible fugitive emissions.

continually reconstructed as a result of global and local material conditions (R. W. Cox 1981), allowing for a more context-specific conception of territory and sovereignty.

Alongside the concepts of territory and sovereignty, there has been increasing attention paid to scale by political geographers—a concept largely left to the side by IPE and IR scholars, but which has implications for the way we consider power, wielded both within and without the state. After the "spatial turn" in studies of human geography, which emphasized a re-conceptualization of previously simplistic and technical definitions of space, place, and scale, there was a turn to constructivist and post-modern theories to interrogate these concepts. The consensus in the early 1990s was that social, political, and economic interaction is not simply organized horizontally, with neat regions fitting together, but rather vertically, with overlapping and hierarchical scales that organize social spaces according to local, regional, national, and global scales(Marston and Smith 2001). In particular, the constructionist view of scale has resulted in an examination of how geographical scales are produced, and in service of whom(Silvern 1999). The politics of scale construction can contribute a lot to an examination of pipelines that relies on IPE and IR, as this one does, because ultimately these scales represent the distribution of power between these differentiated scales, and the contested nature of that distribution (Silvern 1999; Wissen 2009).

Geographical scale is not only the product of these socio-political processes but also helps to constitute them. Existing scales of power and hierarchy are intertwined with the concepts of territory and sovereignty, and are further enabled by them; the further one moves up in terms of scale, the more power one has accumulated, to be deployed over a larger territory(Jonas 1994). These scales are not always strict or explicitly delineated, and the boundaries between scales are often fluid. Geographical scale is often taken for granted in studies of IPE and IR, but we need to be aware of the ways that scale impacts power relationships and institutional change. For instance, Canada as a federal system has two explicitly defined scales of political power and jurisdiction; this has implications for the way that we regulate pipelines, as it distributes the authority for interprovincial/international pipelines and intraprovincial pipelines in ways that affect industrial development and socio-environmental regulation.

Ultimately, there has been critical pushback against simplistic definitions of territory, sovereignty, and scale. This has generally led to a more nuanced and contextual, but less clear, view of territorial and scalar relations. We cannot abandon the more simplistic notions of territory and scale, because states themselves often ascribe to these definitions. In terms of the KXL pipeline, for instance, we can analyze market forces and the myriad of non-state actors, from environmental

activists to Indigenous groups to industrial lobbyists, but ultimately state authority makes the decisions.

The takeaway from all of this literature, including the IPE, regulatory capitalism, and energy security scholarship, is that while notions of the state and state power have certainly evolved—and in many aspects eroded—states still matter, although other actors and institutions have an increasing amount of influence. This project will utilize these distinct but related pools of scholarship to examine the relationships between states, markets, and non-state actors to understand how regulatory institutions have developed and have in turn influenced those relationships.

1.4 Methodology

In support of the critical theoretical foundations of this thesis, this project rests on a constructivist ontology, emphasizing that realities are context-specific and malleable. As a result of its constructivist ontology, epistemologically this thesis comes from an interpretivist position as opposed to positivist, and is less concerned with proposing causal relationships between variables and is more concerned with understanding certain outcomes and behaviours. Interpretivist epistemologies and constructivist ontologies necessarily follow one another, as both rely on an understanding that the world is *socially constructed*, as opposed to views that reality exists outside of our interactions with it. Although these realities may be the result of social construction and therefore centralizes the role of actors and individuals, these actors are in turn affected by certain tangible materialities (ie. geographical/political/social characteristics) (Furlong and Marsh 2010). Within the constructivist ontology there is further division between post-modern constructivism and modern constructivism—to which this thesis ascribes—which emphasizes that we can still make observable claims about how the world works, despite the role that social construction plays in affecting actors, structures, and discourses (Furlong and Marsh 2010).

An emphasis on the importance of institutions persisted in political inquiry until the 1950s, when the 'behavioural revolution' highlighted actors and individuals in the study of political outcomes (Lowndes 2010) . However, the study of institutions evolved and persisted, resulting in a "new institutionalism" which has several variants of its own (rational choice, historical, and sociological) (Hall and Taylor 1996). Under this new paradigm, institutions are more broadly defined as "stable, recurring pattern[s] of behaviour" (Goodin 1996), allowing for an inclusion of informal political structures as well as formal governance mechanisms. Additionally, 'new institutionalist' theory suggests that it is often informal institutional norms and conventions that impacts social and

political behaviour (Finnemore 1996). Institutional choices—whether those are explicit policy outcomes or tacit approval/condemnation of certain economic and political behaviours—has long-term impacts on development pathways. Unlike rational choice approaches, which mostly disregard the normative nature of any institutional decision—for instance, Karl Polanyni's classic position that the choice to allow market determination of outcomes is, in itself, a normative decision (Polanyi 1944)— historical and sociological institutionalists ascribe embrace the normative; the effects of historical context and long-term path dependencies are both of interest to these institutionalist scholars (Sanders 2006). Constructivist institutionalism, a newer variant, differs from its institutionalist comrades by focusing on institutional *change*, and are less convinced by locked-in path dependencies.

The 'new institutionalist' perspective for a project of this type, given that regulatory mechanisms are one integral component of those institutions that constitute oil governance, and that these mechanisms themselves are affected by formal and informal relationships between state and non-state actors. In particular, and with respect to its constructivist ontology, this thesis proposes a constructivist institutionalism that aims to understand the dynamics between institutions and the groups/actors that are involved in such institutions, and how these dynamics change over time (Lowndes 2010; Hay 2006). Constructivist institutionalism (CI) "seeks to identify, detail, and interrogate the extent to which—through processes of normalization and institutional-embedding—established ideas become codified, serving as cognitive filters through which actors come to interpret environmental signals. Yet, crucially, they are also concerned with the conditions under which such established cognitive filters and paradigms are contested, challenged, and replaced" (Hay 2006). CI pays more attention to the behaviours of strategic actors, the effects of those actors on institutional change; actors are in turn acted upon by institutions (Hay 2008). CI also places more emphasis on the ineffectiveness or contested nature of institutions (all though this is not exclusive to CI—the borders between types of institutional theory are overlapping and porous) (Blyth 1997; 2003).
The ontological and epistemological foundations of this thesis— constructivist institutionalism and interpretivism—are appropriate for the questions that this thesis asks. Ultimately, this project endeavours to understand the ways that regulatory governance has evolved and how regulatory mechanisms can address contemporary issues that are far beyond their initial scope. To answer this question, I draw on critical theories of regulatory capitalism and constructivist institutionalism, both of which centralize the interactions between state power, market forces, and non-state actors to create a status quo that privileges economic growth while struggling to address concerns regarding

inclusivity and sustainability. These middle-grade theories are not attempting to paint a causal picture drawing a line from A to B; rather, they propose to understand entrenchment of certain institutional characteristics and behaviours, underlying the socially constructed origin of these institutions.

1.4.1 Comparative Analysis

Comparative analysis has its roots in institutionalism, and contemporary institutional theory has only cemented the role of institutions in comparative political inquiry. This commitment to the study of institutions means that comparative analysis is an appropriate and relevant method for an analysis of regulatory mechanisms, which make up the institutional arrangements that govern fossil fuel development.

A comparative analysis of the regulatory processes of two pipelines will be undertaken in this thesis; the Keystone XL and Northern Gateway projects, in the United States and Canada respectively.[5] This thesis will be of an exploratory nature, analyzing the efficacy of pipeline regulation with regards to the public interest, climate change, and energy security.

As Arend Lijphart contended in his formative 1971 article, the main difficulty with the comparative method is that it tends to deal with "many variables, small number of cases" (Lijphart 1971). While all social inquiry must contend with the problem of too many variables, analysing a small number of cases is quite unique to comparative analysis. However, by focusing the analysis on key variables; that is, by condensing the scope of the inquiry of how three concepts (the public interest, climate change, and energy security) interact with specific institutional processes (the approval of large oil pipelines), the analysis can be considered legitimate (Teune and Przeworski 1970; Lijphart 1971). Comparative analysis is appropriate for this type of project; constructivist ontologies and interpretivist epistemologies in particular lend themselves to comparative work, due to the desire to focus on complex, context-specific interactions rather than propose a more straightforward causal relationship (Furlong and Marsh 2010). In particular, small-n comparative work is appropriate for constructivist-oriented analysis, as large-n studies can sometimes mask nuance in favour of drawing out larger trends.

[5] Although the KXL pipeline does originate in Hardisty, Alberta, data collection and analysis focused on the American portion only. The Canada portion of KXL was approved by the NEB in 2010 and includes 529 km of new pipeline, running from Hardisty, Alberta to the American border at Monchy, Saskatchewan.

1.4.2 Case Selection

Case study selection is a crucial component of most social inquiry and particularly of comparative analysis. When undertaking 'small-*n*" qualitative study, a random selection of cases can often lead to a sample that is unrepresentative of the population and therefore statistically insignificant (Yin 2018). Therefore, there is a strong argument for the conscious selection of cases; although this cannot completely account for the natural unreliability of generalization in small-*N* qualitative study, it can allow researchers to choose cases that will allow some significant exploration of social phenomena (Yin 2018).

Seawright and Gerring describe seven methods of case selection: typical, diverse, extreme, deviant, influential, most similar, and most different (Seawright and Gerring 2008). The most-similar case method requires a selection of at least two cases that are similar in many ways but different in the outcome of a particular variable (i.e., diverging regulatory paths). This method was chosen to enhance the representativeness of cases; while the small number of cases does mean that the distribution of cases may be distorted, the diversity of outcomes has stronger claims to representativeness, and therefore generalization, than most other small-*N* case selection method (Seawright and Gerring 2008).

The cases selected for analysis in this thesis are the Northern Gateway Pipeline in Canada and the Keystone XL pipeline in the United States, both of which have been rejected after reaching the end of the regulatory process. These countries easily lend themselves to the most-similar case method for several reasons: they are both federal countries; they both have concentrated areas of oil production; they both are significant oil producers; and they have sub-national regions that receive a significant share of their GDP from the oil sector. Additionally, they have both been home to pipeline opposition movements in the last 15 years: most notably, to the Keystone XL and Dakota Access pipelines in the US, and the Energy East and Trans Mountain Expansion in Canada. This thesis is not focused on the dynamics of these social movements, but their existence may imply a shift in the public interest which no longer aligns with regulatory policy. Conversely, and crucially for the most-similar comparative method, the United States and Canada appear to have diverged recently when it comes to outcomes of pipeline regulation; large American pipeline projects have been almost all approved since 2006 (KXL an exception but may be signaling a turn in the United States), whereas no large Canadian project have made it through the regulatory approval stage except the Keystone pipeline segment in 2009 and Enbridge's Line 3 replacement.

1.4.3 Methods

This project will examine the efficacy of pipeline governance by carrying out a comparison of contemporary regulatory mechanisms in the United States and Canada. Both pipeline cases selected are large, technically complex, and sparked national (and international) debates regarding social and environmental risks. As such, they act as microcosms of contemporary national pipeline governance in Canada and the United States.

This project makes use of qualitative content analysis to establish the characteristics of contemporary pipeline regulation, and the perceived gaps in that governance (Bowen 2009). The priorities of regulatory agencies can be identified via an analysis of relevant legislation and official mandates, and industry compliance with these rules and priorities is established through an analysis of documents submitted to these agencies. To complete the picture of pipeline regulation, and identify the gaps in regulatory governance, a facsimile of the public interest that **is not being represented through this government-industry relationship** is required**.** Both the Northern Gateway and Keystone XL regulatory processes include an opportunity for public comments, with very few restrictions on submission. These comments provide this facsimile because this is the only opportunity for persons/organizations **not involved** in the regulatory hearing process to voice their concerns. Public comments are not a perfect sample of public opinion; the submission process will inherently attract people with strong opinions rather than moderate, generally opposed rather than in favour, and civil society groups may be over-represented due to information campaigns. Secondly, there is a clear lack of knowledge which hinders the utility of these comments; many commenters identify issues which are explicitly addressed to some degree within compliance documents submitted by individual companies. Nevertheless, these comments represent **perceived gaps in the regulatory process**, because there are clear trends and issues that are consistently referenced. If these issues were being widely addressed within existing regulatory mechanisms, they likely would not be the subject of public comment *en masse*.

The data for this project comes from two sources: the public comments and compliance documents produced for both pipelines, the Northern Gateway and Keystone XL. Public comments serve an essential purpose; both because public access and comment periods are a component of the regulatory process itself, and because these comments define the universe of opposition to pipeline projects. In addition to selecting and analyzing public comments, the regulatory application documents from both projects were also analyzed. These documents are prepared by either the firm or, in the case of Keystone XL, by the relevant government agency. They cover everything from

pipeline schematics to market forecasts, and these compliance documents were also analyzed for discussion of relevant topics. These compliance documents indicate how the state and market are defining the boundaries of regulation, as the private sector submits these documents, and the state accepts them or requests more detail.

The mandates of regulatory agencies are relatively clear in their establishing legislation and subsequent amendments. In Canada, the National Energy Board Act of 1985 and Canadian Environmental Assessment Act of 2012 are most relevant for the Northern Gateway case (as this pipeline was abandoned before the Canada Energy Regulator Act of 2019). In the United States, while there is no central regulatory agency governing oil pipelines, the public interest is theoretically addressed through federal and state level agencies aimed at environmental protection and public health.

In gathering the public comment data, 750 comments were each randomly selected out of 5000 for Northern Gateway and over 10,000 for Keystone XL. These comments were downloaded off of the NEB document depository for Northern Gateway and regulations.gov (the American regulatory document depository) for Keystone XL. These comments were coded according to the nature of opposition (or support) in each submission. Before coding, a tentative list of codes was generated, based on media coverage, informational campaigns from firms and activist groups, and the organizational structure of the project proposal documents. This list was refined in early stages of coding as trends began to emerge, and the full list can be found in Appendices A & B. The three empirical chapters focus on climate change, energy security, and the public interest, and each of these topics was assigned a series of codes, the definitions of which are elaborated upon in Chapters II, III, and IV. Additional codes which indirectly mentioned these problems were also analyzed.
A small number (less than 50) of comments in each case were rejected from the analysis, largely because of legibility (some comments were hand-written and scanned), issues with attached documents, or lack of explanation (some comments simply stated opposition/support with no justification). Inductive thematic saturation was reached fairly early in the process, with no new codes generated after approximately 100 comments analyzed (Saunders et al. 2018). Significant additional coding (to 750 in each case) was done to reach data saturation, where patterns were consistently replicated and a clear picture of the nature of these comments, and so the perceived gaps in regulatory governance, were revealed.

1.5 Plan of the Thesis

This dissertation assesses three aspects of oil pipeline regulation: the public interest, climate change, and energy security. All three of these variables represent a contemporary challenge for regulatory institutions and regulatory governance. While this project aims to make contributions to several areas of scholarship, critical theories of the IPE of energy, energy security, and regulatory capitalism underline all three of these aspects. This thesis utilizes critical perspectives that propose that increasingly close state-market relationships have resulted in in an entrenchment and reproduction of global capitalism that is underpinned by state power. Essentially, the state as an institution has increasingly equated the success of global markets with social, environmental, and cultural well-being. Zeroing in on the oil sector in particular, the scale of capital accumulation that has characterized twentieth century economic growth is made possible by access to, and dependence on, abundant and affordable fossil fuels like oil.

Climate change is an issue that has increased in salience over the last several decades but has not been well integrated into the regulation of oil pipelines. Climate change has broad, diffuse, global impacts, and the continued extraction and consumption of fossil fuels exacerbates these impacts; while pipelines themselves are not emissions-intensive to construct and operate, continued investment in these projects shows a long-term commitment to fossil fuel extraction, undermining climate action globally. Secondly, consistent access to affordable energy has long been the foundation of energy security, but our conceptions of 'security' have evolved in recent years—it is not necessarily more 'secure' to continue reliance on forms of energy that have widespread socio-environmental effects as opposed to diversifying supply with alternative energy sources. Lastly, in terms of the public interest, while the universe of interests regarding large, potentially destructive projects like pipelines has expanded, the capacity of regulators to account for these interests has not. While significant attention has been paid to socio-environmental assessment in regulatory processes since the 1970s, the risks of these pipelines are perceived to be borne by dispersed groups and communities while the benefits are more concentrated for a small number of firms and associated shareholders.

Ultimately, pipeline regulators originated as market-focused rules enforcers that were beholden largely to industry and the relevant government department. There has been an attempt to equip these institutions with the tools to address a broader set of issues, mainly focused on public safety and environmental protection. But the fundamental structures of these institutions are built to encourage oil development in support of high levels of economic growth, and under these

circumstances cannot appropriately evaluate complex contemporary issues like climate change and energy security which have significant but diffuse impacts on a wide variety of stakeholders.

This introductory chapter has provided context on the oil industry in Canada and the United States and the individual regulatory processes for the Northern Gateway and Keystone XL pipelines and elaborated on the methods and literatures utilized in this project (Chapter I). The thesis then proceeds with three individual papers, each to address one contested variable taken from the empirical results (public comment data and socio-environmental assessment documents).

This thesis is presented by manuscript, where each empirical chapter (II, III, and IV) acts as an individual paper. As a result, there is some repetition of methods and literature in each paper. These three papers connect and interact with each other—through the analytical focus on regulatory mechanisms, the similarities in research method, and the overarching research question. The ultimate question this project is asking is how national regulatory mechanisms are interpreting complex, cross-jurisdictional issues, and whether those interpretations are useful as governments decide whether to build these long-lasting, expensive, and contentious pieces of infrastructure. Each of these empirical chapters focuses on a different issue, and incorporates different theories, but the entirety of this dissertation is guided by this overarching inquiry.

In the first empirical chapter, I discuss the characterization of climate change in pipeline governance, examining how this issue is represented via a lens of a critical IPE of energy and regulatory capitalism (**RQ1**, Chapter II). The second empirical chapter focuses on the issue of energy security in pipeline regulation, using the "Four A's" framework and critical political economy to propose that current conceptions of energy security are too narrow (**RQ2**, Chapter III). The final empirical chapter focuses on how the concept of the public interest has evolved and expanded in the last several decades, and how this has affected the efficacy of pipeline regulation, via a theoretical lens of regulatory capitalism and critical political economy (**RQ3**, Chapter IV). Finally, the concluding chapter (Chapter V) will propose that while all of these empirical papers focus on a specific issue in pipeline regulation, and draw from some different bodies of scholarship to frame those issues, all three empirical chapters find pipeline regulatory mechanisms in Canada and the United States to be unable to properly account for complex, cross-jurisdictional challenges with diffuse, long-term socio-environmental effects. Pipeline regulators originated as market-focused rules enforcers that were beholden largely to industry and the relevant government department. While there has been an attempt to equip these institutions with the tools to address a broader set of issues, mainly

focused on public safety and environmental protection, the fundamental structures of these institutions have not appropriately evaluated complex contemporary issues like climate change and the impacts of globalization, which have significant but diffuse impacts on a wide variety of stakeholders.

Chapter 2

Utilizing pipeline regulation to manage the diffuse risks of climate change

Climate change is increasingly central in discussions of energy development in Canada and the United States, including in the regulation of oil pipelines. But broad climate impacts are not yet embedded into contemporary regulatory processes in either Canada or the United States, and are considered on a case-by-case basis. In the United States, executive-level partisanship steers the inclusion of climate change into national interest determinations for cross-border pipelines, indicating a lack of regulatory continuity which narrows or expands the scope of regulation depending on who is sitting in the White House. Conversely, there is a sluggishness that characterizes the Canadian case, which has much more standardized regulatory procedures for interprovincial/international pipelines but rarely updates its guidance documents or regulatory requirements for climate change. This paper utilized critical theories from the IPE of energy to propose that regulators, which operate at the centre of the state-market-civil society nexus, are political organizations with political aims, as opposed to independent institutions with administrative functions within the state. These institutions have significant impacts on trajectories of energy development, signifying a need to assess climate change more fully in deliberations of pipeline projects.

2.1 Introduction

Climate change is a divisive and dissonant issue for civil society and firms in pipeline regulation. This is reflected in regulator mandates in both Canada and the United States, both of which have not standardized the inclusion of upstream and downstream climate impacts in the assessment of pipelines.[6] The new Canada Energy Regulator (which superseded the National Energy Board in 2019)also has a reference to climate change under its section on cumulative effects but will not generally consider downstream climate impacts. The argument against including climate change in regulatory considerations is that it is beyond the capacity and jurisdiction of the regulators to make

[6] There have been project-specific exceptions; for instance, the NEB ruled after a legal challenge that upstream greenhouse gas emissions would be included in the assessment of the Energy East project, which has since been withdrawn.

decisions based on the climate impacts produced by the end-of-pipe consumption of oil running through the pipeline. Rather, only the greenhouse gas (GHG) emissions of the construction and operation of the pipeline itself should be considered, and these are negligible (Natural Resources Canada 2016d).

However, as Canada and the United States grapple with balancing climate change and energy development, it is becoming increasingly clear that energy systems are deeply locked into carbon-intensive development paths, and pure demand-side climate policies are likely insufficient to achieve international climate goals (Unruh 2002; Erickson et al. 2015). Thus, the rationale for including climate impacts more broadly (ie. the end-of-pipe emissions for oil moving through the pipeline) is that these huge infrastructure projects, meant to carry millions of barrels of oil for decades, do not operate in a vacuum. This is largely the nature of the climate change-related opposition from the general public and civil society groups, with opponents pointing out the dissonance between committing to further oil extraction via these pipelines, while ostensibly pursuing international and domestic climate goals (Axsen 2014; Gravelle and Lachapelle 2015).

This dissonance is reflected in much of the literature on the role of energy governance, in terms of mitigating the effects of carboniferous energy systems on the climate. In this paper, we propose that these regulatory institutions, with their emphasis on local impacts and direct effects from the pipeline itself, are neither sophisticated enough nor do they have the capacity to address complex, cross-border problems.

This paper will draw from studies in the international political economy (IPE) of energy and climate change to propose that the conventional state-centric view of resource regulation is not capable of capturing the complex problems these regulators face. This paper will utilize qualitative content analysis to examine public comments submitted to two major pipeline projects (Northern Gateway and Keystone XL) as well as socio-environmental assessments and records of decision for both cases. This paper will draw out themes from both cases to investigate how climate change is interpreted by regulators, and explain how this narrow interpretation affects broader energy and climate policy decisions. Regulatory mechanisms operate at the intersection of state, market, and civil society interactions, and therefore these institutions require a broader toolkit at their disposal to assess complex, international problems like climate change.

2.2 The Role of Climate in the IPE of Energy

2.2.1 Integrating Climate into Traditional Approaches

The tradition of energy studies in international political economy (IPE) is empirically and theoretically underdeveloped, given the importance of the energy sector internationally. Conventionally, international political economy (IPE) has dealt with the issue of energy by focusing largely on oil, through a liberal-versus-realist lens (Kuzemko, Lawrence, and Watson 2019; Keating et al. 2012). However, there has been an abundance of work recently addressing the need for a broader analysis of energy in IPE, as well as a more developed theoretical treasury. The argument persists that there has been too little engagement with energy as a unique commodity and governance problem (DiMuzio 2016; Keating et al. 2012; Hancock and Vivoda 2014).

There are few similarities between 21st century IPE of energy and the work done in the 1980s/1990s. Earlier IPE scholars did discuss energy—but largely within the context of the governance structures/socio-economic events (like the 1973 oil crisis) of the time, and so in many ways this initial IPE of energy is out of step with contemporary IPE. Realist IPE tends to consider energy in terms of security, prioritizing the continuous supply of affordable oil (Stoddard 2013) or as largely indistinguishable from any other commodity (Kirshner 2009). Liberal IPE, which stresses the role of the state in maintaining market operations, has tended to address the international aspects of energy system management, via a research focus on 'global energy governance' (Florini and Sovacool 2009; Van de Graaf and Colgan 2016). Critical IPE, like its counterparts, initially tended to ignore energy as a specific problem in IPE until scholars like Susan Strange posited that energy systems seemed to be uniquely vulnerable to both political and economic forces and therefore required a more nuanced application of critical IPE. More recently, the idea of 'carbon capitalism', which proposes that our state of global capital accumulation was made possible by the rapid development of fossil fuels in particular, has centralized energy within critical IPE studies (DiMuzio 2016; Carroll 2020).

Despite increasing attention paid to the specificity of energy systems in recent years, conventional scholarship on energy in political economy was largely confined to this triumvirate of IPE theories, which often defined energy as a case study rather than something unique and dynamic (Kuzemko, Lawrence, and Watson 2019). The case for energy as something exceptional in IPE is that energy affects state power and market power differently (and more) than other commodities (Goldthau and Sitter 2020). Given the centrality of decarbonization at international summits, the

controversy of national fossil fuel development, and the now well-studied influence of energy on economic and social development (E. Brown and Cloke 2017; DiMuzio 2014), energy does appear to have unique influence on the state-market relationship. Contemporary energy systems have become so complex and diversified in recent years that an oil-based perspective, drawing from narrow realist/liberal theories no longer explains the role of energy in the state-market-community relationship, or of those relationships in the production of certain energy systems (DiMuzio 2016; Kuzemko, Keating, and Goldthau 2018; Pineault 2018). In particular, the expansion of the universe of interests beyond traditional state and market actors, now including stakeholders from across civil society, means that we need theories that take a more nuanced view of state-market relationships and governance structures (Kuzemko, Lawrence, and Watson 2019). The focus on oil does make sense in a historical context—oil has been the dominant energy source globally for decades—but in the face of rapid technological advancement and the emergence of new actors in support of decarbonization, we need to re-define 'energy' as more than 'oil' (Kuzemko, Lawrence, and Watson 2019; Keating et al. 2012). Global energy systems are sensitive to both state and market forces (and vice versa) and a more nuanced application of IPE to these dynamic systems is needed so we can better understand the current energy transition and try to mitigate social, political, and environmental impacts from such a transition. In fact, in the last decade or so, there has been increasing scholarly attention paid to the evolution of global energy markets, decarbonization of energy systems, and the development of energy governance both global and domestic (Goldthau and Sitter 2020; Keating et al. 2012; Newell 2010). Indeed, this paper aims to contribute to this increasingly nuanced view of the IPE of energy through a focus on the regulatory mechanisms that govern the climate effects of oil pipelines.

2.2.2 Using National Regulators to Assess International Impacts

So what does the regulation of oil pipelines, largely a national affair, have to do with the IPE of energy, and why does this regulation need to include systemic assessment of climate change? Firstly, while oil pipelines are regulated nationally or sub-nationally in Canada and the United States, they have global implications. The two cases selected for comparison here, the Northern Gateway pipeline (NGP) and Keystone XL expansion (KXL), are international pipelines with impacts on market diversification, environmental degradation, energy security, and further oil development even as both Canada and the United States struggle to meet their own commitments on climate change and environmental protection (Hoberg 2018; Axsen 2014; MacLean 2015). Historically, resource regulation has been considered to be state-centric, concerned with managing resource flows to the

advantage of that state (Rees 1990; Young 1981; 2017b). But there are large international pipelines, like those examined in this paper, that inherently defy a state-centric regulatory model because they cross an international border or aim to develop international trade ties. Also, the impacts of climate change do not respect national borders, again inherently delegitimizing a regulatory model that fails to account for global effects. Canadian and American regulators assess the viability of these pipelines, but it is not only Canadian and American interests at stake.

The expansion of resource regulation beyond a narrow, state-centric, administrative role can be seen in: the proliferation of non-state actors, especially market-based assessment mechanisms (Castree 2008a; MacNeil 2014a); the expansion of responsibility to include environmental protection (Gunderson and Holling 2001; Bridge 2000); and new challenges to commodity-centric logics of resource development from civil society, Indigenous communities, environmental activists and beyond (Bridge 2001; Leslie and Reimer 1999; Le Billon 2001). In this discussion of integrating broad climate impacts into pipeline regulation, this raises the question of assigning climate change to a level of sovereignty and territorial authority.

2.2.3 Centring Pipelines in the Energy-Climate Nexus

Second, the issue of climate change in IPE is not novel, especially in analyses of decarbonization and environmental governance (Falkner 2018; Jakob et al. 2020; Ashford and Hall 2018; Newell 2008). The emergence of climate change as a research issue in political economy adds a new dimension to the IPE of energy in the 21st century, bringing the need to decarbonize the global economy to the forefront of energy research (Bradshaw 2014; Falkner 2018; Benjamin K. Sovacool 2011a). Climate change is a central challenge for policymakers, both as climate impacts disrupt political, economic, and natural systems, and because the bedrock of global economic activity—fossil fuels—must transform if the problem is to be mitigated (Falkner 2018; 2014; Gunningham 2012). And so, energy and climate policy research have become intertwined, and issues of climate change must be at the forefront of energy policy discussions (Gunningham 2012; Johnsson, Kjärstad, and Rootzén 2019; S. Bernstein and Hoffmann 2019).

Much of the IPE focus on climate and energy has been in analyses of energy security (O'Sullivan 2013; Proedrou 2018; Bradshaw 2014) or on market-based tools like carbon taxes or emissions trading schemes to reduce GHGs (Meckling and Hepburn 2013; Gunningham 2013; Ionescu 2019). These analyses serve to help us understand the possibilities for decarbonization in the energy-climate nexus, but we need to better understand the role of infrastructure regulation because

these regulators are partially steering national energy development. In order to actively plan for deep decarbonization, we need to account for regulators, which can hinder decarbonization and encourage oil-dependent development pathways if climate concerns are not well-integrated into these institutions' decision-making processes (Davis, Caldeira, and Matthews 2010; Tong et al. 2019). There is attention paid to infrastructure in IPE, although largely in the context of broader analysis regarding carbon lock-in and energy transitions (Unruh 2002; L. Baker, Newell, and Phillips 2014; Cherp, Jewell, and Goldthau 2011; Newell and Simms 2020). However, the body of empirical work on regulatory efficacy is gradually increasing as the role of these governance mechanisms at the intersection of the state and market becomes clear (Gunningham 2013; Goldthau 2014; Thacker et al. 2019).

The extent to which climate change is at the forefront of pipeline regulation, however, is not clear. These governance mechanisms do address climate change, but it is not central to their assessment. These institutions can have outsize impacts on energy policy, and therefore climate policy, because the decisions they make (or the advice they give) contributes to locking a state into medium-term oil development (Unruh 2002; Haley 2011; Erickson et al. 2015). There is pushback from activists, communities, and individuals to better integrate climate impacts into the assessment of oil pipelines, and these attitudes are mirrored in the public comment data (J. M. Baker and Westman 2018; Doelle and Sinclair 2019; Domínguez-Gómez 2016).

Lastly, climate change and pipelines exemplify the need for IPE of energy to expand its analytical reach beyond the realist-liberal-critical triumvirate; pipelines are expensive, long-lasting infrastructure assets that have socio-environmental impacts far beyond their initial construction and operation. The spatial aspects of these projects combined with the segmented territorial authorities that regulate them have resulted in regulatory bodies that do not assess the impacts of the pipeline as a whole. While pipelines themselves are negligible contributors to climate change, they signal a material commitment to future fossil fuel development that will exacerbate climate change, which has significant but diffuse impacts globally (Davis, Caldeira, and Matthews 2010; Tong et al. 2019; Davis, Peters, and Caldeira 2011). Until recently, pipeline regulators have taken the stance that this infrastructure is not responsible for end-of-pipe consumption, but in a global, integrated energy market, it is nearly impossible to analytically separate oil from pipelines. These regulatory mechanisms have attempted to take an extremely narrow, localized view of oil pipelines; but at this point it is clear that pipelines are a much more complex issue, with diffuse impacts on a myriad of stakeholders.

There is an opportunity to fill in some of these gaps in the IPE of energy scholarship by focusing on pipeline regulation. Pipelines are cross-jurisdictional, long-lasting pieces of infrastructure that are governed by a narrow interpretation of environmental impact. These projects encourage continued fossil fuel development in the near future, which is at odds with global goals to mitigate climate change. In order to properly flesh out these climate-energy links, we need to examine the idea of climate governance and how this scholarship links to the IPE of energy, and of oil pipelines.

2.2.4 Linking Climate and Energy Governance

While approaches to the study of pipeline and energy governance often have a clearly spatial dimension, climate governance scholarship has emerged to reflect the highly decentralized, multi-actor, and multi-faceted nature of the phenomenon. The two are inextricably linked, however, as "the natural and social phenomena of climate change and its governance are both produced by and change the ways in which energy systems and (predominantly) capitalist political economies are organized" (Newell and Lane 2020). Even so, a disconnect exists between the scale and objectives of the regulatory mechanisms that govern the development of pipelines and the scale at which the impacts of the consumption of fossil fuels play out. Climate change cuts across geographic, political, and temporal scales to introduce multiple (and deeply uncertain) risks. For instance, while the magnitude and pace of climate change impacts at the regional scale may be relatively well-established for the next 10-20 years, the pace at which greenhouse gas emissions are reduced in the coming decades will radically alter the severity of future climate change impacts from 2050 and onwards, and also the possibility of reaching tipping points or thresholds (see for instance (Steffen et al. 2015) in the global climatic system (after which the pace of change is nearly impossible to predict). Furthermore, greenhouse gas emissions and the resulting climate change produce lasting cumulative effects that are unevenly distributed across communities. As just one set of stressors among many, climate change presents unique challenges for governance.

International treaty negotiations have dominated the discourse on global climate change governance, but the reality of policy development and implementation is increasingly influenced by transnational networks (Andonova, Betsill, and Bulkeley 2009; Busch, Bendlin, and Fenton 2018) , subnational strategies (Burch 2010; Fuhr, Hickmann, and Kern 2018) , private sector actors (Burch and Di Bella 2021; Westman, McKenzie, and Burch 2020) and the broader agenda of sustainable development (Dale et al. 2020). As such, climate change is a challenge of multi-level governance (Kern and Bulkeley 2009) , in which power is unevenly distributed (Di Gregorio et al. 2019) among

those who shape (and exist within) the regulatory environment. The long time frames, uncertain outcomes, and fluid alliances that characterize climate governance suggest the need for polycentric approaches that enhance equity, inclusivity, adaptability (Benjamin K. Sovacool 2011a). Regulatory institutions tend to emphasize local and direct impacts, and often have neither the capacity nor the mandate to address cross-territorial and downstream issues like climate change. (Cash et al. 2006; Young and Gasser 2002). Climate policy and energy policy are disconnected in many cases and aren't being governed by the same processes and that creates some challenges. Regulatory mechanisms operate at the intersection of state, market, and civil society interactions, and therefore these institutions require a broader toolkit at their disposal to assess complex, international problems like climate change.

2.2.5 Integrating the Environment into Pipeline Regulation in Canada and the U.S.

In both Canada and the United States, regulatory mechanisms in the energy sector were not designed to address climate change, environmental degradation, or sustainable development. The NEB was created in 1959, and it initial mandates included the setting of tolls and tariffs. In the American context, the State Department has been responsible for administering the regulatory process for international pipelines since 2004, as per Executive Order 13337 during the George W. Bush administration. Relevant state authorities were developed as the transportation of oil became a more pressing concern in that region (McBeath 2016).

In the 1970s and 1980s, there was a sea change in terms of regulatory responsibilities, and environmental issues quickly became some of the most politically sensitive and salient within energy regulators. New departments like the Environmental Protection Agency in the United States and Environment Canada, both established in 1970, advocated heavily for the need to systematically assess environmental impacts within the regulatory process. These agencies within both federal governments began to push for new assessment protocols and broader inclusion of environmental impacts in pipeline decisions, although in the United States this was coordinated much more at the state level than federal (VanNijnatten and Boardman 2002) . Although the focus was initially on direct impacts to local ecosystems, water sources, and endangered species, broader issues of sustainable development and climate change in particular, have increasingly been part of the regulatory conversation. Traditional environmental regulation focuses on utilizing best available technology, spill mitigation and cleanup, and emergency response planning(Doern and Gattinger 2003).

Both Canada and the United States have committed to broad sustainable development practices since the early 2000s. These practices have more recently been operationalized through the United Nations Sustainable Development Goals and involves balancing "three core elements: economic growth, social inclusion and environmental protection. These elements are interconnected and all are crucial for the well-being of individuals and societies in order to pursue development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations 2020).

For energy regulation in the 21st century, sustainable development means that economic benefits are balanced with environmental considerations (National Energy Board 2016; Department Of State 2015). Additionally, the sustainable development paradigm requires prevention—to ensure environmental damage does not happen in the first place—as opposed to conventional reactive measures like emergency response and accident liabilities. This emphasis on post-incident action characterizes much of the early environmental mandates; reactive and punitive rules are relatively easy to set and administer, whereas proactive regulations that are meant to mitigate climate change and encourage sustainable development are much harder to quantify and require cooperation with a much wider set of stakeholders.

So there is a clear ambition to balance economy and environment in oil pipeline regulation, and climate change is an integral variable on the environmental side of the equation. And climate change has been integrated to some extent into regulatory processes in both Canada and the United States since the early 2000s. But what is not clear is how effectively these mechanisms are assessing the impacts of climate change, whether they are assessing climate change to the extent that citizens request, and how climate change fits in the hierarchy of decision-making (ie. how many GHGs from a single pipeline is enough to reject a project?). These issues are clearly still contested; almost every new large pipeline project since 2009 has been met with significant public outcry. This paper aims to define the gap between public opposition and regulatory decision-making, by analyzing public comments and compliance documents submitted for two such pipelines.

2.3 Methods

This paper undertakes a comparative analysis of the climate assessments of Northern Gateway (NGP) and Keystone XL (KXL) pipeline projects, both of which were proposed to carry crude oil from Alberta's Athabasca oil sands. Enbridge, Inc. (Enbridge) proposed the twin NGP pipelines to carry 525,000 bpd to a new marine terminal in Kitimat, British Columbia.

Figure 6: Route of Proposed Northern Gateway Pipeline (Enbridge 2010)

The KXL project, proposed by TransCanada Keystone Pipeline Limited (TransCanada) is an expansion of the current Keystone pipeline system (with a capacity of 590,000 bpd), and aims to carry 830,000 bpd to Steele City, Nebraska. KXL is actually the fourth phase of the larger Keystone system, which consists of the following segments:

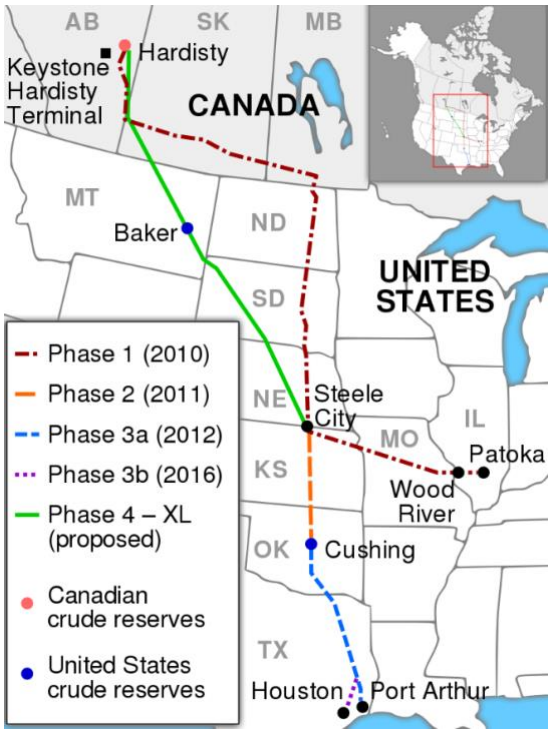

Figure 7: Keystone Pipeline System with proposed KXL extension route (Source: TC Energy)

These pipelines are comparable for several reasons:

- they are both large pipelines which were developed in the mid-2000s;
- they are subject to federal regulation as opposed to subnational, which is much more diverse and piecemeal in both Canada and the United States;
- they have both been subject to significant controversy and opposition from landowners, environmental activists, and Indigenous communities (although this contestation is not the subject of this analysis); and they were both cancelled.

These pipelines represent the contemporary challenges that pipeline regulators face, and they provide ample fodder for comparing Canadian and American regulatory governance with regards to climate change and oil pipelines. When these projects were initially proposed, climate change was gaining salience politically, but energy regulators had not explicitly grappled with the impacts that this phenomenon would have on their own processes.

This paper aims to understand how climate change is characterized and interpreted in regulatory processes, and both the NGP and KXL projects reveal a dissonance between the capacity of these regulatory institutions, their original mandate, and the expectations from communities, activist groups, and industry. This paper makes use of qualitative content analysis to establish the role of climate change of contemporary pipeline regulation, and the perceived gaps in that governance (Bowen 2009; Neal 2012). The activities of regulatory agencies and industry is identified via relevant legislation, official mandates, and compliance documents submitted to regulators. The largest and most complex piece of the empirical results come from an analysis of public comment data. Regulatory processes in Canada and the United States allow for the submission of public comments regarding pipeline projects, which is largely unencumbered by rules or restrictions.

For this project, 750 comments were each randomly selected out of 5000 for Northern Gateway and over 10,000 for the 2019 round of comments for Keystone XL. These comments were downloaded off of the NEB document depository for Northern Gateway and regulations.gov (the American regulatory document depository) for Keystone XL. Codes were inductively developed according to the nature of opposition or support stated (see a list of relevant codes below). Inductive thematic saturation was reached fairly early in the process, with no new codes generated after approximately 100 comments analyzed (Saunders et al. 2018). Additional coding was completed to reach data saturation, where patterns were consistently replicated and a clear picture of the nature of these comments, and so the perceived gaps in regulatory governance were revealed.

Two codes, one each for climate change and decarbonization, provided most of the insight into these trends. For this project, the ‘climate change’ code referred to any mention of anthropogenic

climate change, including downstream impacts and end-of-use consumption, as justification for rejecting either project. The 'decarbonization' code captured comments related to increasing the use of renewable energy, a managed decline of fossil fuel extraction, or the general benefits of decarbonization (this code often but not always appeared in conjunction with the climate change code). To ensure completeness, all other environment-related codes were scanned for misidentification and can be seen below. A full list of all codes generated can be found in the Appendices.

Table 2: Environment-specific codes for NGP and KXL public comments

Code	Description	Comments	References
ENVIRONMENT	General opposition based on environmental impact	208	316
CLIMATE CHANGE	Specific reference to unique aspect of relationship between pipelines and climate change (often but not always related to decarbonization)	135	358
DECARBONIZATION	Reference to specific aspect of renewable energies, need to decarbonize (often but not always correlated to climate change)	214	316
ECOSYSTEMS	Reference to specific impacts on specific ecosystems (ie. Great Bear Rainforest in BC for NGP, Sandhills region in Nebraska for KXL)	188	228
WILDLIFE	Reference to specific wildlife populations	82	101
EXTRACTION	Opposition based on issues with fossil fuel extraction, rather than pipeline itself (ie. Tailings ponds)	48	82

This public comment data represents a facsimile of the public interest that is not represented via the regulator-regulated relationship, and is therefore a crucial part of the perception of climate change by the public, in whose interest regulators are meant to operate, revealing what is perceived to be missing in current governance. This dataset is not a perfect substitute for the public interest; this type of submission process tends to attract strong opinions as opposed to moderate, and certain civil society groups may be over-represented due to information and submission campaigns. There is also a clear lack of project-specific knowledge within the comment data; many commenters identify concerns which are explicitly addressed by the firm/regulator, or which are related to other projects. However, these comments still reveal perceived gaps in governance, because there are trends and issues consistently referenced which likely would not exist if they were being appropriately integrated into regulatory processes.

2.4 Results

There is evidence to suggest that climate change and decarbonization are not appropriately integrated into oil pipeline regulation, or at least are perceived this way by public commenters. A significant

proportion of comments asked the regulators to address downstream climate impacts in their appraisal of the projects, but this issue was either assessed extremely narrowly (focusing on direct GHG emissions from pipeline construction) or that climate change was not uniformly or consistently assessed. (as in the KXL case)the KXL case, 27% of comments explicitly mentioned climate change as a primary reason for cancelling the project, compared to 18% of NGP comments. Additionally, 13% of KXL comments and 27% of NGP comments mentioned the need to decarbonize and invest in alternative energies, although there was significant overlap between the two issues. It is also worth noting that there were significant campaigns from environmental activist organizations like 350.org, Greenpeace, and the Sierra Club to submit form letters to these public submission windows en masse, and so wording in several of these comments is similar. However, these form letters are still worth examining in this context for two reasons: first, many commenters edited these letters to emphasize their own priorities, by removing text or adding additional context, so there is still an effort to engage despite the "copy and paste" nature of these form letter comments. Secondly, form letter submissions are often dismissed outright by regulatory agencies because they do not demonstrate direct impact from the project, and so there is a significant number of comments that are given little consideration despite real concerns about the intersection of fossil fuel development and climate change.
There are three key themes from the public comment data on climate change: that the construction of a new pipeline is antithetical to a managed decline of fossil fuels in order to meet international climate targets; that resources should be invested in the development of renewable energies instead of fossil fuels, or fossil fuel-adjacent projects like pipelines; and that oil from the Athabasca oil sands is particularly carbon-intensive and therefore pipelines meant for its transport should not be constructed.

2.4.1 Managed Decline of Fossil Fuels

First, there is a clear trend that opposes both the NGP and KXL projects because the commitment to building pipelines that are expected to be in service for decades and add significant capacity for oil extraction demonstrates a continued dependence on fossil fuels. In the KXL case, comments bring up that "…the commitment to billions of dollars in capital to a pipeline for conveying Canadian tar sands for the next 30-50 years would foreclose the possibility of the US substantially shifting away from hydrocarbons in time to leave the atmosphere in a habitable condition for our children" (KXL 1.1). There is continuous reference to the IPCC and other scientific climate assessments, citing reports that suggest a need for a managed decline of fossil fuels;

> *"due to the increase in global temperature caused by human greenhouse gas pollution, it is imperative that NO new infrastructure leading to fossil fuel burning should be constructed. No projection of the continuing rise in global temperature is considered in the SEIS….according to the United Nations Committee on Climate Change, we must limit average global temperatures to 2 degrees C to avoid societal turmoil/collapse. This requires a downturn in the CO2 emissions curve, which is still climbing. The NO ACTION alternative - not building the pipeline - is an essential part of this limitation on CO2 emissions." (KXL 1.2).*

Finally, there is a clear link made in these comments between the relatively small direct GHG emissions attributable to the operation of the pipeline itself and the climate implications of the broader fossil fuel industry, "human survival depends on keeping the Canadian tar sands in the ground, and preventing Keystone from connecting to those tar sands is a necessary element of that" (KXL 1.3).

This theme is repeated in NGP, with explicit mentions of a managed decline of fossil fuels; "the best long term solution to human-caused global warning is to keep hydrocarbons in the ground, and, in particular, not to encourage the large populations of the world to repeat the western nation's mistakes in respect to hydrocarbon usage" (NGP 1.1). Canada's international reputation as a climate laggard is brought up, "at a time when other developed countries are finding ways to reduce their fossil fuel dependency, Canada continues to expand its production along with our ecological footprint. We're marching in the wrong direction" (NGP 1.2).

And like in the KXL comment data, the commitment to oil development that NGP would signal is referenced: "…for Enbridge to recover construction costs and make a healthy profit, they will need to operate the pipeline for at least 25 years, which would be a suicidal commitment to new infrastructure supporting dependence on fossil fuels" (NGP 1.3). Connections are made between oil sands extraction, the pipeline itself, and the downstream consumption of those oil sands resources; "the present tar sands contains almost half the amount of carbon to potentially reach that 2 degree ceiling and within the next 25 years Enbridge intends to TRIPLE tar sands production" (NGP 1.4). Throughout the KXL and NGP public comment data, the climate-related opposition proposes a need to look at the entire life-cycle of this project and others like it, and consider the global as well as national and local implications. These comments suggest that there is a perception from the public that these regulatory forums are an appropriate forum for broader climate impacts to be addressed, and that current regulations are not assessing climate change to the extent that they should.

2.4.2 Investing in Renewables

Second, there is a theme of public comments expressing that resources should be invested in the development of renewable energies in order to combat climate change, as opposed to fossil fuel infrastructure projects like pipelines. In the KXL data, 13% of commenters referenced decarbonization in support of climate change mitigation as a reason to deny the pipeline, pointing out that "in order to slow the buildup of greenhouse gases…energy policies that favor sources other than fossil fuels must be promoted, rather than continuing with the easiest approach for meeting our country's energy needs" (KXL 1.4). Many of these commenters proposed that the approval process for this pipeline acts as a microcosm for fossil fuel dependency, and that its rejection could set a precedent going forward.

There are similar calls for decarbonization in the NGP case, with 27% of commenters—more than the 18% that directly referenced climate change—stating that the project "represents a misallocation of resources at a time when Canada should be shifting its focus away from fossil fuels to the development and support of renewable energy." (NGP 1.5). Additionally, there was a desire that resources that would be committed to pipeline project should be invested in renewable energy development; "economically we understand that the tar sands create thousands of jobs and pump money into the economy, but lets start diverting that money into Renewable and safe energy." (NGP 1.6). In both cases, there was some acknowledgement amongst commenters that the oil industry provided economic benefit, but that decarbonization initiatives had to include the industry and therefore had to include pipelines. This perspective was more common amongst comments that referenced decarbonization than those that only referenced climate change.

This desire for a diversion of resources reveals a dissonance in what these regulators do versus what some people think they do; regulators have no capacity to explicitly direct private sector investment. If Enbridge or TransCanada cannot get their pipelines approved, the NEB/State Department does not have the authority to force these firms to construct wind farms instead. Canada and the United States are both outliers in the sense that they do not currently operate state-owned energy companies; most oil-producing states do have national oil companies (NOCs) and so can have more of a direct impact on specific energy projects. For instance, Denmark recently directed their NOC to develop a large offshore wind farm, in conjunction with a legislative wind-down of fossil fuel extraction licenses (Reguly 2019). Neither Canada nor the United States have NOCs, although state, provincial, and federal governments have made public investments into certain energy projects. In Canada, the federal government purchased the Trans Mountain Expansion pipeline, now under

construction, and the Albertan government purchased a stake in the KXL project, which was abandoned by TransCanada in June 2021.

2.4.3 Carbon Intensity

Lastly, while many commenters used climate change as a justification to reject both of these pipeline applications in the sense that no emissions are good emissions, some commenters focused on the carbon intensity of the Athabasca oil sands in particular, where both KXL and NGP would originate. In the KXL case, comments pointed out the 'dirtiness' of Canadian oil sands, "tar sands ranks near the very worst, being far more carbon-intensive than even conventional petroleum. Tar sands are a catastrophe that the US must not facilitate, whatever the route that TransCanada tries to weave through the American permitting process." (KXL 1.5). KXL comments also pointed out that the multiple EISs produced for the regulatory process did not account for the energy intensity of oil sands extraction, "the draft SEIS did NOT consider the additional carbon-based energy intensity effect of extracting, transporting, and refining the material from Alberta oilsands, which is the most energy intensive form of oil available (KXL 1.6). This conclusion is correct, with some caveats: Canadian oil sands are some of the most energy-intensive to extract in the world, and despite industry's best efforts to reduce extraction-related GHGs emissions remain high (and are likely higher than estimated) (Liggio et al. 2019). However, when we look to oil imports from other countries that would have higher transportation/refining emissions, the picture becomes muddier (Jing et al. 2020; Toombe 2016).

The emissions intensity of the Athabasca oil sands is cited in the NGP comments as well, stating that "production and consumption of oil from the Oil Sands consumes more energy and water and produces more greenhouse gasses than any other source of energy" (NGP 1.7). However, there is an added facet to the NGP comments regarding this issue. In the case of KXL, oil would be shipped to refineries in Texas and on the Gulf Coast, which most comments either do not address or acknowledge would be a benefit to the United States in terms of monetary value added and employment. However, in the NGP comments on climate change, there is a small number of commenters expressing reservations regarding the stringency of refining and consumption regulations in China, which is assumed as the final destination for oil traversing the NGP, stating that GHGs are a concern not only because of the energy-intensity of upstream oil sands extraction, but "especially so if the bitumen is refined in China, where emission controls during the refinement process are less stringent than in Canada." (NGP 1.8). While Enbridge did emphasize increased access to Asian

markets in their initial proposal for NGP, and China would have been a significant trade partner due to increasing oil demand, NGP was meant to open up trade routes all over Northeast Asia, including Japan and South Korea initially and eventually expanding to the Philippines, Thailand, India, etc., all of which have varying levels of environmental regulation. However, only China would initially have the capacity to refine raw dilbit (Lemphers and Gilchrist 2011a).

It is also worth noting that Prime Minister Stephen Harper announced in 2008 that his government would not export raw bitumen to countries without equivalent emissions targets; however, in 2009, China had at the very least announced a target to reduce carbon intensity by 40% from 2005 levels by 2020 (although policy did not support this goal), and had also ratified the Kyoto Protocol which the Harper regime had pulled out of in 2011 (Conrad 2012).

These public comments tell us that those who opposed the KXL and NGP pipelines on climate grounds did so for three main reasons: the need to encourage a managed decline of fossil fuel extraction, invest in renewables rather than fossil fuel projects, and the high carbon intensity of Athabasca oil sands extraction. The next piece of the puzzle that needs to be addressed is the regulators; did these regulators address these issues, and if so, to what extent? The next section examines pieces of the socio-environmental assessments from both KXL and NGP to answer this question.

2.5 The Regulators

The evidence from public comment data reveals a perception that climate change as an issue is not being appropriately addressed in the regulation of these pipelines, but that it should be. However, the regulatory processes form both NGP and KXL do explicitly address climate change, although only at a superficial level. For the most part, regulators have required a very narrow and specific type of climate assessment that focuses on direct project GHG emissions, and industry has accepted this type of assessment.

We can extract the regulator and industry perspectives on climate change by looking at how firms address climate change in the compliance documents they submit to regulatory institutions, and the guidelines that those institutions publish. For the NGP process, climate change is addressed by the NEB, Canadian Environmental Assessment Agency (CEAA), and Enbridge.

2.5.1 Northern Gateway

The primary guiding document for climate change considerations in large industrial projects until 2012 was published in 2003 by the CEAA: *Incorporating Climate Change Considerations in Environmental Assessment: A General Guide for Practitioners.* This document provided guidance under the CEAA Act 1992, and was retained when the CEAA was amended in 2012. Since most of the environmental assessments for NGP were completed prior to 2012, this was the guiding regulatory document with regards to climate change. *Incorporating Climate Change Considerations* was meant to encourage less emissions-intensive ways to construct and operate projects (across the industrial spectrum) as well as assist operators with mitigating climate risks on these projects (CEAA 2003). This document emphasizes that jurisdictional policies should be the foundation of environmental assessments of climate change; for instance, interprovincial projects should adhere to the *Climate Change Plan for Canada* (superseded by the Turning the Corner Plan of 2007, proposed by the Harper government, and the 2016 Pan-Canadian Framework on Clean Growth and Climate Change proposed by the Trudeau government) or the relevant provincial plan if the project operates under provincial authority. *Incorporating Climate Change* emphasizes a project-specific accounting of direct GHGs (although indirect GHGs are mentioned, they are far more difficult to quantify)(CEAA 2003). In terms of assessing how a project may affect climate change, the CEAA suggested completing (CEAA 2003):

1. Preliminary scoping for GHG impacts
2. Identifying GHG considerations: this includes project specifications, industry profiles and best practices, and identification of jurisdictional authorities.
3. Assessing direct (project-specific) and indirect (project-adjacent) GHG emissions, with attention paid to impacts on carbon sinks
4. Creating GHG management plans, if required
5. Monitoring and adaptation as the project moves through its life cycle.

While the NEB largely took its climate change-related guidelines from the CEAA, the regulator itself did also weigh in on the issue. A lack of coherence and certainty on climate change plagued the NEB as the issue became more politically salient. Until the regulator was superseded by the CER in 2019, the general policy mandate was that the scope of climate change was narrow and would only require an accounting of construction and operation related GHGs (CEAA 2003) . This policy was included in an equivalency agreement between the NEB and the Environmental Assessment Office of British Columbia regarding the Trans Mountain Expansion proposal, the central tenet of which was that the NEB and Environmental Assessment Office (EAO) of British Columbia ruled that multiple

environmental assessments need not be developed in order to avoid duplication (NEB and EAO 2010). This agreement stated that only GHG emissions of the construction/operation of the pipeline itself would be considered, which constituted approximately 1% of total emissions associated with the pipeline and the oil moving through it. GHGs associated with extraction in Alberta (upstream emissions) and end-use consumption in Asia and the United States (downstream emissions) would not be considered (West Coast Environmental Law 2012). After a legal challenge, the Supreme Court of British Columbia ruled that a portion of the NEB/EAO agreement was invalid and that a further environmental assessment would need to be conducted to develop an Environmental Assessment Certificate (*Coastal First Nations v. British Columbia (Environment), 2016 BCSC 34* 2016). The NEB's approach to climate change was largely patchwork and on a case-by-case basis, with the CEAA guidelines providing an extremely narrow definition of climate impacts[7]. The CER and Impact Assessment Agency of Canada (IAAC) have since replaced the NEB and CEAA, but it is worth noting that climate change is still fairly narrowly assessed, with a focus on project-specific and upstream emissions.

From the application for NGP submitted to the NEB, climate change is largely addressed in section 4.5, Volume 6 of the Environmental and Socio-Economic Assessment (ESA), regarding the contribution of the project to Canadian GHGs. Enbridge acknowledges the negative impacts of climate change and the contribution of fossil fuels, stating that "climate is a VEC because of the importance of climate change as a national and international issue. The Project will result in an increase in GHG emissions, thereby contributing to provincial and national GHG emission totals." (Enbridge Northern Gateway Pipelines 2010a, sec. 4.5). However, Enbridge identifies only a small number of project-related activities considered 'significant' to the issue of climate change. The primary GHG activities Enbridge identifies is the berthing of tanker ships at the Kitimat marine terminal, and the infrastructure operations associated with this tanker activity. The construction, operation, and decommissioning of the pipeline itself are considered insignificant due to the minor GHGs that this type of activity creates. No mention is made of end-of-pipe consumption or broader implications of long-term dependence on fossil fuels. Enbridge emphasizes that they follow the Canadian Environmental Assessment Agency's (CEAA) guidelines from 2003 with regards to

[7] For instance, in 2016, the Trudeau government announced that in the case of the Trans Mountain Expansion, upstream emissions would be considered despite NEB guidance to the contrary.

assessing the climate impacts of their project by following a phase-by-phase calculation of GHGs produced directly by the project (CEAA 2003; Enbridge Northern Gateway Pipelines 2010a, sec. 4.5).

In Volume 5 of the application, which documents Indigenous consultation and outstanding issues, Enbridge responds to concerns regarding climate change and Canada's long-term energy strategies by re-iterating that "Canada's policies relating to the national energy strategy, global warming and climate change are beyond the scope of the Application" and that "it is anticipated that the Project will not result in any substantive interaction with the atmospheric environment (climate) that will result in discernible changes to regional, national or global climate patterns" (Enbridge Northern Gateway Pipelines 2010b, M–4; O-5).

2.5.2 Keystone XL

For the KXL process, climate change is addressed by the EPA and by TransCanada in the initial 2014 EIS and in the 2019 EIS update after re-application. The EPA, in its submission for the 2014 EIS, worked with the State Department to develop the environmental analysis of KXL. The EPA also submitted an additional comment which specifically addressed the determination of the national interest with regards to climate change. There are two important points from this addendum; first, that based on market projections from early 2014, KXL would have a negligible impact on GHGs because due to relatively high oil prices, Albertan crude would find another way to market likely via rail (Environmental Protection Agency 2015) . However, after the EIS was submitted in 2014, the price of oil fell significantly, to approximately $50/barrel (from $100 in early 2014), emphasizing that the volatility of oil markets could render any conclusion from the EIS as uncertain (Environmental Protection Agency 2015).

The EPA also acknowledges the broader climate impacts of KXL, stating that

> *"a decision that the Project serves the national interest would need to find a way to resolve the one fact that seems most clear and compelling: oil sands crude is substantially more carbon intensive than reference crudes and over its lifetime, this Project could end up significantly contributing to carbon pollution. So while no one can predict with certainty what the global price of oil will be, whether oil sands development will be more economic in future years than it appears today, or whether other pipelines for oil sands crude will be built, this one thing is certain: approving this Project ties the US to a significantly more carbon intensive oil for the next 50 plus years" (Environmental Protection Agency 2015)*

This is fairly unequivocal and addresses many of the issues from within the public comment data. However, this is one comment, from one agency, which is not representative of the

Final EIS. The State Department makes the final determination of national interest, and then the President chooses to approve or reject that determination. But it is clear that American regulatory processes are not unaware of the broader climate impacts of projects like KXL, even if they are not entrenched in compliance guidelines. President Joe Biden cancelled the KXL permit in January 2021 largely due to the climate implications of the pipeline, perceived or otherwise (McKibben 2021).

In the Supplemental EIS completed in 2014, TransCanada addresses climate change in several contexts, albeit briefly. In Volume 1, Section 2.2 (Description of Alternatives), TransCanada discusses the proposition of the No Action Alternative with regards to climate change, arguing that even if American demand for oil were to shrink, global demand would still justify the Project (State Department 2014a, 2.2-40). Additionally, TransCanada points out projections from the International Energy Agency (IEA) that suggest global oil demand is projected to increase until at least 2035, barring significant new policy barriers and therefore it is unlikely that demand would decrease enough to justify the No Action Alternative (State Department 2014a, 2.2-41).

In Volume 3, Section 4.14, TransCanada acknowledges the anthropogenic nature of climate change, citing the IPCC in this statement (State Department 2014b, 4.14-2). TransCanada then states that "the amount to which these effects are attributable to any single man-made project is very small; however, given their magnitude when combined, these effects warrant discussion" (State Department 2014b, 4.14-3). TransCanada acknowledges the potential GHGs associated not only with project-specific activities, but also with end-product refining and consumption. They estimate that the annual lifecycle emissions associated with 830,000 bpd through the pipeline would contribute 147-168 $MMTCO_{2e}$ (State Department 2014b, 4.14-5). TransCanada then emphasizes that this calculation assumes a significant increase in oil sands extraction in Alberta due to the approval of the project, which is unlikely.

TransCanada concludes in both Volume 3 and Volume 1, Section 1.4 (Market Analysis) that "approval or denial of any one crude oil transport project, including the proposed Project, is unlikely to significantly impact the rate of extraction in the oil sands, or the continued demand for heavy crude oil at refineries in the United States (based on expected oil prices, oil-sands supply costs, transport costs, and supply-demand scenarios)" (State Department 2014b; 2014a, 1.4-1). TransCanada states that they are compliant with the 2007 U.S. Supreme Court ruling that defined GHGs as air pollutants under the Clean Air Act (and therefore under the auspices of the EPA) and the subsequent 2009 Greenhouse Gas Reporting Program (GHGRP) and which collects data on downstream and upstream

emissions sources (State Department 2014b, 4.14-7). Under the GHGRP, firms are required to collect emissions data and submit it to the EPA, but crude oil transportation lines are exempt from this reporting requirement and so TransCanada will not collect this data.

Finally, in section 4.14, TransCanada discusses the impacts of climate change, like increased variability in precipitation, could have on the operation of the pipeline itself. Additionally, TransCanada discusses the Low Carbon Fuel Standards (LCFS) implemented in California, British Columbia, the European Union, and under development in 11 other states, warning that these LCFS policies could prompt emissions leakage as GHG-intensive crude oil will simply be routed through other markets with less stringent regulations, resulting in no net decrease in GHGs globally, and potentially a slight increase (State Department 2014b, sec. 4.14).

In the updated EIS submitted in 2019, minor changes were made to TransCanada's climate change methodology. TransCanada cites updated IEA projections which project that global energy demand is likely to slow after 2025, but that fossil fuels will continue to fulfill the majority of global demand until at least 2040. TransCanada also cite McGlade & Eakins seminal 2015 work which proposes that one third of current oil reserves should remain un-extracted from 2010-2050 (McGlade and Ekins 2015) and dedicates a whole section of this EIS to explaining GHG emissions trends and climate projections (State Department 2019, sec. 3.10). TransCanada admits a 'significant' cumulative effect with regards to climate change due to the indirect lifecycle emissions of the pipeline products but they continue to emphasize the project's limited direct contribution to GHGs and their own compliance with EPA requirements (State Department 2019, S-18). TransCanada concludes that KXL would lead to an incremental increase in GHGs. These increases depend on how much of currently produced crude oil is displaced, and the carbon-intensity of displaced crude, but range from 33-178 $MMTCO_{2e}$ annually (State Department 2019, sec. 7.20).

2.6 How wide is the gap? Regulators, commenters, and Broader public opinion

The public comment data reveals that in the set of people and organizations that submitted comments during the NGP and KXL 2019 processes, there is a significant amount of attention paid to climate change and the responsibilities of regulators to include broad climate assessments in their appraisal of pipeline projects. However, while the data reveals a vocal minority within the public commenters, this attention to climate change is not necessarily mirrored in the wider public opinion. In fact, while about 10% of comments in both cases were supportive of the projects, there is a significant amount of 'silent support' beyond those who commented in the regulatory process. In 2016, 30% of Canadians

generally supported Northern Gateway and another 28% (so 58% in total) supported the project if Enbridge satisfied 209 conditions set out by the NEB (Anderson and Coletto 2016). In 2017, during the initial stages of TransCanada's re-application during the Trump administration, 42% of Americans supported the project (which substantially decreased from 2013, when the project was first announced; then, 66% of Americans supported the project) (Suls 2017).

So these pipelines were both at least passively supported by a large segment of the general public. But these public comments still reveal a gap between regulator and the public interest, because these comments are consistently pointing out the same issues that regulators do not address. Additionally, the process of submitting a comment, even if much of the text is taken from activist letter-writing campaigns, is much more active than answering a poll and demonstrates an active interest in the project and the regulatory process. The issues that these comments bring up are also clearly on the radar of firms and regulators, since both address climate change to some extent during the regulatory process.

Ultimately, though, both regulators (and the governments behind them) are not asking pipeline firms to be broad in their assessment of climate change. They explicitly acknowledge the anthropogenic and damaging nature of climate change, but they are not required to account for it in compliance procedures. And nowhere in this process is end-of pipe consumption assessed. In some specific projects like the Trans Mountain Expansion project in Canada, the federal government instructed the CER to include upstream extraction GHGs, but not downstream, in their assessment after a legal challenge. But the standard regulatory processes in both Canada and the United States simply do not require a broad assessment of climate impacts, and firms are unlikely to offer this assessment up without legislative coercion.

2.7 Discussion: Defining Risks to Climate, Communities, and Economies

The public comment data analyzed, in conjunction with compliance documents submitted to regulators, reveals several gaps (or perceived by public commenters) between regulation and the public interest with regards to climate change. First, broader climate impacts are not yet embedded into contemporary regulatory processes in either Canada or the United States, and are currently considered on a case-by-case basis. In Canada, the NEB underwent a series of reforms and became the Canada Energy Regulator in 2019; as of September 2021, downstream GHG emissions and climate impacts are not included in project assessments. Generally, localized environmental impacts like ecosystem degradation, endangered species, or project-specific GHG emissions are assessed in

both cases as part of the EIS. Cumulative, diffuse, cross-territorial climate impacts tend to be assessed as part of the national interest determination, if they are assessed at all. On the one hand, the fact that KXL in particular did address these impacts, as well as changes happening in the Canadian processes to include upstream emissions in the assessment of some projects, speaks to the increasing salience of climate change both politically and economically. Since 2010, there has been increasing attention paid to cumulative climate impacts in assessments of energy projects in both Canada and the United States. NGP and KXL represent a kind of turning point in both countries, as NGP was the last large pipeline project that did not include global climate change in the national interest determination for Canada, whereas KXL was the first large infrastructure project to include climate change. Climate change was not the driving force behind the rejection of NGP, whereas it certainly was in the case of KXL (in both 2015 and 2021). This harkens back to the IPE of energy scholarship which suggests the need to acknowledge the material limitations of current regulatory structures. To properly assess climate change, we need to include downstream emissions that are not consumed in Canada. These types of emissions are difficult to track once they leave our shores. They are also extremely difficult to balance against the direct economic benefit that exporting fossil fuels brings to Canadians generally and Albertans in particular (A. V. Carter 2018).

Second, there are procedural differences between the piecemeal nature of American interstate/international regulation compared to the standardized nature of Canadian interprovincial regulation. On the one hand, the extremely centralized nature of the KXL process, an anomaly in American pipeline regulation, allowed Presidents Obama and Biden to react to the changing tides of public opinion and activism and cancel the project on climate grounds. On the other hand, these same governance features allowed President Trump to reinvigorate the project. Executive-level partisanship steers the inclusion of climate change into national interest determinations for cross-border pipelines, indicating a lack of regulatory continuity which narrows or expands the scope of regulation depending on who is sitting in the White House. And the case here is distinctive in its global nature; most oil pipelines in the United States undergo far less scrutiny, depending on the states they cross. [8]

Conversely, there is a sluggishness that characterizes the Canadian case, which has much more standardized regulatory procedures for interprovincial/international pipelines. Enbridge was

[8] The State Department ruled that Enbridge's Line 3 pipeline, expected to be in service by November 2021 after overcoming legal challenges, did not require a new presidential permit/environmental review because the project proposed a replacement of existing pipe rather than a new build.

relying on guidance documents from 2003 for the NGP process, which stretched into 2016. The scientific understanding of climate change has increased considerably from 2000, but Canadian regulators were slow to update their compliance guidelines. The supersession of the NEB with the CER came at the end of years of frustration from both industry and civil society regarding a lack of clarity within regulatory mechanisms; some pipeline projects were required to account for certain climate impacts, others were not, and the courts frequently made the decision (see the Trans Mountain Expansion, Energy East, and Line 3 projects in addition to NGP).

However, despite the fragmentation of American pipeline regulation, and the slightly more centralized Canadian experience, the NGP and KXL cases in particular reveal the importance of executive power in these contemporary regulatory processes. KXL was cancelled by Presidents Obama and Biden and revitalized by Trump. NGP was overturned by the Supreme Court and then effectively cancelled by Trudeau after a series of legal challenges, particularly regarding the new marine terminal proposal, proved too controversial. These cases may represent a turning point in both countries. In Canada, the federal government has purchased the Trans Mountain expansion pipeline, indicating a commitment to fossil fuel extraction in the long term, despite its former owner Kinder Morgan backing out of the project due largely to regulatory uncertainties. In KXL, we see that regulatory process is largely at the whims of the executive; in the updated ESA delivered to Trump, the language on climate change from the EPA was relatively strong. Trump still ultimately approved the project. When Biden cancelled KXL in January 2021, the (admittedly uncertain) market forecasts for oil demand still existed, but under a Democrat president that ran on a strong climate platform, cancellation was all but inevitable (McKibben 2021). Ultimately, in the last several decades regulators have been acting more like advisory councils than independent governance mechanisms with decision-making capabilities, making their outputs even more political. As discussed in the IPE of energy section earlier, there is a need to overhaul these regulators with more capacity to deal with broad and complex problems; to be able to assess projects beyond the territorial scope of federal/sub-national sovereignty; and to be able to introduce a normative mandate towards sustainable development.

Lastly, there is the question of balancing the harms and benefits of these pipelines with regards to climate change, as both Canada and the United States struggle with balancing impulses to continue privileging oil development at (almost) any cost and the increasing outcry from civil society both domestic and global to reckon with the socio-environmental impacts of a carbon-dependent society. Market-based concerns are still paramount during national interest determinations; as seen

above, anxieties regarding climate change are often couched in discussions of oil prices and demand forecasts. Climate impacts are rarely disentangled from global market forces. At first glance, the rise of environmental regulation since the 1970s seems to indicate a turn away from market supremacy and the 'neoliberalization of nature' (Bakker and Bridge 2007; Castree 2008a). However, we see in the dissonance between public comments and regulatory requirements that while there has been a broadening of regulatory capacity, these are still economic regulators that were created to encourage resource development. This holds despite the cancellation of both projects; while climate anxieties certainly played a large role, in the case of KXL in particular, market demands will be largely met by current infrastructure assets, and others (like Enbridge's Line 3) are still in the works. The commercial justification is much less certain when other pipelines are ready to meet demand (depending on certain climate policy outcomes domestically and globally).

In the NGP and KXL cases, we can see this climate-state-market tension play out as commenters proposed that if the risks of these projects were interpreted more broadly, they no longer outweighed the economic benefits. In the NGP case, within the comment data there was a clear sense that the environment and climate is a resource in its own right and should be protected to the same extent that oil is developed. Additionally, there was a clear resistance to the unequal distribution of benefits (largely to Enbridge, its shareholders, and some communities along the pipeline route) and risks (globally, in terms of climate change). From the regulator side, both American and Canadian institutions are operating from a classically liberal perspective, where states ensure the orderly operation of markets. But contemporary IPE of energy scholars, as suggested earlier in this paper, propose that we need a more holistic and less oil-centric view of energy, even when we are talking about oil (and the pipelines that carry it). And the trends in public comments echo that sentiment. Ultimately, it is no longer clear that the benefits of oil development outweigh the risks of climate change for many people, but regulators have thus far avoided reforming their scope to include a climate-forward interpretation of their mandate

2.8 Conclusion

This paper utilized critical theories from the IPE of energy to propose that regulators, which operate at the centre of the state-market-civil society nexus, are political organizations with political aims, as opposed to independent institutions with administrative functions within the state. Pipeline regulators in Canada and the United States assess climate change in extremely narrow and site-specific contexts, despite the evidence that climate change is a global problem with diffuse and significant impacts.

This dissonance between regulatory practice and the public interest which these mechanisms are meant to represent can be seen in an analysis of public comments submitted for both the NGP and KXL cases. Both sets of comments revealed concerns regarding the need to reduce fossil fuel dependence now in order to mitigate climate change, the need to invest in renewable energies, and that the particular oil marked for transport through these pipelines is especially carbon intensive. None of these issues are clearly addressed through regulatory compliance guidelines. In both cases, it has come down to the federal executive to decide on the fate of these pipelines, which introduces uncertainty into the regulatory process. The Obama and Biden administrations cancelled KXL due largely to climate concerns, which suggest a shift in (parts) of the American drive for carbon-based energy independence and an acknowledgement of broader climate impacts. However, the revitalization of the project by President Trump suggests that these climate concerns are not embedded in regulatory institutions but are rather at the whims of the President. In Canada, the Trudeau administration cancelled the NGP—and promptly purchased the Trans Mountain expansion pipeline to ensure that demand for Albertan oil would be met. There is a lack of regulatory certainty and continuity to assessing climate change in both Canada and the United States which renders these institutions incapable of assessing complex global problems like climate change.

These pipeline regulators were originally based on a very oil-centric view of the IPE of energy, concerned with encouraging oil development, but we are seeing attention paid to climate change within these organizations now. Pipeline regulation is a matter of national jurisdictions, but it has impacts on, and is influenced by, global events. The segmented nature of pipeline sovereignty and jurisdiction in Canada and the United States makes it easier for pipeline projects to 'pass' environmental assessment because if regulation is narrow and localized enough, there are rarely problems big enough to justify rejecting the project outright. This is played out in climate assessments, where only GHGs directly produced by the operation and construction of the project were considered in the NGP and KXL cases, despite the fact that both the Prime Minister and two Presidents acknowledged the broader climate impacts of the pipelines.

Conventional regulation emphasizes rule-setting and monitoring in a way that measures direct impact on a concentrated group of stakeholders, and the prospect of explicit policy planning is rarely part of regulatory institutions—although certain socio-economic goals may be pursued, they are often a result of institutional inertia as opposed to explicit goal-setting (Young 2017a; Doern, Prince, and Schultz 2014; McBeath 2016). Institutions need to expand their capacity to respond to these increasingly complex problems. The scale and nonlinearity of climate change, as well as the

complexity of global energy markets, necessitates regulatory institutions that privilege setting specific environmental goals and normative ambitions in order to create a flexible regulatory system that goes beyond setting and enforcing a set of rules. This is not an easy balance to achieve and detailing the specifics of such goals is complex. Other climate governance mechanisms, like the Paris Agreement may serve as a blueprint for a more effective regulatory structure in the energy sector (Young 2017b). The Paris Agreement sets specific and measurable goals but allows participants to determine the best way to achieve these goals (as opposed to rule-setting without specific policy priorities, which characterizes North American energy governance), and pipeline regulators may be able to learn from these types of agreements.

This paper emphasizes the lack of continuity between the energy governance and climate governance, which speaks to issues that have been increasingly relevant in the study of the international political economy of energy. We know that global energy systems need to be overhauled to mitigate the worst impacts of climate change; but the governance institutions that oversee those energy systems, like pipeline regulators, rely on a narrow interpretation of impacts and lack a clear and inclusive framework with which to assess climate change. These governing institutions are complex and often fragmented but tend to support fossil fuel development. In an era where the prospect of a managed decline of fossil fuels is increasingly commonplace, these institutions are out of step with the realities of the industry they are charged with governing. Climate change is certainly a factor in these pipeline decisions; Presidents Obama and Biden cited it as the primary reason for rejection, and it was a secondary factor in Prime Minister Trudeau's cancellation of NGP. However, while executive leaders (at least, the Liberal and Democrat leaders) address climate change explicitly in their decision-making, the regulatory processes themselves lack a clear and consistent assessment framework. The NEB (and CER, for now) generally avoided assessing upstream and downstream impacts. In the United States, the pendulum swings between denial of permits based primarily on climate grounds and downplaying the concept of climate change entirely. Broader climate change needs to be consistently assessed *throughout* these processes, not simply when it is politically advantageous to do so.

Now that our understanding of the relationship between climate change and regulation is fuller and more nuanced, we need further research into institutional design to investigate what a better regulatory structure might look like. Additional comparative analysis of fossil fuel producing states would contribute to this research, as would investigation of other climate-sensitive sectors like agriculture. Lastly, the suggestion to design regulatory mechanisms for sustainable development as

opposed to economic growth is likely relevant to climate and energy justice movements seeking to accelerate decarbonization and just transitions.

Chapter 3

Cheap, Local, Ethical: Addressing Energy Security Through Pipeline Regulation

Energy, and oil in particular, has long been at the forefront of policymakers' minds in Canada and the United States. Consequently, anxieties regarding energy security have been ingratiated into national energy policies, and so energy regulation, for decades. In the United States, energy security generally manifests itself as a drive for energy independence and continuity of supply internationally; in Canada, this is exhibited in a need to ensure continuity of extraction and access to global demand. To complicate matters further, there are public concerns regarding energy security. There are significant economic benefits associated with the operation of pipelines, and thus the extraction of oil, but there is a perception that these benefits are largely concentrated amongst a small group of global industry stakeholders and is not dispersed to those who take on the social/environmental risks associated with these large and invasive infrastructure projects, both domestically and internationally. The question of what is being secured, and whom is at risk from these pipelines, is much more complex than a narrow supply-and-demand view of energy security would suggest. This paper will utilize the Four A's framework of energy security to compare the characterization of energy security in two cancelled pipeline projects: the Northern Gateway project in Western Canada, and the Keystone XL extension to the Gulf Coast. Relying on public comment data and industry compliance documents, this paper will investigate the interpretation of energy security in both projects and discuss the broader implications for regulatory governance. It will be concluded that due to a lack of mandate capacity, these regulatory institutions are characterizing energy security too narrowly for the expectations of the public who may desire an assessment of broader socio-political issues, or by ruling parties that ultimately make the final decision on these pipelines with these broader issues in mind.

3.1 Introduction

Canada and the United States have historically been extremely invested in the development of their domestic oil industries. In terms of oil, the Canada-U.S. trade relationship is extremely close—in 2019, 98% of Canadian oil exports are shipped to the United States, and 56% of American oil imports came from Canada (Natural Resources Canada 2017b; EIA 2019a). Both countries have entrenched energy security at the heart of their energy policies for decades, albeit this has manifested slightly differently. The United States has long strived for energy independence—the idea of reducing the need to import oil from unstable countries, and ideally of eliminating the need to import oil at all in an effort to protect the American economy from price shocks and supply disruptions. Just before the 1973 oil crisis, 35% of oil consumed in the United States was imported; this peaked in 2005 at 60%(EIA 2019a; 2021a). While the United States was the top global producer of oil in the 1960's, high levels of consumption rendered the goal of total energy independence out of reach. American oil production dropped off in the 1970s/1980s as domestic reserves were drained, and reliance on

international imports remained until the mid 2010s, when American oil production skyrocketed due to the shale oil boom.

Conversely, Canada's abundant oil resources, largely from the Athabasca oil sands in Alberta, have kept Canadian oil production high for decades; in 2020, Canada was the fourth-largest producer and third-largest exporter of crude oil globally, and has been in the top 10 since the 1960s (Natural Resources Canada 2016b). Canada exports a significant amount of crude oil; 3.8 million bpd were exported in 2019 (Natural Resources Canada 2017b). Canada also imports some refined crude, due to a lack of domestic refining capacity (Government of Canada 2020).

Energy, and oil in particular, have long been at the forefront of policymakers' minds in Canada and the United States, and so anxieties regarding energy security have been integrated into national energy policies and energy regulation for decades. In the United States, energy security generally manifests itself as a drive for energy independence and continuity of supply internationally; in Canada, this is exhibited in a need to ensure continuity of extraction and access to global demand. While these anxieties surrounding continuity of supply and demand are placed under an umbrella of 'energy security', it is more accurate analytically to consider these state-market relationships at a 'energy-security-trade' nexus. Pipeline regulators like the NEB do not engage with security in the strictest 'hard power' sense, here meaning the use of military/economic might to coerce specific outcomes from certain actors (Goldthau and Sitter 2015a). However, the trade relationships facilitated by certain pipeline approvals certainly impact the manifestation of security of access and availability.

To complicate matters further for pipeline regulators, conventional, oil-centric interpretations of energy security lack the nuance of the risks and benefits of pipelines. There are significant economic benefits associated with the operation of pipelines, and thus the extraction of oil, but there is a perception (as will be expanded upon in this paper) that these benefits are largely concentrated amongst a small group of global industry stakeholders and is not dispersed to those who take on the social/environmental risks associated with these large and invasive infrastructure projects, both domestically and internationally (with regards to complex, cross-border issues like climate change that are exacerbated by the expansion of the global oil sector). The question of what is being secured, and whom is at risk from these pipelines, is much more complex than a narrow supply-and-demand view of energy security would suggest.

This paper will compare the interpretation and characterization of energy security within the regulatory processes of two major pipeline projects, one each in Canada and the United States. The Northern Gateway pipeline in Canada and Keystone XL project in the United States, both cancelled

after years of contestation and controversy, will be examined for their interpretation of energy security, and the impacts of that interpretation for fossil fuel development. This paper will utilize a theoretical lens of the Four A's framework of energy security: affordability, availability, accessibility, and acceptability, which will be discussed in more detail below (Asia Pacific Energy Research Centre 2007; Benjamin K. Sovacool 2011c). Relying on public comment data submitted during the regulatory processes for both projects, the public perception of regulatory legislation will be examined. By contextualizing this comment data with industry compliance documents, this paper will then investigate the trends in the interpretation of energy security by pipeline regulators, how regulatory governance has addressed this issue in these projects, and potential best practices for reform. This paper concludes that due to a lack of mandate and capacity, these regulatory institutions are not representing issues of contemporary energy security to the extent that is needed, either by the public who clamour for an assessment of broader socio-political issues, or by governments that ultimately make the final decision on these pipelines with these broader issues in mind.

3.2 The Four A's Framework

The 1973 oil crisis encouraged interest in the connections between energy and national security, culminating in scholarly attention on these linkages, but scholarly interest receded in the late 1980s as the crisis waned (Miller 1977; Willrich 1976). In the early 2000s, as energy demand began to rise sharply in Asia while environmental concerns put pressure on national governments to consider widespread decarbonization, interest in energy security was re-invigorated, and the interrogation of what energy security means has persisted since (Goldthau and Sovacool 2012; Cherp and Jewell 2014). Until the 2010s, energy security scholarship tended to focus on the security of supply and demand, focusing on oil and gas, with an analytical focus on states depending on their status as a energy importer or exporter (Chester 2010). Since the mid-2000s, energy security has shifted from this narrow, conventional conceptualization and has become both more nuanced and more interdisciplinary. Factors like climate change, innovation in renewable energy, energy poverty, etc. reveal the multidimensional nature of energy security and its connections to social, environmental, and political issues (Chester 2010; Benjamin K. Sovacool 2012b).

Energy security is difficult to conceptualize; certain actors and institutions tend to propose the definition that supports their own economic/political/social interests, and there is little consensus in the scholarship (Benjamin K. Sovacool and Brown 2010). However, there are some points of convergence. The 'Four A's' approach to energy security proposes that there are four main aspects to

energy security: availability (of fossil fuels, unconventional energy sources, and renewable energies); accessibility (regarding economic, political, or physical barriers to accessing energy, as well as energy poverty); affordability (concerning price volatility and costs of infrastructure); and acceptability (largely concerned with the social and environmental impacts of resource extraction and consumption, including climate change) (Benjamin K. Sovacool and Brown 2010; Asia Pacific Energy Research Centre 2007; Kruyt et al. 2009). The Four A's framework has become one of the most common for energy security, although it is often adapted to suit the researchers' needs, and was first proposed by the Asia Pacific Energy Research Centre in 2007(Asia Pacific Energy Research Centre 2007). When infrastructure is discussed in energy security literature, it is usually through the lens of protecting critical infrastructure from potential interruptions to oil supply in case of extreme natural events or deliberate sabotage (Farrell, Zerriffi, and Dowlatabadi 2004; Yusta, Correa, and Lacal-Arántegui 2011). However, while the links between climate change and natural disasters are increasingly clear, this is only beginning to manifest in the literature as a call to shift away from oil-centric worldviews in order to better secure this critical infrastructure (Benjamin K. Sovacool 2012a).

The Four A's framework has its shortcomings; notably the lack of attention paid to security itself. Cherp and Jewell attempt to bring the 'security' back into 'energy security' by focusing on what exactly is being secured, arguing that this is a necessary facet of any discussion of energy security (Cherp and Jewell 2014). However, there is much to draw on analytically from the Four A's as there has been increasing attention to the accessibility and acceptability aspects in particular. Studies on energy poverty, environmental sustainability, and climate change with regards to energy security have abounded since 2010 (Benjamin K. Sovacool et al. 2012; Goldthau and Sovacool 2012; Ali et al. 2020; Naeem Nawaz and Alvi 2018; Proskuryakova 2018; Shah et al. 2019; Herington and Malakar 2016). Ultimately, the Four As framework provides a conceptual starting point for discussions regarding energy security, although critics are correct in that we need to consider the perspective and direction of *what* is being secured, and for *whom*, in order to properly integrate challenges of sustainability and equity into questions of energy security. In the next section, I discuss pipelines as the method of securing security of oil supply and demand in Canada and the United States. Regulators in both countries have tended to prioritize securing affordable oil resources, continuous access to stable trade partners, and energy self-sufficiency at the expense of broader sustainability issues and risks related to fossil fuel development.

3.3 Energy Security in Pipeline Regulation: Accessibility and Availability

3.3.1 Canada

Pipeline regulation in Canada was born out of a political, economic, and physical landscape which privileged the extraction of oil resources, but the spatial realities of these resources necessitated certain issues with transport and export (Doern and Gattinger 2003; Doern, Prince, and Schultz 2014). Regulatory mechanisms like the NEB were largely built to manage the economic aspects of this extraction and transportation, but growing pressure from environmental and consumer safety groups, both within and without government, has led to a much larger mandate.

One issue that consistently arises in discussions of Canadian energy security is the role of the American market. The Canadian oil sector has historically been dependent on American demand, and so "Canadian energy decisions are almost always simultaneously American decisions" (Doern and Gattinger 2003, 23). Not only does the United States represent essentially the only export destination for Canadian oil, but American regulators play an outsize role in the domestic oil sector; more than 40% of oil and gas destined for Canada moves through the United States, meaning that American regulators can influence domestic energy availability and accessibility (Doern and Gattinger 2003).[9] Additionally, Canadian territorial authority plays a role in energy policy and regulation; provinces typically administer the leases for fossil fuel extraction and mining, since provincial governments retain ownership of below-ground resources (as opposed to landowners, who retain rights to above-ground resources) (Pearse 1988). Federal authority comes into play when these extracted resources need to be transported, as the federal government has authority over interprovincial (and international) trade as well as powers of taxation (Dijkstra and Fredriksson 2010; Pearse 1988; Doern, Prince, and Schultz 2014). Additionally, any pipeline that crosses a provincial or national border is automatically under the authority of the NEB and the Canadian Environmental Assessment Act (CEAA); conversely, any pipeline that exists wholly within one province is subject to provincial authority only(J. M. Baker and Westman 2018; Canada 2016). This ultimately means that the state of energy policy and development generally, and of regulation in particular, is always precariously

[9] We can see this playing out in 2021, as opposition against Enbridge's Line 5 pipeline in Michigan threatens to cut fuel sources for consumers by more than 50% in Ontario and Québec. This would result in an increase in truck/rail/marine transportation, although price increases across the provinces are likely in the short-term. Despite the fact that this pipeline originates and concludes in Canada, its route leaves it at the mercy of American state governments.

balanced between provincial, federal, and American interests, all of which are working towards securing cheap, continuous energy supplies.

3.3.2 United States

Since the 1973 oil crisis, the United States has sporadically pursued energy security, albeit a very narrow definition. In response to this crisis—along with a bevy of other statutes aimed at dealing with the oil shortage—President Richard Nixon announced Project Independence, the goal of which was to develop domestic energy sources and ultimately eliminate the need for global energy imports (von Hippel et al. 2011a). This goal was never achieved. President Jimmy Carter signed the Energy Security Act in 1980, which proposed a reduction in overall domestic energy consumption, increased reliance on both coal and renewable energies, and higher taxes on gasoline(J. Carter 1980). In addition, President Carter also created the Department of Energy in 1977, which is currently "tasked with maintaining a safe, secure and effective nuclear deterrent and reducing the threat of nuclear proliferation, overseeing the United States' energy supply, carrying out the environmental clean-up from the Cold War nuclear mission, and the 17 National Laboratories" (Department of Energy 2021). Important to note here is the lack of regulatory capacity; neither extraction projects nor pipelines are managed by the Department of Energy. Rather, oil pipelines in the United States are regulated via a number of overlapping departments and agencies at the state and federal level. For the purposes of this analysis, which focuses on the Keystone XL pipeline project, the State Department is responsible for coordinating international pipeline regulation as per Executive Order 13337, signed by President George W. Bush (Bureau of Energy Resources 2020). Like in the Canadian case, territorial jurisdiction plays a huge role in pipeline regulation in the United States; while extraction sites (largely concentrated in California, Texas, Oklahoma, Colorado, Wyoming, North Dakota, and New Mexico) are governed by state regulation, interstate regulation of oil pipelines generally requires each state authority to review the segment within its borders, and for overarching federal authorities like the EPA or the ACE to assess the specific portions of the pipeline under their jurisdiction (McBeath 2016). This results in a much more fragmented regulatory authority than the Canadian system.

In terms of energy security, the United States has long been concerned with reducing its reliance on global oil sources, and in encouraging trade with close allies like Canada in the absence of total energy independence. 48% of American oil imports came from Canada in 2019 (EIA 2019a). Due to the destination and direction of crude oil transport, Canadian regulators do not have same

influence on the American oil sector that American regulators have in Canada. However, Canadian pipeline companies own and operate several of the major interstate oil pipelines in the United States. Canadian and American pipeline regulators are ultimately concerned with securing continuous supplies of oil, although this manifests for slightly different reasons. American energy security is largely concerned with energy independence, whatever form that may take, whereas Canadian energy security is about creating new and maintaining current trade relationships to ensure demand for Canadian oil. However, while both countries address environmental impacts in their pipeline regulatory processes, neither integrates environmental concerns into these energy security imperatives. As the public comment data and compliance documents will show, there is a call for an expanded conception of energy security in both countries, that includes environmental sustainability as well as prioritizing domestic energy demand.

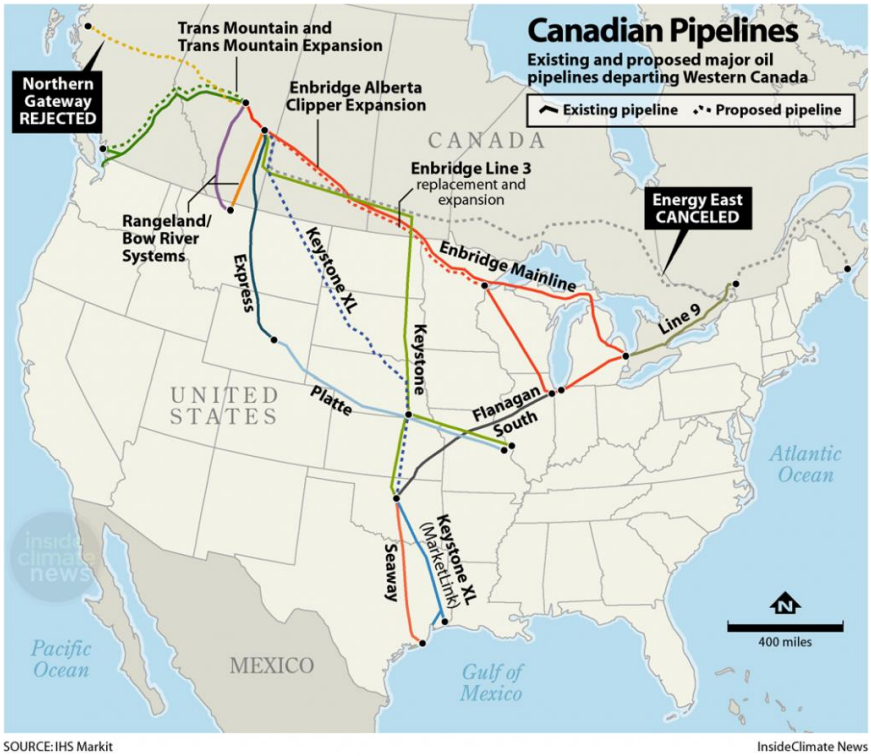

Figure 8: Existing/Proposed Oil Pipelines Originating in Alberta (IHS Markit/Inside Climate News)

3.4 Methods

This paper will compare the interpretation and characterization of energy security within the regulatory processes of two major pipeline projects, one each in Canada and the United States. The Northern Gateway pipeline (NGP), proposed by Enbridge in 2009 and eventually rejected in 2016,

would have run from the Athabasca oil sands in Bruderheim, Alberta, to a new marine terminal in Kitimat, British Columbia, where crude oil would have shipped largely to Asian markets via tankers. The Keystone XL project (KXL), proposed by TransCanada (now TC Energy) in 2008, was rejected by the Obama administration in 2015, re-invigorated by the Trump administration in 2017, and then cancelled again by President Joe Biden in January 2021. KXL proposed to run from its origin in Hardisty, Alberta through Nebraska to refineries in Houston and Port Arthur, Texas. Although this pipeline does originate in Canada and therefore a short segment of the pipeline is subject to Canadian regulatory authority, the focus here will be on the American segment.

A comparative analysis of public comments and regulatory documents for two pipeline projects will constitute the basis for this paper. NGP and KXL are comparable as both are large, controversial projects, rejected after lengthy, controversial regulatory processes. The difference—Canadian versus American regulation—represents the point of comparison and will allow for an examination of energy security within pipeline regulatory governance. Comparative analysis is appropriate for this type of research question, which focusses on understanding complex, context-specific interactions (Furlong and Marsh 2010; Yin 2018)

The data comes from public comments submitted to the NGP process in 2012-2015, and the second KXL process in 2017-2019. Both Canadian and American regulators offer an opportunity for anyone to submit a comment in support of or in opposition to pipeline proposals, although the influence of those comments is limited (Government of Canada 2021; Bureau of Energy Resources 2020). Only a small number of accepted intervenors (often landowners along the route, Indigenous communities, or other organizations that can prove direct impact) officially participate in the assessment process. However, these comments can help us understand the nature of public opposition or support of a project, and in particular reveal the dissonance between how regulators think about energy security as opposed to how the public thinks about energy security.

Given the nature of the data for this project—public comments that focus on individual and collective perceptions of the risks/benefits associated with pipeline operations—it is necessary to acknowledge the literature surrounding the perception of contemporary risks. The risks that these comments address—not just climate change and energy security but also the potential for catastrophic spills, the top-down nature of consultation with Indigenous groups and communities, the long-term exposure of water supplies, the vulnerability of sensitive ecosystems along pipeline routes—are long-term, geographically diffuse, and increasingly unavoidable. However, this literature on risk perception tends to focus on individual and collective discourse-making rather than political

institutions (Beck 1992). This project is ultimately concerned not with the dynamics of risk perception, but with how regulatory institutions respond to those perceptions as they evolve (Sjöberg 1999). The focus here is on institutional interpretation of these complex socio-environmental risks, not on the collective construction of those risks; hence the use of the energy security theory, which has more applicability to institutional dynamics (Goldthau and Sitter 2015a; E. Moe and Midford 2014). Additionally, the subject of analysis here are the regulatory processes themselves, of which public comments are a crucial component; while these comments may, in a future project, have some insights for the nature of risk construction, they also represent the only opportunity for individual, non-affiliated citizens to participate in these regulatory processes.

For this project, 750 comments were each randomly selected out of 5000 for Northern Gateway and over 10,000 for the 2017-2019 round of comments for Keystone XL. These comments were downloaded off of the NEB document depository for Northern Gateway and regulations.gov (the American regulatory document depository) for Keystone XL. Codes were inductively developed according to the nature of opposition or support stated (a full list of codes can be found in Appendix B). Inductive thematic saturation was reached fairly early in the process, with no new codes generated after approximately 100 comments analyzed (Saunders et al. 2018). Additional coding was completed to reach data saturation, where patterns were consistently replicated and a clear picture of the nature of these comments, and so the perceived gaps in regulatory governance were revealed.

This paper was concerned with codes that addressed the Four A's of energy security, and the most relevant were three codes: 'international relations', 'commercial justification', and 'necessity'. The 'international relations' code focused on the relationship between domestic risk and international beneficiaries; concerning the accessibility or acceptability aspects of the Four A's. For instance, KXL commenters were often concerned about the risks they would take on so that Canadian shareholders or Chinese consumers would benefit, or NGP comments discussed the risks to British Columbians where Albertan firms or Chinese and American consumers would benefit. The 'commercial justification' and 'necessity' codes were also used, as they contained discussions of the availability and affordability aspects of energy security. Here, the focus was on concerns about the potential increase of fuel prices if these projects were approved (affordability), and the need for more international pipelines instead of increased domestic production (availability). In addition to these three codes, others related to trade, other sectors, and general economic conditions were scanned to ensure completeness and address any misidentification in the initial coding. The codes analyzed in the paper can be seen in Table 3 below, with a full list available in the Appendices.

Table 3: Codes related to Four A's of Energy Security for NGP and KXL public comments

Name	Description	Comments	References
ECONOMICS	Discussion of revenues/trade/employment as reason for opposition	37	41
COMMERCIAL JUSTIFICATION	Economic benefits generated from pipeline, and desire for domestic production (includes refining capacity for NGP)	29	42
GOVERNMENT	Reference to issues with current government as opposed to the pipeline itself (ie. Trump, Harper)	59	86
INTERNATIONAL RELATIONS	Reference to international socio-economic trends and relationships; often cited with regards to risk/benefit (ie. Canada benefits from KXL, but USA takes on risk)	108	195
NECESSITY	Reference to broad oil supply/demand forecasts, capacity of other pipelines	76	90

These comments are not a perfect facsimile of the public interest; they weigh heavily towards opposition of both projects, there is often a clear lack of understanding of the projects themselves as well as regulatory processes generally, and activist groups tend to be over-represented due to project-specific information campaigns. These public comment periods are the only opportunity for anyone to be involved in the regulatory process; otherwise, it is usually government departments and municipalities or landowners directly along the pipeline route that have some other method of participation. But these comments are heavily skewed towards opposition; only about 10% of comments in both project expressed support, but broader polls of the general public suggest a large amount of passive support. In 2016, 58% of Canadians supported Northern Gateway if all conditions set out by the NEB were satisfied, and 66% of Americans supported KXL under some condition in 2014 (which decreased to 42% in 2017) (Suls 2017; Anderson and Coletto 2016). Indeed, public comment data can produce stronger opinion than polls/surveys, which tend to show more public ambivalence (G. Brown and Eckold 2020). However, public comments are more accessible for most citizens than public meetings or hearings, which usually must be attended in person, therefore allowing for a broader universe of respondents (Rasch 2019).

Despite the obvious bias in the public comments, this data is still useful to identify the nature of the opposition, which defines the gap between institutional mandate and public expectation. Additionally, both these cases had huge numbers of comments submitted—over 2 million for all

phases of KXL and over 8000 for NGP[10]— and several trends emerged, indicating a set of collective issues with energy security. Lastly, this paper is concerned with examining the nature of the opposition to these projects in order to define the boundaries of the governance gap for regulators, for which this dataset is very useful.

So while these comments do not represent the whole universe of public opinion on energy security, but a very specific subset of opposition, they can still help us understand the governance gaps in terms of how contemporary energy security issues are interpreted by regulators. 20% percent of Northern Gateway commenters and 13% percent of Keystone XL commenters opposed the project because they felt the economic benefits of the fossil fuel extraction these pipelines would facilitate would ultimately land in other countries or that the energy policies being pursued were not for their benefit. For the Northern Gateway pipeline, comments largely addressed the ultimate destination of China and other Asian markets for Canadian oil and were concerned that domestic energy security was being abandoned in favour of market diversification. Commenters questioned the necessity of shipping unrefined oil overseas as opposed to refining and consuming oil domestically. Conversely, in the case of Keystone XL, American commenters felt that Canada would reap most of the benefits of the pipeline, as it would increase market access for the Canadian oil sector, while landowners and communities along the route would pay the socio-environmental price.

3.5 Results

There are three key themes that emerge from the public comment data with regards to energy security, although they manifest differently across the cases. Concerns regarding continuous supplies of energy for domestic consumption were raised in both cases, relating to the 'availability' and 'affordability' aspects of energy security. Both cases raised concerns regarding the continued dependence on fossil fuels, proposing that increased investment in renewable energy would increase national energy security and reduce dependence on a traditionally volatile global industry. Lastly, comments raised issues about the nature of trade relationships that were being pursued as a result of these pipelines; in NGP, commenters raised the issue of human rights abuses and lack of

[10] For context, Enbridge's Alberta Clipper expansion in Minnesota (meant to upgrade the pipeline to 800,000 bpd capacity) proposed in 2016/2017 received 90,000 comments; the Trans Mountain Expansion in Canada received about 400 during its initial application process in 2013/2014.

environmental protection in China, whereas in the KXL case comments were concerned with the perceived destination of both Saudi Arabia and China. Ultimately, comments concerned with energy security were largely protectionist in nature, with the idea that if this oil was to be developed, it should be produced by and for Canadians and Americans, respectively.

3.5.1 Expanding Availability: Energy Independence

A common theme in the comment data for both cases addressed the 'availability' and 'affordability' aspects of energy security, as commenters were concerned with ensuring a continuous and affordable supply of energy, ideally produced and refined domestically. In the KXL case, this lines up well with the American pursuit of energy independence as touted by various administrations (Tidwell and Smith 2015; J. Carter 1980; Matthew Huber 2013). However, while there has been rhetoric surrounding a 'true energy independence' in the United States for decades, import/export data suggests that this goal is unreasonable. The United States has always been a net importer of crude oil, although recent discoveries in the Permian Basin have increased its domestic production; 2019 petroleum imports were the lowest since 1954 (Gaswirth et al. 2018; EIA 2019a). In 2019, the U.S. produced about 19.25 MMb/d of petroleum and consumed about 20.46 MMb/d; imports totaled 9.10 MMb/d, 6.8 MMb/d of which were crude oil (EIA 2019a). In addition to consuming these imports, some imported crude oil was refined in the United States and then exported. The United States is the world's largest consumer of oil, and simply does not have the domestic resources to meet demand.

However, the comment data focuses on the perception that Americans would not reap the benefits of oil shipped through KXL, while taking on the burden of socio-environmental risk. The benefit to Canada, and Canadian companies, is frequently touted as a reason to reject the pipeline, since "this is not even oil for the domestic market, a foreign company is using the US and exploiting us by piping the dirtiest crude through our country, to be refined and shipped off to the global market" (KXL 2.1). Additionally, the KXL comments propose that the risk to Americans is not balanced by benefits, stating that "it should be more obvious that the risk associated with this pipeline is even more pointless given the fact that the oil will be exported from a foreign market to other foreign markets. In no way is this pipeline in the interest of the people, but rather oil executives and the politicians that profit them" (KXL 2.2). Additionally, some comments specifically cite the "national security concerns with importing more foreign oil", despite the gap between American energy supply and demand.

In the NGP case, concerns regarding domestic availability of oil were focused largely on refining capacity. Comments questioned the need to ship unrefined crude oil to the United States and Asian markets, only to purchase refined oil to meet domestic demand. Canada has long struggled with a lack of domestic refining capacity; in 2019, 15 refineries processed approximately 1.9 Mmb/d (Government of Canada 2020). Also in 2019, 19% of refined petroleum consumed in Canada was imported, 72% of those imports from the United States (Natural Resources Canada 2020). Petroleum refining in Canada is made more complex by the geographical characteristics of the oil and gas sector; while five refineries in Alberta make use of their proximity to the Athabasca oil sands to refine domestic oil, the nine refineries in Eastern Canada must import crude oil to meet domestic demand (although the 2015 reversal of Enbridge's Line 9 pipeline has increased access to the oil sands for these Eastern refineries)(CBC News 2015). Canadian refining capacity does have access to domestic crude oil and imports what it cannot access domestically. Additionally, the economic justification for additional refining capacity is not clear; consumers generally want unrefined Canadian crude, since different markets have different refining needs, and our closest trade partners have their own refineries which depend on imports. However, there was significant opposition to NGP from trade unions, which cited the lack of jobs associated with shipping unrefined crude oil internationally (Wood and Thistlethwaite 2018). The United States, which is Canada's main customer, has a refining capacity of 18 Mmb/day (as of July 2020), largely in Texas, Louisiana, and California (EIA 2021b). Despite fairly high domestic refining capacity for Canadian crude oil commenters in the NGP process emphasized the need to increase energy independence by keeping Canadian oil in Canada.

Commenters proposed that "I am not quite sure why another part of our country continues to rely on imported oil when we have some within our own country to share. To follow export and international terms and conditions and riding on the wave of "the market" is not good enough." (NGP 2.1). Others focused on the potential jobs that hypothetical new refineries would bring, "I don't get how shipping our oil resources to China helps our Canadian economy. Yes, my home province of Alberta will continue to have plenty of jobs, and a growing oil industry but what about the rest of Canada. Let's be analytical - we ship our raw oil and condensate to China, they use it and ship cheap products back to us" (NGP 2.2). Finally, commenters emphasized that Canada is already overly dependent on crude oil imports, despite the fact that Canada has long been a net oil exporter; "it must be noted that Eastern Canada is essentially fueled by unethical oil bought from those sources that we seek to shift others from consuming. To me, the development of an east-west pipeline network and

upgrading suitable eastern Canadian refineries will have more benefit to Canadians, in terms of energy independence, employment and economic development" (NGP 2.3).

3.5.2 Maintaining Affordability & Reducing Competition

There is a perception in both cases (which skew heavily towards pipeline opposition rather than support) that the construction of the KXL and NGP pipelines would increase fuel prices for Americans and Canadians, respectively. Commenters were concerned that while oil producers would reap the economic benefits of both pipelines, individual consumers would be burdened with higher fuel prices. This reduction in affordability, one of the four central aspects of energy security, played out in both sets of comments. In the KXL case, there is definite concern regarding the potential of the pipeline to increase fuel prices as there is a perception that "KXL will divert Tar Sands oil now supplying Midwest refineries, so it can be sold at higher prices to the Gulf Coast and export markets. As a result, consumers in the Midwest could be paying 10 to 20 cents more per gallon for gasoline and diesel fuel. These additional costs (estimated to total $24 billion) will suppress other spending and will therefore cost jobs" (KXL 2.3). These concerns are paralleled in the NGP case, with commenters emphasizing that "the project would also raise gas prices for Canadians as Canadian refineries would have to compete with Asian markets. This in turn would cause widespread inflation, hurting our economy" (NGP 2.4).

This perception of increased fuel prices is based on the fact that as both Enbridge and TC Energy emphasized in their pipeline proposals, oil prices were expected to increase as a result of these pipelines. In fact, this is possible; if Canadian oil had increased exposure to world oil prices (keeping in mind that currently, approximately 97% of Canadian oil exports are directed to the United States) then oil prices would probably increase, all else being equal. Both NGP and KXL would have increased revenue to oil extractors and owners—leading to a subsequent increase in royalties and tax revenues, which would be an overall net positive for the Canadian economy. Additionally, in the case of NGP in particular, an over-production of oil in the pricing hub of Cushing, Oklahoma resulted in the 'WTI-Brent spread', where prices for oil in North America were below global prices until 2014, when oil prices dropped globally (Millington 2016). In that sense, transporting oil directly to the west coast for Asian markets would have allowed for higher oil prices. The effects on fuel prices for Americans regarding KXL are murkier; it is still Canadian producers that would reap the benefits of increasing exports, but oil prices would still be subject to the pricing hub in Cushing. However, it is important to note in both cases that increased oil prices do tend to lead to higher gasoline costs—but

only negligibly in most cases. There have been episodes where oil price shocks have significantly increased fuel prices (like the 1973 oil crisis), and increases in global oil prices can contribute to increased gasoline prices—we saw in 2005 as oil prices increased, European fuel prices increased between 16-36% over nine months (European Environment Agency 2018). The burden of these price increases is on individuals, while oil producers reap the direct benefits; however, the impact on households is generally small, and there are second-order benefits due to increased tax revenues.

3.5.3 'Acceptable' Trade Partners: Ethical Oil, China, and Saudi Arabia

A final theme of the public comments focused on the acceptability of trade partners involved in the extraction, refining, and consumption of oil sent through the KXL and NGP pipelines. When acceptability is discussed in the energy security context, it is often from the perspective of the energy sources themselves; focus is on the suitability of continued dependence on fossil fuels in a world impacted by global climate change. It is not often discussed in the context of trade partners' human rights records. However, this notion of 'acceptable' trade partners comes up frequently in the public comment data. In the KXL context, commenters point out the benefits that Canadian oil producers will reap while Americans take on the burden of risk, but significant opposition is based on the fact that China and Saudi Arabia are potential beneficiaries of the pipeline as well.

KXL commenters were concerned with the human rights/environmental records of Canada and China, where at least a portion of oil from KXL would be consumed, stating that "Canadian tar sands are easily one of the dirtiest energy sources on Planet Earth. Does China care? No. As Deng Xiaoping used to say, it doesn't (sic) matter whether a cat is black or white, as long as it catches mice. China's leaders are so indifferent to environmental concerns" (KXL 2.4), and that "citizens of the United States should expect to have access to clean water and a Canadian Pipeline created to cross the US to send tar sands to China should not have the right to take that away" (KXL 2.5). KXL was meant to bring oil down from Alberta to the Gulf Coast refineries in Texas, including the Port Arthur refinery (the largest in the United States). In 2017, Gulf Coast refineries exported almost two thirds of incoming products, up from about 38% in 2012 (EIA 2020). The remainder is sold within the United States; despite the protests of opposition, the United States would receive some benefit from KXL, if benefit is defined as increased accessibility of Canadian crude and crude products. The Gulf Coast refineries were the preferred destination for KXL because these large refineries are best equipped to refine heavy crude, like that coming from the Athabasca oil sands. So while a portion of the refined crude products exported from Gulf Coast refineries would likely have been consumed in China,

where environmental regulations are often but not always less stringent than the United States (Nyman 2018; Yao and Herrerias 2014), these petroleum products also would have ended up in Europe, Canada, and within the United States.

The second issue in the KXL case in terms of 'acceptability' of the KXL pipeline and the subsequent processes of refining and exporting relates to the Motiva refinery in Port Arthur, Texas. The Motiva refinery, the largest in the United States, began operation in 1903 and has a capacity of over 630,000 bpd in 2019. In 1989, Saudi Aramco, Saudi Arabia's national oil company, purchased a 50% stake in the refinery, and in 2017 purchased the other 50% to become sole owner. Saudi Aramco's ownership of the United States' largest refinery is a repeated theme in the KXL comment data, as commenters remark that "some may point to the financial benefits of the pipeline. However, the money is not even supporting us. Instead, it goes to a refinery in Saudi Arabia, a country notorious for human rights violations" (KXL 2.6). The implication of these comments is that a country with a history of inadequate social or environmental protections should not benefit from economic relationships with the United States.

Commenters are similarly concerned with the risk/benefit calculation with regards to Saudi Arabia, apprehensive that the United States takes on the burden of environmental risks while Saudi Arabia, via its ownership of the Motiva refinery, is a beneficiary, "how is it in America's interest to transport foreign oil through environmentally sensitive wetlands in North Dakota to an oil refinery owned by Saudi Arabia? It may be in Trump's interest because he and Kushner have business dealings with the Saudis, but it is not in the national interest" (KXL 2.7). Similar to concerns regarding Canada and China, commenters' issues stem from the fact that on a surface reading, the United States takes on the risk of KXL while other countries reap the benefits. However, as discussed above, it is more complex than that, as KXL does contribute to American supply of oil. However, it should be emphasized that these comments are concerned with Saudi Arabia and China on the basis of 'acceptability'—that these countries are undeserving of the economic benefits of such a pipeline—are couched in general anti-globalization sentiment.

The NGP case particularly emphasizes the environmental and human rights records of China. While both cases are large pipelines with global implications in terms of trade and exports, the comments in the NGP case focus on China. Enbridge proposed that diversifying Canada's export partners with regards to oil and gas was one justification for the project, given that 97% of Canadian petroleum exports went to the United States in 2019 (Natural Resources Canada 2020), and that the Canadian sector has been extremely dependent on the United States as an export destination for as

long as Canada has been a net oil producer. The prospect of opening up Asian markets, particularly Chinese markets, via a west coast pipeline and marine terminal was touted as a necessity for diversifying the Canadian oil and gas market. And in fact, the vast majority of oil shipped through NGP would have been shipped to China where it would have been refined and then consumed domestically or sold to neighbouring countries like Japan, South Korea, and eventually further afield to India and beyond (Lemphers and Gilchrist 2011b). Notably, Chinese state-owned energy company Sinopec was part of an international consortium that contributed $100 billion CAD to the project (Tait 2011). However, while this market diversification was one of the central justifications for determining NGP to be in the public interest, Chinese shippers and refineries remained contractually uncommitted throughout the process. Additionally, Chinese refining capacity has proven difficult to determine with vague and incomplete data, leading to concerns regarding where this oil would be going if NGP would be approved, and what the exact economic benefits would be to Canadians.

The secrecy regarding shipping and refining contracts, as well as Chinese investment in Canadian oil sands projects, led to frustration within the NGP public comments. Commenters emphasized that "China has one of the worst environmental destruction records in recent history and the thought of their oil tankers navigating the narrows in and around the many islands from open ocean to the shore at Kitimat is frightening" (NGP 2.5). Additionally, commenters resisted the idea that a country with an unacceptable human rights record should benefit from Canadian natural resources, proposing that the "Joint Review Panel should also consider Asia as a beneficiary(sic) of bitumen supplied by Oil Sands and this Enbridge proposal. China in particular has a terrible human rights record" (NGP 2.6).

In both the KXL and NGP cases, public comment data revealed an emphasis on several facets of energy security, both conventional and novel. Commenters in both cases were concerned about maintaining the affordability of domestic energy and of pursuing energy independence, both of which are fairly classic issues associated with the 'affordability' and 'availability' aspects of energy security. However, while pipelines are often associated with *increasing* the availability of energy (more pipelines=more oil), comments took the opposite road and proposed that fewer pipelines (at least, fewer international pipelines) would produce more energy independence. Lastly, comments emphasized a fairly novel aspect of 'acceptability' in energy security, which tends to focus on the acceptability of one energy source over another (ie. fossil fuels vs. renewable energy). But the comment data emphasized the acceptability of trade partners, with a desire that energy trade should have a more explicit ethical consideration.

3.5.4 The Regulators: Determining the National Interest

In terms of energy security, the regulators themselves—the Joint Review Panel under the auspices of the NEB in the NGP case, and a multi-agency effort coordinated by the State Department in the KXL case—do require for firms to provide a justification for their proposed projects, both in terms of the chosen infrastructure characteristics (the specific routing decisions, placement of tank terminals) as well as the project as a whole. This is represented by firms' submission of alternatives, including 'no-action' alternatives, as well as the regulators final determination of the national interest.

In the NGP case, Enbridge references energy security in a very conventional and narrow fashion; that this pipeline would increase demand for Western Canadian oil producers, focusing on the 'availability' aspect of energy security, while bestowing economic benefit on all Canadians via resource revenues and some regionally concentrated employment opportunities. The initial Northern Gateway application from 2010 states that "the Project is needed to diversify markets for Canadian oil by connecting Canadian oil supply to rapidly growing markets in northeast Asia and elsewhere, which are driving increasing global demand for oil. The Project allows Canada to increase the security of its markets and add significantly to the benefits that Canadians derive from oil exports" (Northern Gateway Pipelines Limited Partnership 2010, 1–3).[11]

As discussed above, concerns regarding the affordability aspect of energy security run rampant through the public comment data. Fuel prices are not addressed by the regulatory process as it is not within its scope, but Enbridge did enlist an external study on the economic benefits of the project for all Canadians, which would (ideally) offset any trickle-down effects of increased oil prices, stating that "although the net benefits to the Canadian oil industry resulting from the Project are very large, total benefits flowing to all Canadians are greater. Wright Mansell Research was retained to provide an independent assessment of the benefits of the Project from a Canadian public interest perspective. Over a 30-year operating period, Canadian gross domestic product (GDP) would increase by $270 billion. Additional labour income would be $48 billion, as a result of an additional 558,000 person years of employment. Federal and provincial governments could collect an additional $81 billion in revenue" (Vol 2, p 1-13). However, while these forecasted monetary gains are indeed beneficial for Canadians, it is worth noting that the vast majority of employment opportunities for NGP (and in fact, most pipelines) are quite short-term and uncertain. Additionally, the Wright

[11] Hereafter, references to the Northern Gateway Application will directly cite Volume numbers within the application; ie. Vol 1, 1-3.

Mansell report is based on a set of very specific assumptions: that environmental policy does not develop to such an extent in the United States that demand for Canadian oil significantly declines; that environmental regulation does not develop to such an extent in Canada that Western Canadian oil production is forced to decline; that Canadian oil sands production almost triple by 2035, far beyond even the Canadian Association of Petroleum Producers' (CAPP) most ambitious forecast at the time (Lemphers and Gilchrist 2011b). In terms of environmental policy forecasting, this report is also obviously skewed against environmental action, suggesting that "some highly visible and effective environmental groups have been very successful in painting the oil sands as an environmental villain, particularly in terms of GHG emissions and this appears to be having some effect on U.S. policymakers" (Vol 2 Appendix 1-5).

Contrary to some of the views espoused in the public comments regarding the ethics of expanding the oil trade with China, Enbridge emphasized the benefits of market diversification that would result from increased access to China, Japan, South Korea, Taiwan and beyond. A conventional and narrow interpretation of the 'availability' aspect of energy security focuses on consistent demand and supply—for net energy exporters and importers, respectively—which an emphasis on oil market diversification aims to improve. Enbridge focused extensively on the potential exports to these markets via NGP, proposing that for the four countries listed, "the opportunity for Canadian-sourced supply to be approximately 278,700 m3/d (1,750 kbpd). This demonstrates there is ample refining capability for processing Canadian crude oil in targeted markets today without contemplating refinery conversions or additions that may occur in the future" (Vol 2 sec 1.3). Currently, China, Japan (the largest importer of crude oil in Asia), South Korea, and Taiwan are mostly supplied by Saudi Arabia, through longer and more constricted shipping routes than NGP (Vol 2, sec 1.3). Additionally, Enbridge projected increased access to refining areas on the west coast of the United States, many of which were already refining Canadian crude oil imported from the Trans Mountain pipeline and via tanker (Vol 2 sec 1.3), offering an alternative American destination than the Gulf Coast refineries.

However, while Enbridge touted the benefits of northeast Asian trade relationships in its application for NGP, no long-term contracts with any entities based in these countries were made public at any point during the regulatory process. The lack of demonstrated demand for NGP, combined with an air of secrecy regarding several of Enbridge's "Funding Participants"—referred to simply as a group of Canadian producers and East Asian refiners—feeds into issues of public perception. The lack of transparency surrounding NGP's funding participants, coupled with increased

investment into the Canadian oil sands from Chinese firms, fueled concerns regarding China's intentions for Canadian oil—whether it would be refined and sold on the open market, or offered at a discount to the domestic Chinese market (Lemphers and Gilchrist 2011b; Lee and Canadian Centre for Policy Alternatives 2012). Due to Enbridge's confidentiality agreements with its Funding Participants and a general lack of data regarding Chinese refining capacity, there is little evidence to support either viewpoint.

In the KXL case, the justification for the project in terms of energy security was articulated in the several documents from both the initial national interest determination in 2014 and the re-invigorated process in 2017. In the 2015 Record of Decision (ROD), the State Department emphasized that "no statute establishes criteria for this determination", with regards to the national interest, and that "the Secretary has considered a range of factors, including but not limited to foreign policy; energy security; environmental, cultural, and economic impacts; and compliance with applicable law and policy"(Department Of State 2015, 3).

Regarding the 'availability' variable of energy security, the ROD emphasized that any one pipeline project, including KXL, was unlikely to have significant impact on the rate of extraction in the Western Canadian Sedimentary Basin, and acknowledged the uncertainty of forecasting oil production and prices. The impact of one project, even one as large as KXL, on general oil development trends was negligible and difficult to determine because "the dominant drivers of oil sands development remain more global than any single infrastructure project. Oil sands production and investment could slow or accelerate depending on oil price trends, regulations, and technological developments, but the potential effects of those factors on the industry's rate of expansion need not be conflated with the more limited effects of individual pipelines" (Department Of State 2015, 11). The State Department in their determination took a macro view of energy availability, pointing out that where one pipeline failed, others would succeed as long as demand exists. Other government departments contributed to the determination, and the Department of Energy's 2015 memorandum is the most relevant with regards to energy security. The Department of Energy addressed issues of availability directly, stating that "Keystone will not appreciably change the current constraints of the US refinery system or the distribution of refined product (which increasingly relies on access to heavy crude)" (DOE 2015). Additionally, the DOE emphasized that as long as Canadian oil is extracted, even if it is not transported directly to American refineries, American energy security would be stable, "the security of the supply side - with a large portion of Canadian crude expected to flow to the US either by rail (as it is doing now), by barge, or even from coastal Canadian terminals supplied by

Canadian pipelines that then supply US refineries through tanker - are all likely to continue. If Canada decides not to move the oil to the US, but rather to export it to the global market through new Canadian port facilities, that will result in additional supply in the global system - essentially adding to US security, even if more indirectly"(Department of Energy 2015, 4). The Department of Energy is referencing the NGP project here, which had not yet been cancelled, as well as the Trans Mountain Expansion project. The Department of Energy also extends its comments on energy security beyond the conventional issues regarding continuity of supply and demand, and references statements from the G-7 groups in 2014 regarding the 'acceptability' dimension of energy security, which proposed that "reducing greenhouse gas emissions and accelerating the transition to a low carbon economy [are] key contributors to enduring energy security" (G7 Rome Energy Ministerial Meeting 2014) Further on the question of availability and accessibility, which Enbridge stressed in its regulatory application, the KXL national interest determination takes into account significant market opportunities. The 2014 ROD stresses the volatility of oil prices, coupled with the relative resiliency of Canadian oil production despite this volatility, as a reason to decouple analysis of KXL from the North American oil market as a whole (Department Of State 2015). The ROD also points out that unless oil prices consistently fall below $20-40 per barrel, existing extraction projects are unlikely to shut down, and therefore concurs with the 2014 Supplemental EIS that any one project will have negligible effects on the industry as a whole, due to existing pipeline capacities and (admittedly uncertain) production forecasts (Department Of State 2015, 11).

It is worth noting that while several government departments and TC Energy itself prepared comments in support of the national interest determination, these comments were not always ideologically aligned; the Market Analysis documents emphasized the impact of KXL on industry and future oil prices in particular, where the Department of Energy and State Department downplayed these impacts. Conversely, in the Market Analysis section prepared by TC Energy, the need for stable sources of crude oil for Gulf Coast refiners was identified, stating "there is existing demand by Gulf Coast area refiners for stable sources of crude oil….Currently, refiners in the Gulf Coast area obtain heavy crude oil primarily via waterborne foreign imports, but the reliability of those supplies is uncertain because of declining production and political uncertainty associated with the major traditional suppliers, notably Mexico and Venezuela. The additional supply of light crude oil from formations like the Bakken is expected to enable domestic refiners to reduce their imports of more expensive (light and possibly medium gravity sweet), imported waterborne crude oil" (Vol 1.4, 8). Interestingly, TC Energy also references the "acceptability" of trade

partners here, although directs its reservations towards Mexico and Venezuela as opposed to China or Saudi Arabia.

The re-application process under the Trump Administration, which culminated in the 2017 Record of Determination in favour of KXL, utilized almost all of the same documents as the Obama-era process, with small edits throughout. Most notably for issues of energy security, the 2017 ROD added that

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> *"the [State] Department finds that the proposed Project will meaningfully support U.S. energy security by providing additional infrastructure for the dependable supply of crude oil. Global energy security is a vital part of U.S. national security…. historically, oil has been a major source of U.S. energy security concerns due to our relatively high volume of net imports, and oil's economic importance and military uses. Such concerns are well founded. Over the past year, crude oil supply disruptions internationally have trended noticeably higher when controlling for Iran's return to the international oil market….Canada has a low likelihood of political unrest, resource nationalism, or conflict—above-ground factors that sometimes disrupt oil production in other regions….Moreover, as the Canadian Government's conditional approval of the Trans Mountain pipeline illustrates, failure to approve new transboundary pipeline infrastructure may redirect this source of reliable supply to Asian markets" (State Department 2017, 27–28)*

It is worth noting that this document does not provide data for its assertion that the frequency of crude oil supply disruptions had increased due to increased production from Iran, which did increase oil production from 2015-2018 but not beyond historical fluctuations since 1990 (Trading Economics 2020). Lastly, the 2017 ROD significantly reduces engagement with the issue of climate change, stating only that approving the project would not undermine American climate change efforts domestically or abroad.

3.6 Discussion: Using Regulators to Support Political Goals

There are several crucial differences between the American and Canadian cases. First, since cross-border pipelines are solely executive decisions in the American context, there is no legal requirement to line up with NEPA or other legislation, although as a matter of convention these regulations are

often consulted. In the Canadian case, all interprovincial and international pipelines are subject to the same legislative requirements despite the executive role in ultimately accepting or rejecting the recommendation of the NEB. Second, in Canada the firm (or its contractors) prepares the Environmental Impact Statements, records of community consultation, and market analysis; in the American process several entities (including the firm) prepare contributions, although the State Department makes the final decision. It cannot be concluded that government-led impact assessments are more or less robust in these cases, but private firms have different interests than governments, which have competing internal interests. These competing interests can certainly affect the preparation of regulatory documents; for instance, Enbridge emphasized the importance of NGP to the wider Canadian oil sector, whereas the State Department explicitly acknowledged that one project would not make or break the oil industry. However, this does support the outsize role of Cabinet in the American context specifically; not only is the State Department leading the regulatory process, but other departments prepare most of the assessments and advice. There is no veneer of procedural independence in the United States, while in the Canadian context Cabinet still has veto power, there are instances where the NEB provides advice contrary to Cabinet decisions, as in the NGP case which the NEB approved subject to hundreds of conditions. In the United States, the production of these complex technical socio-environmental assessments is crucial for maintaining transparency and safety standards; but these regulatory assessments support the preference and broader political goals of Cabinet and the President. By comparison, the Canadian regulators are explicitly accountable to their own mandate and process, although Cabinet still maintains veto power.

These bureaucratic processes point to another underlying difference between Canada and the United States; the role that executive power plays not just in approving or rejecting these projects, but in deciding which issues are worthy of in-depth analysis. In both the NGP and KXL cases, executive power ultimately made the final decision to reject the pipelines. In the NGP case, Liberal Prime Minister Justin Trudeau confirmed the cancellation of the project after years of judicial challenge at both the provincial and federal level. In the case of KXL, also after years of controversy regarding Indigenous rights and environmental conservation, Democrat President Barack Obama rejected the project; after his election, Republican President Donald Trump approved it; and in January 2021 Democrat Joe Biden again cancelled the project, primarily citing climate change concerns as reason to reject KXL. Despite overtures of regulatory independence, particularly from the NEB, it is clear that decisions on these large pipeline projects are ultimately in the hands of the executive, divorcing these regulatory decisions from any sense of non-partisanship.

This lack of 'objective' regulation can be seen in the ways that the ROD from KXL framed energy security broadly in 2014 and then 2017; although the documents are almost identical, the Republican administration simply dismissed Democrat concerns regarding climate change and community consultation and proposed their own version of events that prioritized industrial development and strengthening ties with proven allies like Canada. And the fact that these decisions are made not by regulators, but by Cabinets, is partially due to the ways that regulators define (or, in this case, do not define) controversial issues like energy security. The narrowness of regulator's interpretation of energy security, focused on continuous supplies of affordable oil resources, raises questions about the legitimacy and decision-making capabilities of these institutions. If regulators cannot satisfactorily account for issues like energy security, then decisions are either overturned (as in NGP) or re-assessed (KXL). Neither of these decisions was made solely on grounds of energy security, but as one component of a vast network of opposition. We cannot know the outcomes if energy security was interpreted more broadly and sustainably, but many of the criticisms of these projects may have been dealt with, or the projects themselves cancelled earlier with much less firm investment or regulatory volatility.

There are also clear divisions (and points of agreement) between how the public comments submitted for both projects interpret energy security, and how the regulators and governments of the time interpret the same issue. In the KXL case, for the Democrats, climate change was the most pressing energy security issue, whereas for the Republicans in 2017, ensuring continuity of supply from a trusted and stable ally was of the upmost importance. But the public comments from the second KXL process indicate that, much like the initial 2014 ROD indicated, climate change as an issue of 'acceptability' in energy security ultimately renders the project unacceptable. The Democrats in 2014 and 2021 agreed with this sentiment; the Republicans in 2017 did not. Interestingly, there is a significant point of agreement between the 2017 State Department ROD and the public comments, despite the majority of commenters expressing their opposition to the Trump Administration generally. In both the public comments and the 2017 ROD, encouraging energy independence and affordability were cited as areas of concern. The Republican State Department interpreted these concerns to justify approving the project; public comments conversely opposed the project due to a perceived lack of benefits for Americans.

In the NGP case, the divisions between firms, regulators, and public comments are clearer. Public comments denounced the building of a pipeline solely for exporting crude oil on the grounds of a perceived lack of refining capacity, and like their American counterparts, questioned the benefits

for Canadians. Conversely, Enbridge and the NEB emphasized the potential (although uncertain) economic and employment benefits that would result from the project, and in particular framed the diversification of export partners as a primary reason for approval. Ultimately, the Liberal Trudeau government cancelled the project on grounds of negative impacts to Indigenous communities and vulnerable ecosystems rather than conventional energy security concerns.

Lastly, and most novel in discussions of energy security, is the notion of 'acceptable' trade partners. Neither the United States nor Canada have been particularly circumspect when it comes to cultivating trade partners in the oil sector; while sanctions are often applied to individuals (and even more rarely, an entire country) in response to human rights abuses, this rarely translates to the widescale circumvention of oil exports to a particular state. In energy security scholarship specifically, 'acceptability' usually refers to the type of energy source that is being extracted/consumed, or the inequities inherent in one type of energy extraction vs. another, rather than which regime is doing the extracting/consuming. In particular, there has been significant attention paid to the acceptability of continued dependence on fossil fuels in a world increasingly impacted by climate change (Bradshaw 2014; Proedrou 2018). Additionally, scholarship on energy poverty—discussing which groups have access to certain types of energy, which groups would be disadvantaged by transitions to alternative energies—propagates the energy security niche (Benjamin K. Sovacool 2012b; Ali et al. 2020). However, the public comments from NGP and KXL bring up a relatively new aspect to this discussion of acceptability; how do we decide which regimes are 'acceptable' trade partners, and how do we balance a principled approach to trade with other aspects of energy security, like affordability or accessibility? These questions are beyond the scope of this paper, but it is worth noting that these questions do not disappear with a transition away from fossil fuel dependence. The fact that both Canada and the United States have elected to cast a wide net for their energy trade partners suggests that for most states, the economic benefit of natural resources outweighs the moral pitfalls of pursuing trade relationships with certain regimes. This is not to say that the concerns of these public comments, which mostly tout isolationist (and often racially charged) adages about the dangers of China and Saudi Arabia should be taken as a blueprint for foreign policy, but rather to reveal an under-explored aspect of energy security and to emphasize the 'oil development equals energy security' mindset of most Canadian and American governments for the last several decades, regardless of the colour scheme of the executive.

3.7 Conclusion

Relying on the "Four A's" framework of energy security, with particular attention paid to the aspects of 'availability' and 'acceptability', this paper investigated the interpretation of energy security by oil pipeline regulators and the governance gap between these institutions and the public interest they claim to represent. Analysis of the public comment data revealed several points of similarity between the NGP and KXL cases. Commenters in both cases were concerned about the energy independence of their states, with an emphasis in the NGP case on increasing domestic refining capacity (as opposed to shipping oil to Asia for refining/selling, as NGP proposed to do), whereas the KXL commenters desired an increase in domestic oil extraction, refining, and consumption. These comments did simplify or disregard some facts of the global energy marketplace; Canada does refine a significant amount of oil (and produces more than domestic demand), and the United States produces a lot of oil (although not enough to satisfy domestic demand). Additionally, the goal of 'energy independence' may be at odds with concerns regarding affordability, which were also examined in both cases. Finally, and most novel for theories of energy security, both sets of comments revealed an unwillingness to allow certain states to receive the benefit of these pipeline projects; namely China and Saudi Arabia, whose NOC owns the largest oil refinery in the United States. It is worth noting, however, that many of these types of comments proposed reduced trade relationships with these countries on the one hand, while touting xenophobic ideologies directed at these states on the other; hardly the stuff of ethical trade policy. But ultimately, oil producers want to sell to those who will buy. And this particular trend in the comments tells us that people are thinking about the consumption of these fossil fuel products in addition to the extraction and transportation, which presents a potential new facet of 'acceptability' in energy security theory.

Conversely, regulators addressed these issues of availability and acceptability from a much different perspective; in both the NGP and KXL cases, the prospect of market diversification (from both a demand and supply perspective) was frequently utilized as justification for the projects, and the potential economic benefits were proposed to outweigh any changes in fuel prices that would result from the pipelines' operation.

So what does this tell us about how regulators are interpreting energy security? Ultimately, regulators are (for the most part) emphasizing narrow and conventional interpretations of energy security, focused on maintaining continuity of a relatively inexpensive supply of oil. Market forecasts submitted to regulators do reckon with the rise of renewable energies but are ultimately dismissed due to projections that oil demand will continue to increase globally (mostly in India and China) until at

least 2050. The outsize role of Cabinet in the decision-making process means that regulatory advice is either in service of (in the United States) or secondary to (in Canada) broader energy security goals. The trends identified in the public comment data indicates a desire for energy security to be characterized more sustainably and equitably, but this is not paralleled in pipeline regulators nor in the regimes that ultimately make the decisions.

This project has a few limitations to consider, which may be mitigated in future research. First, only two pipelines were compared, and so broader conclusions about the changing relationship between fossil fuel development and energy security cannot be drawn. However, KXL and NGP were two large, controversial pipelines, and the lessons learned here may be replicable in future case studies, paving the way for those types of discussions. Second, and has already been discussed, is the bias in public comment data against these projects. There is a great deal of utility in these comments, and the issues raised in them are important for the way that we assess energy security; but they represent one piece of the puzzle, and most Americans and Canadians are not overly concerned about the energy security implications of oil pipelines. So, while this opinion data can tell us a lot about the perceived governance gaps regarding energy security and pipelines we need to be cautious not to take this microcosm of opinion as representative of the whole population. There are several avenues for future research beyond additional case studies. An investigation of how these energy security issues play out in other contexts like fossil fuel extraction sites and renewable energy developments would give more nuance to the increasingly complex ways that scholars, institutions, and citizens conceive of energy security.

There is a disconnect between these regulators, the citizens they represent, and the administrations they serve. In the public comment data, we see a much broader set of energy security concerns, ranging from climate change, ethical trade, and lack of direct economic benefit for those that take on the risks of these pipelines. And in both cases, governments rejected or cancelled these projects; in the Canadian case, indicating a regulator that is out of step with its own government, and in the American case, emphasizing the ideological and political basis of these international pipeline decisions, since they are coordinated by the State Department. In both cases, we see that these regulatory institutions suffer from a lack of mandate and lack of capacity, and are largely unwilling or unable to address contemporary and complex energy security issues.

Chapter 4
In whose Interests? Interpreting the Public Interest in Pipeline Regulation

Oil pipelines have been the subject of intense contestation in the last several decades. Regulatory mechanisms that are responsible for assessing the socio-environmental impacts of these projects have failed to do so in a manner that satisfies environmental, social, and cultural civil society groups who argue that the risks of these projects far outweigh the supposed economic benefits. This paper will argue that while the issues that these regulatory mechanisms have been asked to address have evolved, the opportunities for public participation and for the representation of the public interest have not evolved concurrently or to the same extent. Two case studies, the Northern Gateway pipeline in Canada and the Keystone XL pipeline in the United States, will be compared for their interpretation of the public interest. Qualitative content analysis will be used to analyse public comments submitted for both projects, as well as regulatory compliance documents prepared by the firms/regulators themselves. Regulators rely on narrow definitions of their public interest mandate which no longer reflect many of the concerns that the public has about the risks of these pipelines. It will be concluded that despite significant organizational evolution, these institutions still fail to integrate broad socio-environmental concerns in any meaningful way, and their advice is ultimately secondary to executive decision-making, despite a façade of institutional independence and non-partisanship.

4.1 Introduction

Oil pipeline regulators in both Canada and the United States rely on 'science-based' regulation to identify risks to local communities and assess whether these projects are in the public interest. These types of risks are the most obvious, due to their immediate and direct impact (for instance, a pipeline rupture near a town's water supply), however there is a significant portion of the public that is opposed to these projects on the grounds of more diffuse and indirect risks. Issues like climate change, energy affordability, Indigenous rights, and ecosystem degradation are all increasingly salient issues in the public interest, as is shown by consistent contestation via protest and other large activist movements in the past decade. However, the interpretation of these complex, cross-jurisdictional issue by pipeline regulators has not evolved in step with the public perception of these risks. This paper will use theories of regulatory capitalism and the public interest to investigate how the Canadian and American regulatory processes for oil pipelines have characterized the public interest in their decision-making processes. Ultimately, oil pipelines in both countries rely on "science-based" regulation to identify risks to local communities, largely to do with spill potential and accident response measures (Doern, Prince, and Schultz 2014; McBeath 2016; Carpenter and Moss 2013). These types of risks are the most obvious and direct, but the emphasis on this narrow lens of social and environmental impacts disregards detrimental effects which occur beyond the temporal and

spatial scope of spills and accidents which occur on the pipeline route, like climate change or broader ecosystem degradation. However, there is a significant portion of the public that is opposed to the construction and operation of new major oil pipelines, whose concerns are a matter of public record but rarely formally addressed in the regulatory process of either country. Energy regulation was originally conceived as largely economic in both the United States and Canada. Only since the 1970s/1980s have concerns regarding the public interest and public participation become the motivating factor behind regulation, as civil society groups and individual citizens became increasingly concerned with the socio-environmental impacts of these infrastructure projects (Doern, Prince, and Schultz 2014; McBeath 2016).

This paper will argue that while the issues that these regulatory mechanisms have been asked to address have evolved, the opportunities for public participation and for the representation of the public interest have not evolved concurrently or to the same extent. Two case studies, the Northern Gateway pipeline in Canada and the Keystone XL pipeline in the United States, will be compared for their interpretation of the public interest. Qualitative content analysis will be used to analyse public comments submitted for both projects, as well as regulatory compliance documents prepared by the firms/regulators themselves.

This paper will begin with an overview of the regulatory processes in the USA and Canada, both of which were developed largely to address economic concerns and have now evolved to deal with social and environmental issues. It will then move to an in-depth discussion of trends identified in public comment data—the nature of these perceived gaps in the regulatory process, if/how they are addressed, and how industry (in these cases: Enbridge and TransCanada) have responded. Theories of public interest regulation and regulatory capitalism will be used to explain these developments—in short, that these mechanisms were not adequately designed to represent the public interest but rather to promote oil and gas development, resulting in a state of co-regulation between government and industry in pursuit of a specific economic goal, rather than a system of rule-setting and enforcement in pursuit of representing the broader (and more nuanced) public interest (Braithwaite 2011; Levi-Faur 2005; 2013; Carrigan and Coglianese 2011; Levine and Forrence 1990; Pal and Maxwell 2004). The paper will proceed with a discussion of public risk perception, public interest regulation, and regulatory capitalism in order to set the boundaries of the public interest and mandates of regulatory institutions. Then, an overview of the two pipeline regulators in question, the National Energy Board (NEB) and State Department, will be given with particular attention to how these institutions have been inherently political since their creation. Finally, major trends and themes from the public

comment data will be examined, and compared to other facets of the regulatory process in order to expose the governance gaps between how these regulators characterize the nature of the public interest, and how that characterization fails when applied to increasingly cross-jurisdictional and indirect impacts of oil pipelines. It will be concluded that despite significant organizational evolution these institutions still fail to interpret their public interest mandate in ways that address many significant public concerns, and their advice is ultimately secondary to executive decision-making, despite a façade of institutional independence and non-partisanship.

4.2 Regulating Risk: Public Interest and Public Perception

4.2.1 Public Perception of Risk

The public comment data used this for this project focuses on individual and collective perceptions of the risks/benefits associated with pipeline operations, so we must situate this data within the literature on risk perception despite the analytical focus on institutional dynamics. The analytical focus is on regulatory institutions, of which these comments are an integral component. The literature on risk construction and perception is less useful for analyzing these institutional processes, although it does help contextualize the environment in which these issues are becoming increasingly salient (Hood et al. 1999; Sjöberg 1999). Risk perception scholarship tends to focus on the complexities of collective risk creation, rather than on political institutions, although public trust of institutions is a factor on risk perceptions (E. K. Smith and Mayer 2018). This project is ultimately concerned not with the dynamics of risk perception, but with how regulatory institutions respond to those perceptions as they evolve. The focus here is on institutional interpretation of these complex socio-environmental risks, not on the collective construction of those risks; hence the use of regulatory capitalism which has more applicability to institutional dynamics. Additionally, the subject of analysis here are the regulatory processes themselves, of which public comments are a crucial component; while these comments may, in a future project, have some insights for the nature of risk construction, they also represent the only opportunity for individual, non-affiliated citizens to participate in these regulatory processes.

The uncertainty that accompanies many of these new threats, especially a complex problem like climate change, has led to a re-conceptualization of security dynamics, away from the ‘state vs. human’ security debate and towards ideas of threat prevention and management. Sociologists Ulrich Beck and Anthony Giddens suggested the idea of a ‘world risk society’ as a new paradigm for these

contemporary security relationships (Beck 1992; Giddens 1999). Ulrich Beck defined the world risk society as "a systematic way of dealing with hazards and insecurities induced and introduced by modernisation itself" (Beck 1999, 146); Beck suggests that this society is characterized by a greater number of risks that are unbounded and potentially catastrophic, that can affect regions beyond where they originated (Beck 1999). Climate change and energy security fit this description well, particularly because Beck defined the risk society partly in response to his own work on ecological disasters. Beck stated in 2006 that previous iterations of risk were based on "the scientific utopia of making the unsafe consequences and dangers of decisions ever more controllable; accidents could occur, as long as and because they were considered as compensable", but in our contemporary risk society, this idea of compensation "breaks down and is replaced by the principle of precaution through prevention" (Beck 2006). Giddens emphasized the shift from natural to technological or manufactured risk, which are effects of scientific/technological knowledge and political decision-making (Giddens 1999). This "end of nature", where almost all natural processes are affected by human decision-making, represents a turning point in our perception of risk as "we stopped worrying so much about what nature could do to us, and we started worrying more about what we have done to nature" (Giddens 1999).

This idea of the risk society and the end of nature feeds directly into the issues identified in these public comments. As psychologist Paul Slovic noted, the way that individuals perceive risk is based on a variety of internal and external forces: the inability to understand probabilistic occurrences, biased media reporting, emphasis on personal experiences, and anxieties related to uncertainty (Slovic 1987). Additionally, economic interests, cultural values, and intuitive biases also play a role in risk perception (Kasperson et al. 1988). This construction of risk is obvious in the comment data; commenters cited previous oil spills (like the 2010 Kalamazoo River spill in Michigan) as a reason to deny these newer pipeline proposals, despite increased requirements for pipeline integrity for both KXL and NGP and the unlikelihood of such large spills. While risk perception is a result of all these multiple and coinciding factors, technical risk assessment tends to focus more narrowly on the probability of an event, and the magnitude of its consequences (Kasperson et al. 1988). This tends to leave impacts that will affect the future, or affect space beyond a specific local boundary, out of risk assessment; and this is certainly reflected in the procedures for both regulators under examination here. An emphasis on short-term, localized impacts by institutions has left many, with a more complex (although sometimes distorted) perception of the risks posed by these pipelines, to believe that these institutions are not acting in the public interest. This paper asks

these questions from the institutional side, examining the purpose of such narrow definitions of risk and impacts, and the consequences of failing to apply a broader interpretation of the public interest.

4.2.2 The Public Interest and Regulatory Capture

The contemporary regulatory state largely rests on the concept of the 'public interest'—the idea that state-sponsored regulation is meant to protect social welfare as opposed to private stakeholder interests—known as the public interest theory of regulation (Posner 1974). Beginning in the 1950s in most wealthy industrialized nations (including Canada and the United States), consumer safety was given serious consideration in sectors like agriculture and food production, and environmental site assessments and hazard assessments were integrated into the regulatory compliance process for a variety of large infrastructure projects, including oil pipelines (Doern, Prince, and Schultz 2014). The broad trend was towards regulatory agencies that were more inclusive of consumer safety, environmental sustainability, and measures to reduce vulnerability in an effort to both protect the public and encourage economic growth (Levine and Forrence 1990).

However, while there was a proliferation of regulatory mechanisms in the post-war period and the pursuit of the 'public interest' was recognized as an explicit goal of regulation, in practice the operation of regulatory governance was seen to be less than ideal. Criticism of the public interest theory intimated that the idea was overly normative, and did not reflect real-world experiences (Levine and Forrence 1990; Laffont and Tirole 1991). Access to regulatory mechanisms can be restricted to political and economic elites; inefficacies in the system can privilege certain technologies and innovations over others; regulatory bodies can be manipulated by the very actors they are meant to regulate (Levine and Forrence 1990). The presence of such failures in the regulatory state led to the rise of alternative explanatory theories, more positive than normative, the 'economic theory of regulation', or capture theory, principal amongst them.

Fundamentally, capture theory is the idea that in practice, regulatory mechanisms can evolve to facilitate private interests over the public interest (Stigler 1971). Many empirical studies of the regulatory capture phenomenon focus on institutions that were created to ensure the public good, but whose mechanisms have been manipulated by powerful, well-organized private sector actors (Portman 2014; Carpenter and Moss 2013). This theory came to prominence in the 1960s, with the work of economists like George Stigler, Anthony Downs, Mancur Olson, and George Tsebelis, and has remained a fundamental pillar of regulation theory since. This work has several central tenets: that private sector actors are no different than individuals and will pursue advantageous policies; that

these actors can coordinate better than other civil society groups; and that regulation is itself a product that can be acquired by industry (Downs 1957; Olson 1965; Stigler 1971; Tsebelis 2002). It should be noted that 'capture' is not a dichotomous condition, but a scalar one.

Capture theory proposes that the regulatory state, despite good intentions, can be manipulated by private sector interests. This has serious implications for North American energy infrastructure, due to the oft-controversial nature of contemporary pipeline projects and increasing uncertainty regarding regulatory processes, especially in Canada where most large pipelines proposed in the last decade have failed after years of contestation. However, while industry influence on regulatory agencies is undeniable in some instances, the strength of this influence ebbs and flows across regimes, administrations, and institutions (Carrigan and Coglianese 2011). Both public interest regulation and capture theory seek to analyze the purpose of regulatory mechanisms and the interaction between the regulator, the regulated, and the consumers of the regulated product. The theory of regulatory capitalism goes one step further, suggesting that these institutions were not created with the public interest in mind, but that these institutions were in fact created to facilitate industrial development and growth rather than constrain these activities in any meaningful way.

4.2.3 Regulatory Capitalism

As a critical counterweight to public interest and capture theories, the theory of regulatory capitalism suggests that the goal of regulation is not to protect the public good (even under capture theory, regulatory agencies rarely start out captured), but rather as a tool of capital accumulation (Drahos and Braithwaite 2001). As defined by David Levi-Faur, regulatory capitalism suggests that "regulation made, nurtured and constrained the capitalist system and capitalism creates the demand for regulation" (Levi-Faur 2017). In regulatory capitalism, the links between political economy and regulation scholarship become most explicit due to the emphasis on the state-market relationship as cyclical and interdependent (Levi-Faur 2005). Under a framework of regulatory capitalism, regulatory mechanisms are one of many institutions that constitute the capitalist state, and can be manipulated to cultivate strategies of commodity accumulation, the raison d'être of capitalism.

In the 1990s, after a period of de-regulation in the 1980s in most liberal democracies, a kind of "regulatory explosion" took place, with a rapid and sharp increase in the number and mandate of regulatory agencies (Braithwaite 2008). To some scholars, notably John Braithwaite, David Levi-Faur, and Jacint Jordana, this represented a shift in the way we think about regulation; the concept of the 'regulatory state' seemed to place too much emphasis on state actors, without accounting for

broader global social/political/economic forces; but neither public interest regulation nor capture theory could explain this rapid expansion in regulatory services(Braithwaite 2008; Jordana and Levi-Faur 2004; Levi-Faur and Jordana 2005a; Levi-Faur 2017). So the theory of 'regulatory capitalism' was instead proposed; that regulation was increasingly transforming into a part of government, with all its associated ideological accoutrements, rather than an administrator to ensure the provision of public and private services (Jordana and Levi-Faur 2004; Braithwaite 2008).

Regulatory capitalism pushes back against the idea that neoliberalism has been the guiding institutional principle of politics since the 1970s. Neoliberalism as a concept is somewhat contentious in both scholarship and beyond; but broadly, under a neoliberal directive, there is a tendency towards privatization, deregulation, and 'small government' (Castree 2008b; MacNeil 2014a; McCarthy and Prudham 2004). And there were deregulatory impulses in the 1980s across the world; as evidenced by the Thatcher regime in the UK and Reagan administration in the US, the Mulroney Conservatives in 1984, and beyond in Europe, Latin America, and Australia (Quirk and Derthick 1985; Braithwaite 2008). But as Levi-Faur and Jordana posited, the regulatory explosion in the 1990s suggests that deregulatory impulses were short-lived; we have been in a broad period of 're-regulation' (in terms of regulatory agencies and rule-setting) for decades (Jordana and Levi-Faur 2004).

In summary, regulatory capitalism takes this notion of regulation as a tool of state power one step further, intimating that increased regulation, both from within the state and without, actually further entrenches global capitalist power structures by privileging large multinational corporations (MNCs). These firms are often well-equipped to satisfy a heavy regulatory burden and they have the technical expertise and financial resources to propose regulations that privilege their business development. Regulatory capitalism, and this is borne out by the evolution of regulatory institutions globally, suggests that both markets and the state have become stronger, and regulatory institutions have evolved to strengthen the state-market relationship rather than act as a bureaucratic bulwark between the two. The state increasingly shares governance with non-state actors (like industry associations, NGOs, civil society organizations, etc.), but the wealth and market power that is produced under contemporary capitalist structures in turn gives states the capacity to regulate more than ever, therefore maintaining its own power over market forces.

4.3 The Politicization of Pipeline Regulation

Energy regulation was originally conceived as largely economic in both the United States and Canada, and the economic factors of regulation (ie. setting toll and tariff rates) remain central to the

process in both countries. To “intervene” in the regulatory process in the United States and Canada, a person or organization must prove a direct impact of the proposed pipeline, and the burden of proof is high. In the Northern Gateway process, the vast majority of intervenors represented municipalities or landowners that were geographically located directly along the pipeline route. In the Keystone XL process, the opportunities to participate meaningfully are even fewer; for the most part, only federal agencies and some Indigenous groups can officially participate; most other engagement is via legal challenge. For all other Canadians and Americans who feel impacted by a proposed project, there are multiple opportunities to record a public statement of support or opposition—which are theoretically available to regulatory agencies throughout the process—in practice these are rarely addressed explicitly. Ultimately this is where accusations of regulatory capture or failure come to light; these processes define ‘impacts’ extremely specifically and locally (usually disregarding broader second-order impacts that occur outside of a certain region, like climate change or ecosystem degradation), shutting out interested parties which do not operate directly on the pipeline route, whereas industry stakeholders have nearly constant access to the regulator. And there is certainly a close relationship between pipeline regulators and regulated companies; for instance, most regulatory officials have worked in industry for at least some time in order to accrue the technical expertise required to evaluate these complex pieces of infrastructure(Taft 2017; Meghani and Kuzma 2011; Graham, Carroll, and Chen 2019). But while there are often “revolving doors” between industry and regulator—where personnel move between private firms and regulatory institutions, bringing with them highly specialized knowledge but also potentially eroding public trust in institutions and encouraging industry bias—we rarely see environmental or consumer safety organizations have the same kind of access (Meghani and Kuzma 2011; Hong and Lim 2016).

In Canada, the NEB was created in 1959 with an initial mandate to both direct and regulate the economic aspects of energy extraction and transportation. Additionally, the NEB was initially directed to develop a national energy policy, which made the Board a slightly anomalous regulator in that it was implicitly allowed not only to regulate industrial activity, but also to propose policy; however, no such national energy plan every came to fruition from the NEB, which chose to focus its efforts on increasing the trade relationship with the United States (Doern and Gattinger 2003). In its initial mandate as an economic regulator only, the NEB was meant to act as “a specialized, independent, impartial, non-partisan agency, employing a court-like process and [with] appropriate powers could defuse conflicts” (Doern and Gattinger 2003, 83).

When the NEB was created, the universe of interested parties was small due to the focus on the economic aspects of regulation, but with the emergence of consumer safety and environmental movements from the 1970's onwards, the NEB has undergone a huge shift in mandate as diverse interests from a variety of public, private, and intergovernmental stakeholders recognized the impacts of the regulator's decisions, and therefore pursued the right to participate in the decision-making process (Doern, Prince, and Schultz 2014; Schultz and Alexandroff 1985).The result of this explosion of new and diverse interest was the rapid politicization of the regulatory process as these new actors sought to benefit (or mitigate the harm of) regulatory decisions (Doern, Prince, and Schultz 2014).

However, while this increase in the set of interested stakeholders certainly exacerbated and complicated the politicization of energy regulation, the NEB has never been, despite initial ambitions, a non-political or independent mechanism. Even in 1959, while the NEB could give advice on particular projects, the final decisions were to be approved by Cabinet, rendering the regulatory process inherently partisan. This has rendered these regulatory decisions volatile and uncertain, as one administration may overturn the previous' regimes based on differing ideological or policy priorities (Hinte, Gunton, and Day 2007). Keystone XL epitomizes this problem, as the pipeline went through several rounds of approval/rejection before its eventual cancellation in 2021; although the saga continues as TC Energy moves forward with legal action against the United States government.

However, the initial emphasis on preventing abuse of market power and the setting of tolls and tariffs largely shielded the NEB from societal socio-environmental concerns. As the potential risks of energy extraction and transportation became known, and became more salient to the general population, the NEB took on these additional aspects of regulation, and was given the resources to evaluate environmental impact assessments, Indigenous consultation, and social impacts, the details of which were laid out in the NEB Act of 1985 (*National Energy Board Act* 1985). But the initial mandate of the regulator—to prevent abuses of market power and ultimately facilitate resource development in Canada—never significantly changed. Specific social and environmental goals were never explicitly addressed in the NEB mandate, and only a vague direction to operate in the public interest steers the decision-making process; according to the Act, the NEB was simply meant to take into account "any public interest that in the Board's opinion may be affected by the issuance of the certificate or the dismissal of the application" (*National Energy Board Act* 1985). This is extremely vague and allows for project-specific assessment guidelines, resulting in an environment of significant regulatory uncertainty for private firms and a lack of commitment to social, cultural, and environmental protection from the Canadian government. This lack of clarity calls into question how

the NEB is meant to evaluate the public interest without any clear explanation of the meaning of such a term.

The story of unclear mandate and vague appeals to the public interest is similar in the United States, although the emphasis in the State Department, is in promoting the 'national interest' rather than acting as an economic regulator. It should be noted that while KXL was chosen as a case precisely for the somewhat atypically centralized federal coordination that a cross-border pipeline entails, federal regulatory processes do not parallel the institutions of individual states. In terms of domestic pipelines, both inter- and intra-state, federal departments have authority over specific areas of pipeline construction. In particular, the EPA manages the Clean Air Act, Clean Water Act, and National Environmental Protection Act, while the PHMSA has some authority over pipeline accidents. However, most authority is delegated to state environmental and safety authorities. Even within the states, regulatory authority over oil pipelines is dispersed; for example, while the Texas Commission on Environmental Quality is the delegated authority for the EPA in matters of oil pipelines, the Texas Railroad Commission is the state regulator that ultimately approves or rejects pipeline projects, and their relationship is often contentious (McBeath 2016).

The Bureau of Energy Resources (BER) within the State Department, which coordinates all federal and state authorities with regards to international pipelines like KXL, is much newer than Canada's NEB (now CER) and was founded in 2011. However, the State Department has been responsible for the regulatory processes of international pipelines since 2004, when President George W. Bush delegated that authority via Executive Order 13337.The official mandate of the BER and the State Department, which is subject to executive direction rather than legislative mandate like the NEB or CER, is to "to develop and execute international energy policy to promote: energy security for the United States and its partners and allies; U.S. economic growth that benefits American business and people; and global political stability and prosperity through energy development" (Bureau of Energy Resources 2020).

Pipeline operators contend that pipelines are the best (safest and cheapest) method of crude oil transportation, and so it is in the national/public interest to build new pipelines since reliance on older pipelines increases risk. Pipeline firms operate on the assumption that without significant policy change, oil demand justifies new pipelines because that oil will be transported anyway; it should be transported by the safest and most efficient method. However, this logic further reveals the politicization of pipeline regulation; significant shifts in environmental policies both domestically and abroad indicate that the global oil demand that pipeline firms have relied upon for decades may be

decreasing (or at least, its growth may be slowing). Demand for oil is not an apolitical characteristic of the global marketplace, but rather has been a goal of industrialized states for almost a century to support rapid economic growth (Bridge 2008; Matt Huber 2013; DiMuzio 2014).This is not to say that economic regulation is unnecessary or incorrect, but simply that this type of regulation has never been apolitical, and the politicization of these regulators has increased significantly as the universe of interests has expanded to include social, cultural, and environmental issues. However, as the number of interested actors and the types of risks assessed has expanded, regulatory mechanisms have not fundamentally changed their mandates. There has been significant addition of socio-environmental assessment, but despite these assessments there is still significant and vocal opposition to these projects and the processes that govern them. Questions remain regarding the ability of these institutions to adequately assess these newer, more complex risks. By investigating the nature of these risks as they are perceived by the public, we can better understand the gap between the public interest as it is characterized by regulatory institutions and the facets of the public interest that are not yet accurately defined by these institutions.

4.4 Methods

This paper undertakes a comparative analysis of the public comments and regulatory compliance documents of the Northern Gateway (NGP) and Keystone XL (KXL) pipeline projects, both of which were proposed to carry crude oil from Alberta's Athabasca oil sands. Enbridge, Inc. (Enbridge) submitted their application to the NEB in 20120 for the twin NGP pipelines to carry 525,000 bpd to a new marine terminal in Kitimat, British Columbia.

Figure 9: Route of Proposed Northern Gateway Pipeline (Enbridge 2010)

The KXL project, first proposed in 2008 by TransCanada Keystone Pipeline Limited (TransCanada) is an expansion of the current Keystone pipeline system (with a capacity of 590,000 bpd), and aims to carry 830,000 bpd to Steele City, Nebraska. KXL is the fourth phase of the larger Keystone system, which consists of the following segments:

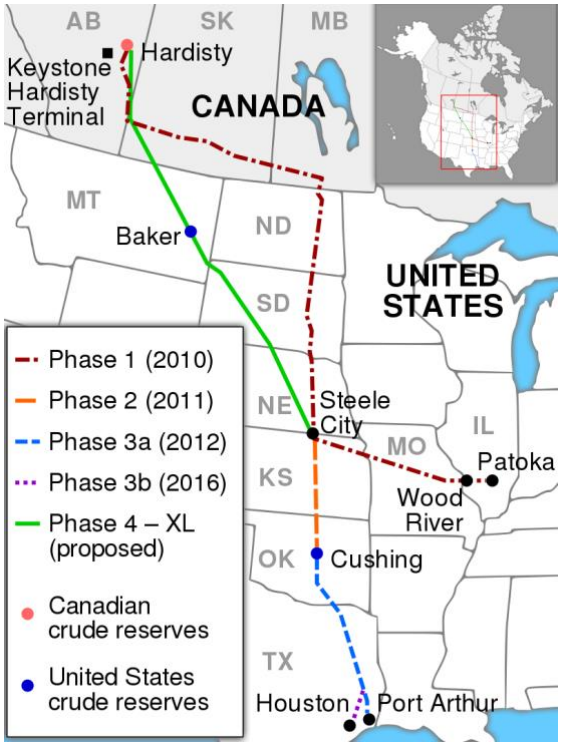

Figure 10: Keystone Pipeline System with proposed KXL extension route (Source: TC Energy)

These pipelines are comparable for several reasons:

- they are both large pipelines which were developed in the mid-2000s, after regulators became responsible for a much broader set of socio-environmental issues;
- they are subject to federal regulation as opposed to subnational, which is much more diverse and piecemeal in both Canada and the United States;
- they have both been subject to significant controversy and opposition from landowners, environmental activists, and Indigenous communities (although the nature of this contestation is not the subject of this analysis);
- they were both cancelled via Cabinet rejection

This paper makes use of qualitative content analysis to establish the interpretation of the public interest by pipeline regulators, and the gaps in that governance perceived by a significant swath of the public itself. (Bowen 2009; Neal 2012). The activities of regulatory agencies and industry are

identified via relevant legislation, official mandates, and socio-environmental assessments prepared by firms or regulators themselves. The largest and most complex piece of the empirical results come from an analysis of public comment data. Regulatory processes in Canada and the United States allow for the submission of public comments regarding pipeline projects, which is largely unencumbered by rules or restrictions.

While there was a sustained and relatively coordinated opposition to both Northern Gateway and Keystone XL, there is a significant amount of silent support for these projects as well; in 2016, 30% of Canadians generally supported Northern Gateway and another 28% supported the project under certain conditions (Anderson and Coletto 2016). In the lead-up to the revived Keystone XL hearing in 2017, 42% of Americans supported the project. This did decrease considerably from 2013, when the project was first proposed; then, 66% of Americans supported the project, showing a significant downward trend in the wake of publicized anti-pipeline protests and questions regarding the need to re-assess a project that had already been rejected (Suls 2017).

Having said that, there is little doubt that Canadians and Americans feel that their voices are not being heard in their regulatory processes. Northern Gateway received over 5000 public comments, most opposed. Keystone XL received over 10,000 distinct comments in 2017, and thousands during the initial application process in 2013/2014.[12] For this project, 750 comments from each project were randomly selected from online regulatory depositories (the NEB website for NGP, Regulations.gov for KXL). The KXL comments were selected from the 2017 process, as this round captured both the initial points of opposition as well as newer concerns that had propagated during the regulatory process. These comments were coded according to nature of opposition and support. Common trends and themes were analyzed in order to examine the perceived gaps in the regulatory process, and investigate how these concerns were being addressed. Due to the self-selection of commenters as overwhelmingly (strongly) opposed to these projects, these comments do not represent the whole of Canadian/American public opinion. However, this data still reveals the perceived gaps in regulatory governance, due to issues that are consistently referenced and common trends that show a preponderance of public concern and perception of regulatory inadequacy.

[12] KXL initially received over two million public submissions; the vast majority of these comments came in the form of petitions from activist groups, and so distinct and independent online submissions were not available. However, there were tens of thousands of distinct comments submitted in 2014, many as form letters, and another 10,000 distinct comments submitted in 2017.

For this chapter, the 'public interest', 'process' and 'capture' codes captured the vast majority of relevant comments. It is important to note that in both regulatory processes, the definition of 'public' or 'national interest' is kept high-level and vague. So for the purposes of generating and later analyzing these codes, the public interest is defined as "a balance of economic, environmental, and social interests that changes as society's values and preferences evolve over time" (National Energy Board 2015). Any comments related to the interpretation of these interests or preferences were collected under the 'public interest' code, and issues related to the specific regulatory process itself—for instance, that the Canadian Coast Guard was not appropriately consulted in the Northern Gateway hearings—were placed under the 'process' tag. Additionally, references to regulatory capture, where a regulatory process has been manipulated by private sector interests, were placed under the 'capture code' Finally, the 'government' code, which collected issues to do with specific government officials or parties, was scanned to ensure completeness and avoid misidentification. The full list of codes for this dissertation can be found in the Appendices, and the codes examined for this chapter are detailed in Table 4 below.

Table 4: Public interest/regulatory process-related codes for NGP and KXL public comments

Code	Description	Comments	References
CAPTURE	Reference to regulatory processes; specifically industrial influence on these processes.	27	29
GOVERNMENT	Reference to issues with current government as opposed to the pipeline itself (ie. Trump, Harper)	59	86
NECESSITY	Reference to broad oil supply/demand forecasts, capacity of other pipelines	76	90
PROCESS	Issues with the regulatory process itself, usually related to lack of public participation; often but not always correlated with "capture" code	146	250
PUBLIC INTEREST	Direct reference to the public or national interest with regards to the pipeline	141	226

In the comments, there was significant attention paid to the public interest and the regulatory process in general; comments brought up concerns that the federal government had decided to approve these pipelines regardless of legitimate opposition, that the regulatory process deliberately shut out anyone who did not live along the pipeline route and that other citizens who would be impacted by the pipeline (albeit less directly) had no recourse, and that broader environmental/social concerns were ignored in favour of extremely specific potential impacts. Below, I discuss the

common trends from these comments and the response from regulators and firms and examine the gap between the two in terms of the interpretation of the public interest.

4.5 Results

From the public comments submitted in the regulatory processes for NGP and the second round of KXL, several trends concerning the public interest/public participation can be identified: first, that the impact assessments required by regulators tend to be very localized in terms of tangible effects, but an increasingly broad perception of social, cultural, and environmental risk that is not well captured by current definitions of the public interest. Second, that there is a significant lack of understanding of the regulatory requirements and the mandate of regulators, particularly with regards to explicit industry planning and development. Lastly, there is a lack of trust from a significant portion of the general public that believes that regulatory processes are at least partially captured by industry or have no power to make and enforce decisions. These trends all point towards regulatory processes that are out of step with contemporary perceptions of the risks and benefits associated with oil pipelines, and institutions that rely on a narrow interpretation of the public/national interest when assessing those pipelines.

4.5.1 Localization of impact assessment versus a broad perception of risk

A theme throughout the comments is that the interpretation of the public interest utilized by the NEB and BER is perceived to be too narrow, and does not take into account broader, second-order negative impacts exacerbated by the pipelines. In particular, issues related to climate change and spills were prevalent through both the NGP and KXL processes. Commenters in the NGP process stated that "global warming has no borders, and every nation has a right to be concerned about Canada's activities" (NGP 3.1), indicating that the universe of acknowledged stakeholders for this project (and others like it) should be much wider than those landowners and municipalities along the pipeline's direct route. NGP commenters also emphasized the risk of spills and that the burden of those spills would fall on citizens, not firms, "the rationale that the tar sands and the pipeline are "nation building" is a fallacy and not in the best interest of Canadians. Costs of spill clean-ups in wilderness areas and coastal waters cannot possibly be calculated, but the fact that the Kalamazoo spill has been such a costly expense to taxpayers and the number of spills that have already occurred should be cause for serious alarm" (A2X9H7). These comments often referenced specific past accidents, in particular the 2010 Kalamazoo River spill where Enbridge's Line 6B ruptured, and clean-up took five

years and cost 2.8 billion USD (mostly borne by Enbridge), although nearby towns were also affected and took on some of the burden of repair.

In the KXL case, similar entreaties to global and regional environmental impacts that occur beyond the scope of the direct pipeline route were also common amongst commenters. Submissions directly equated these socio-environmental risks with the national interest, stating that "how can it possibly be in our best interest to drive a climate crisis which is already killing us and leaving people homeless and costing us our savings and our businesses due to floods and fires? How is it in our interest to put our water supplies (pipelines cross water ways and run adjacent to them) at huge risk at a time when droughts are growing more severe and so much of our water has already been poisoned by oil leaks, fracking and toxic chemicals? How is it in our best interest to use eminent domain to take people's property and destroy it so that a corporation based in Canada can make a profit? Eminent domain is supposed to be used only in cases where property is taken for things that are of public benefit? How is it in our best interests to seize and destroy Native American sacred and burial sites, especially in light of the U.S. history of genocide toward them?" (KXL 3.1). Other commenters questioned the reversal of the Obama era decision, asking "How can it [the State Department] reverse itself when the climate crisis has dramatically worsened since that decision and pipeline leaks and the destruction that they cause have been relentless?" (KXL 3.2)

In both cases, there is a clear indictment of the localization of impacts that regulators assess; commenters desire a more holistic and system-wide definition of risk and impact that includes regional, national, and global consequences, and that takes into account second- and third-order impacts that may result from or be exacerbated by these projects.

4.5.2 Lack of clarity regarding regulatory process

A second theme throughout the comments in both cases concerned a lack of clarity regarding the mandate of regulators. In the NGP process, this took the form of comments calling for re-investment in other types of projects, notably renewable energy projects. Commenters implored the NEB "to abandon projects like this and start working towards green energy projects for a sustainable future" (NGP 3.3), and to "invest money into solar, geothermal, wind, and other sustainable energy sources and open world-renowned schools in the construction, operation and maintenance of these new sustainable alternatives instead of dealing with dirty oil…" (NGP 3.4). Other comments called for a regimented and explicit national energy plan to help guide the country in its energy development, stating that "the companies and governments behind the Gateway project are strongly pushing the

view that there are no other options, when in fact there are many options that we as a society need to explore. I feel that ANY project of this magnitude should not proceed without Canada first establishing a National Energy Plan" (NGP 3.5).

While these comments reveal a desire for the Canadian government to be more circumspect and disciplined in its decisions regarding energy development, they also ask for the NEB to reach far beyond its mandate in terms of policy-setting. The NEB does not make policy, nor does it make planning decisions for the future; it is charged with evaluating each project independently. However, as has been discussed above, no regulator exists in a vacuum, and these comments emphasize that while the NEB has maintained a narrow, project-specific evaluation process, there is a large segment of the population that expects more ambitious regulation from its institutions.

In the KXL case, this lack of clarity regarding the regulatory mandate manifests in more specific analyses of the process itself. Commenters repeatedly question the findings of the Draft Environmental Impact Statement (EIS) as inadequate, stating that "it also attempts to assess the magnitude of many of those risks, as appropriate to the purpose of the Draft E.I.S. However, I believe the risk assessment understates the true magnitude, due to the compounding of prior environmental and social damages with the further damage that can be reasonably expected from this large-scale project" (KXL 3.3). Additionally, commenters take issue with the extremely segmented nature of the regulatory process, pointing out that the risks of the pipeline are assessed in pieces and rarely as a whole, "the XL Pipeline crosses Tribal lands and may go by different names in prior States and prior crossings, therefore due diligence(sic) must be accomplished by including the performance of the FULL TRAJECTORY of the Pipeline from its beginning and ALL leaks and accidents leading up to and including the Keystone XL Pipeline in question must be taken into account in assessing the viability of building the Keystone XL Pipeline" (KXL 3.4). It should be repeated that the KXL process, due to its coordination by the State Department, is much less segmented than typical interstate pipeline projects, which often piece out regulation by particular water crossing.

4.5.3 Lack of public trust/perception of political interference

Lastly, comments in both cases reveal a concern regarding government interference in these regulatory processes. In the NGP case, comments are centred around Conservative Prime Minister Stephen Harper's government spending reforms from 2006-2015, which aimed to and reduce government spending by implementing budget cuts to several departments which provided environmental assessments and reviews, including the Department of Fisheries and Oceans and the

Department of Environment, as well as streamline the regulatory review process for pipelines (Angela Carter 2016; MacNeil 2014a; 2014b). The Harper government was explicit in their support for NGP, with Harper stating in 2012 that opposition to the pipeline was the result of "foreign money and influence"(National Post 2012). Prime Minister Harper also stated that the project would be "evaluated on an independent basis scientifically, and not simply on political criteria"(CBC News 2012)—a statement seemingly at odds with both the significant budget cuts to research and development as well as the regulatory streamlining that demanded an accelerated review process. Additionally, as discussed above, NEB advice has always been subject to Cabinet approval, rendering calls for independence somewhat moot.

In the public comments submitted, Canadians push back at Harper's characterization of the opposition with concerns of their own; that their government was pushing through NGP without appropriate review, stating "I am concerned that politics and the economy are pushing the pace of the environmental review of the Northern Gateway Project (NGP) into overdrive. Prime Minister Stephen Harper used his majority to weaken environmental review processes so that this project, among others, could be rushed through within his current term of office" (NGP 3.6). Others questioned "the legitimacy of the process and project, given the way the regulatory system has just been massively overhauled, seemingly for the purpose of making it easier for this project to go ahead without delay and for it to operate without any obstacles once permitted…Good decisions are not made in haste. Good oversight, for the sake of protecting our ecosystems and communities, cannot be done by gutting monitoring programs and terminating large numbers of expert staff" (NGP 3.7).

Comments in the KXL case also expressed concerns regarding influence on the regulatory process. In the United States, there is no single agency that coordinates interstate oil pipeline regulation, and international oil pipeline regulation is coordinated by the State Department—there is no attempt at institutional independence or bipartisanship, since this is a political department that changes with presidents. Further complicating the KXL case in particular is the initial rejection by the Obama administration and the re-invigoration of the project by the Trump administration, when these comments were submitted. Commenters express confusion over this re-invigoration, stating that "President Obama made it clear that this was going to be an environmental nightmare so he blocked the continuation of this pipeline. Then Trump came in and reversed this decision, as he has done with anything that supports sustainable environmental issues" (KXL 3.4), and that "This KXL pipeline was reviewed during Pres. Obama's term and was deemed to be harmful. to all. Why are you reinventing the wheel?" (KXL 3.5). It should be pointed out that the tendency towards pipeline opposition within

the comments needs to be accounted for here; if one was supportive of the initial KXL project proposal, one may argue that the Obama administration had hijacked the regulatory process due to pressure from environmental groups. It is also worth noting that many of the documents submitted in the initial Obama-era proposal are almost identical to those submitted to the Trump administration, often simply with a different recommendation indicating different policy priorities. Also, due to the dozens of agencies involved, as well as TransCanada itself, in providing impact assessments, there were dissenting views even within the process itself despite the State Department's final recommendation.

Other comments bring up this inherent politicization more generally, expressing concerns that the controversial and highly publicized nature of the project makes it difficult to produce independent and objective assessments. One comment stated, "I am against this project as I have strong worries about the political pressures under which the NEPA report was created. We have seen other situations where highly politicized pipelines and projects have had extreme flaws in their NEPA assessments, like in Virginia where the US Forest Service has been found to have "suddenly, and mysteriously, assuaged in time to meet a private pipeline company's deadlines" according to judges. This casts doubt on the ability of these political pipelines to be fairly evaluated, especially one where the president has explicitly spoken in favor of this project" (KXL 3.6).

These three themes point to a lack of confidence in regulatory institutions to characterize and interpret the public interest in a way that captures the diffuse, indirect, and long-term impacts of oil pipelines. Additionally, the regulatory uncertainty that has plagued both these projects has left the public concerned about the capabilities of regulators to make decisions and enforce those decisions. These regulators give advice which seem to be mutable to suit the policy priorities of the government of the day; and so how can they also be operating in the public interest, which exists beyond and outside of current government administrations. But these regulatory mechanisms spend significant time, effort, and money on assessing the impacts of these projects, and as was noted in previous sections public perception of risk is often complicated and mercurial. So before condemning these institutions as failing to act in the public's interest, we must first examine the inputs of regulators when it comes to assessing these projects.

4.6 The NEB and State Department

So these three trends in the public comment data for NGP and KXL have established several points of public dissatisfaction with the state-industry-regulator relationship. Now, we turn to the regulators

themselves to identify how the public interest is interpreted by these institutions, in order to define the other side of this governance gap. There are some key procedural differences for KXL and NGP; in Canada, the firm creates all regulatory compliance documents (including socio-environmental assessments, which are often sub-contracted out to a third party firm) according to regulator guidelines. The NEB then assessed these documents for completeness and accuracy and requested additional information where relevant. In the American case, the firm creates the initial project application which includes economic justification for the project. For international pipelines, the State Department then coordinates the creation of relevant assessment documents, with several federal departments contributing, including the Environmental Protection Agency, the Army Corps of Engineers, the Bureau of Land Management, and others. Relevant departments then give their final advice to the State Department, which makes a recommendation to the President. For both projects, compliance and assessment documents that referenced the public interest were analyzed to delineate the state-industry interpretation of the public interest, and emphasize the governance gaps identified in the previous section.

4.6.1 Keystone XL

The KXL process represents a unique situation in terms of determining the interpretation of the public interest, because the project was first rejected, then approved, and then rejected again. For the purposes of this paper, President Joe Biden's second rejection of the project will not be discussed, because his administration did not produce any additional documentation and simply cancelled the project via executive order. However, the National Interest Determination (NID) from 2015 and its supporting interagency comments, the NID from 2017, and the applications for presidential permit submitted by TransCanada in 2012 and 2017 will all be examined for their interpretation of the national interest.[13]

While TransCanada prepared many impact assessments and submissions for the KXL process, including environmental studies and commercial forecasts, their articulation of the national interest with regards to KXL is clearest in their applications for presidential permit, where the firm is meant to justify their project. TransCanada filed their first application for Presidential Permit in 2008,

[13] In the American process, the term 'national interest' is used, whereas in the Canadian process the term 'public interest' is utilized; for all intents and purposes, these terms evoke the same meaning and so will be used in their appropriate context.

which was denied by President Obama in 2012 after Congress mandated a 60-day deadline for the administration to make a ruling. Based largely on the grounds that the pipeline route through the environmentally sensitive Sandhills region of Nebraska was not appropriately assessed, President Obama denied the permit (TransCanada Keystone Pipeline L.P. 2012). In 2012, TransCanada indicated their readiness to file an additional permit, with significant re-routes to avoid the Sandhills region.

In their 2012 permit application, TransCanada stated that KXL is in the national interest on several grounds, and indicated that "recent Department decisions granting Presidential Permits to similar cross-border crude oil pipeline projects" support a determination in the national interest, referring to recent decisions to approve the original Keystone Pipeline in 2008 and the Alberta Clipper Expansion in 2009 (TransCanada Keystone Pipeline L.P. 2012). While the State Department and President have significant discretion over the definition of 'national interest', TransCanada referred back to the original Supplemental Draft EIS, developed by the State Department with input from the EPA and other agencies, for a list of factors considered in past decisions (United States Department of State 2010, 1–5). The State Department indicated in 2012 that the following factors were typically considered in a national interest determination:

1. "Environmental impacts of the proposed projects
2. Impacts of the proposed projects on the diversity of supply to meet U.S. crude oil demand and energy needs
3. The security of transport pathways for crude oil supplies to the U.S. through import facilities constructed at the border relative to other modes of transport
4. Stability of trading partners from whom the U.S. obtains crude oil
5. Impact of a cross-border facility on the relations with the country to which it connects
6. Relationship between the U.S. and various foreign suppliers of crude oil and the ability of the U.S. to work with those countries to meet overall environmental and ' energy security goals
7. Impact of proposed projects on broader foreign policy objectives, including a comprehensive strategy to address climate change
8. Economic benefits to the U.S. of constructing and operating proposed projects
9. Relationships between proposed projects and goals to reduce reliance on fossil fuels and to increase use of alternative and renewable energy sources" (TransCanada Keystone Pipeline L.P. 2012)

While TransCanada did address the national interest in their 2008 permit application, the 2012 documents were much more detailed. TransCanada submitted significant comments addressing each of these criteria, ultimately proposing that not only did KXL meet these requirements, but in many

cases exceeded them (TransCanada Keystone Pipeline L.P. 2012). TransCanada proposed that: (1) the lengthy environmental review went beyond typical requirements for environmental impacts, and concluded that the project would result in no significant impacts; (2) that the KXL project would positively affect diversity of supply via long-term contracts to bring heavy crude oil from Alberta to the Gulf Coast refineries, which deliver substantial supply to the East Coast and Midwest; and (3) that KXL had worked with the Pipeline Hazardous Materials Safety Administration (PHMSA) to establish special conditions that would result in a higher degree of safety than other domestic crude oil pipelines, and would far exceed the safety scenarios for truck, rail, or marine transport (2012, sec. A).

The foreign policy objectives, delineated in factors 4-7, would also be met or exceeded: by (4) and (5) maintaining and improving the U.S.-Canada trade relationship, in addition to reducing American reliance on other oil sources globally; that due to the comparatively stringent climate and environmental policies in Canada and Alberta (as opposed to other global jurisdictions that supply oil to the United States) would result in a better climate outcome overall relative to the absence of KXL as well as the opportunity for climate coordination between Canada and the United States due to aligned environmental and energy security priorities (6) and (7) (2012, sec. A). In terms of economic benefit (8), TransCanada proposed an influx of direct and indirect employment opportunities during the construction phase as well as longer-term tax revenues for state and municipalities along the pipeline route (2012, sec. A). Lastly, TransCanada acknowledged that while the U.S. would continue to decrease its reliance on crude oil, demand would remain in the near future, and emphasized that the choice was not between KXL and alternative energies but rather between Canadian oil supplies or Venezuelan and Mexican sources, or alternative sources further afield (9) (2012, sec. A).

In response to TransCanada's extensive appeals to national interest considerations, the State Department elicited a number of interagency comments to inform their eventual advice to President Obama. The Department of Energy, Environmental Protection Agency, and dozens of tribal communities through the Department of the Interior provided substantive comments. Tribal communities largely opposed the project on grounds of inappropriate consultation proceedings. The Department of Energy emphasized that market conditions had changed since 2008, and that as domestic oil production in the United States had increased considerably, oil prices had declined, and investment in Canadian oil fields had declined (Department of Energy 2015). The DoE also emphasized the minute impact of KXL on direct GHG emissions but declined to offer a firm opinion on the national interest (Department of Energy 2015). The EPA's comments were mostly concerned with broader climate change impacts, especially noting that the WCSB crude that would flow through

KXL has high GHGs associated with its lifecycle than other oil sources (Environmental Protection Agency 2015). The EPA reiterated that climate and environmental concerns should be central to a national interest determination (Environmental Protection Agency 2015).

In both TransCanada's and the EPA's submissions, an interesting dynamic regarding climate intensity is revealed; TransCanada maintains that WCSB oil is more climate friendly because Canada has instituted more stringent regulatory requirements and is easier to transport than alternative sources from Mexico, Venezuela, and beyond, whereas the EPA affirms that WCSB crude is more emissions-intensive than alternative sources due to its associated extraction processes. Both are partially correct; WCSB is more emissions-intensive than many other sources, but it is comparatively highly regulated, industry has made huge strides in reducing direct extraction emissions, and pipelines have lower associated emissions than marine tankers. The difference is how these organizations framed their data; TransCanada emphasizing the stringent regulatory requirements (including emissions standards) in Canada and the EPA emphasizing the geophysical nature of WCSB oil in global context.

While these comments and supporting documents were submitted in 2012, the Obama administration did not release its NID until 2015, where it rejected the KXL application. The 2015 NID emphasized the climate change impacts associated with KXL, in terms of both directly associated GHG emissions and indirect lifecycle emissions of WCSB crude extraction (Department Of State 2015, 10). Secondly, the NID also referenced the short-term volatility of oil prices as a factor in its decision, although also acknowledged that this short-term volatility was not indicative of the sector as a whole (Department Of State 2015). Thirdly, the NID addressed the possibility of crude-by-rail transport, concluding that existing pipeline capacity combined with new safety rules for train transportation meant that the future utilization of rail was uncertain at best, and would be covered by announced regulatory reforms (Department Of State 2015). Lastly, the NID addressed socioeconomic impacts, acknowledging that concerns regarding human health, environmental justice, and employment opportunities played a factor in its determination. The NID also dismissed the claim that KXL, as one singular infrastructure project, would have an appreciable impact on American energy security, and would not prevent the import of Canadian oil to the United States (Department Of State 2015, 28). For these reasons, the State Department advised President Obama against permitting the KXL project, which he consequently denied in January 2015.

When TransCanada re-submitted its application for Presidential Permit in 2017, much of the supporting documents and impact assessments were re-used, with only minor updates attached. A new supplemental EIS was produced, which regurgitated much of the same data as the 2008/2012

processes, and modified route maps were submitted as well. The application for Presidential Permit contained a truncated discussion of the national interest that focused on economic benefits, energy security, and facilitating the Canadian-American trade relationship (TransCanada Keystone Pipeline L.P. 2017). Importantly, the 2017 application did contain a new reference to the regulatory uncertainty that had plagued KXL, stating "issuance of a Presidential Permit for the proposed Project would send a signal to American industry that permitting decisions for critical infrastructure projects will be assessed based on their merits and based on the relevant facts; that these reviews will be conducted in a timely, fair, and predictable manner; and that projects will not be rejected based on alleged perceptions or political considerations" (TransCanada Keystone Pipeline L.P. 2017, 12).

The NID released in 2017 which advised President Trump to approve the project also utilized much of the same data, although the section on climate change was significantly reduced. However, while there was significant overlap between the first, second, and third applications for Presidential Permit, and in fact much of the text was recycled verbatim, the final judgments differed. In the 2017 NID, the State Department advised the President to grant the KXL permit based on:

> "*the proposed Project's potential to bolster U.S. energy security by providing additional infrastructure for the dependable supply of crude oil, its role in supporting, directly and indirectly, a significant number of U.S. jobs and provide increased revenues to local communities that will bolster the U.S. economy, its ability to reinforce our bilateral relationship with Canada, and its limited impact on other factors considered by the Department, all contribute to a determination that the issuance of a Presidential permit for this proposed Project serves the national interest." (Department Of State 2017, 30)*

This process of multiple applications, unique to the KXL case, emphasizes the role of executive decision-making in the American regulatory process for oil pipelines. The NIDs issued in 2015 and 2017 contained much of the same information, presented similarly, and were based on the same socio-environmental assessments (while the 2017 process did produce a supplemental EIS eventually completed in 2019, it largely concluded with few significant changes from the 2012 process)—but they proposed opposite outcomes, with the Obama administration State Department recommending a rejection, and the Trump administration recommending an approval.

4.6.2 Northern Gateway

The Northern Gateway process was in many ways much simpler with regards to the determination of the public interest, since the project was not proposed and re-proposed so many times. But the

determination of the public interest in the NGP case is complicated by the changeover from Conservative to Liberal governance in the middle of the process, and the lawsuits filed regarding Indigenous consultation and extent of environmental assessment. However, we have only one set of documents to analyze in this case; Enbridge's initial 2010 project justification, contained within the first application submitted to the NEB, and the Joint Review Panel's conditional approval of the NGP project, issued in 2014 and with 209 mandatory conditions attached.[14] In Volume 1, Section 3 of the full NGP application Enbridge emphasizes the socio-economic benefits for Albertans and British Columbians via property and income taxes (Enbridge Northern Gateway Pipelines 2010c, 1–4). They also propose that "access to Pacific Rim markets for Canadian oil production will create numerous and sustaining benefits for all of Canada, while providing secure and essential energy supplies to nations such as China and South Korea" (2010c, 1–4). Enbridge also enlisted a third-party assessment of the pipeline from a "Canadian public interest perspective", which focused largely on the potential $270 billion CAD increase to GDP over a 30-year operating period (Enbridge Northern Gateway Pipelines 2010c, 1–5). Enbridge's proposal rests largely on existing approvals of oil sands development, arguing that if a certain amount of WCSM extraction has already been deemed in the public interest, so too should projects that support that development—like the NGP, which would add 525,000 bpd of pipeline capacity. Enbridge suggests that "new markets and expanded transportation capacity are essential to the development of this oil sands production, which has already been determined to be in the public interest"(Enbridge Northern Gateway Pipelines 2010d, 1–6). While Enbridge acknowledges that sustainable development is key to the NEB's public interest mandate, the project justification put forward is based almost entirely on economic benefit.

After five years of contention—notably from several Indigenous groups in British Columbia with regards to a lack of consultation, and the provincial government in BC which opposed the project on grounds of inadequate environmental assessment—the Joint Review Panel (JRP) recommended the approval of the NGP, subject to 209 conditions. These conditions ran the gamut from emergency response, specific ecological impacts, public consultation and employment benefits (Joint Review Panel and National Energy Board 2014b). This report also included a detailed section on the public interest with regards to the broader NEB mandate as well as the specific application to NGP.

[14] Enbridge did submit a preliminary application for the Northern Gateway Project to the NEB in 2005, but this was delayed in 2006 in favour of investing in pipelines to the U.S. Little progress was made and so the focus is on the full 2010 application.

The JRP emphasized that the NEB is an "independent federal tribunal" that is "quasi-judicial…and follows the principles of natural justice and fairness, which have been developed by the courts over time" (2014b, 7–8). The report also points out that decisions "are not influenced by the number of letters received or by other demonstrations of public opposition or support. Rather, recommendations are based on the evidence provided, within a legal framework enacted by the legislature and applied by the courts"(2014b, 9). So by its own admission, the public comment process has little to no impact on the decisions made by the tribunal, despite the fact that this process is often the only opportunity for Canadians who do not live along the pipeline route to make their views known. If this process is not for the NEB decision-makers, then its only purpose seems to be to collate (some) public views for potential (but not required in any sense) review by the JRP or Cabinet when the time comes for a final decision.

The JRP also explicitly references that "the public interest is inclusive of all Canadians, locally, regionally, and nationally, and refers to the integration of environmental, societal, and economic considerations" (2014b, 10). Section 52 of the *National Energy Board Act* requires that the Board consider:

- the availability of oil/gas to the pipeline
- the potential and actual markets for the pipeline
- the economic feasibility of the project
- the financial structure/methods for financing the project
- any other public interest issue that may be affected by the project, in the board's opinion (National Energy Board 2013; Joint Review Panel and National Energy Board 2014a)

Four of these public interest concerns are related to finances and market conditions; the last encompasses all other public interest concerns without specification. By convention and precedent, these "other" concerns have included a variety of social, cultural, and environmental factors, and some of these issues are codified in the Canadian Environmental Assessment Act and its predecessors. However, the fact remains that the NEB was given almost unlimited discretion to define matters of the public interest, and was not required to take into account any of the comments submitted by the public, advocating for their own interest. The JRP states explicitly that in their view, the existence of the JRP itself "is a component of the public interest" via the provision of expert evidence and time to consider that evidence (Joint Review Panel and National Energy Board 2014b).

Lastly, the JRP discusses whether the NGP "is, and will be, in in the present and future public convenience and necessity and, therefore, in the public interest" (Joint Review Panel and National

Energy Board 2014b, 9). In this determination the JRP finds that there are a variety of environmental burdens and that any potential environmental benefits of the project are outweighed by these burdens. However, the Panel also concludes that "the potential adverse environmental outcomes are, in the Panel's view, outweighed by the potential society and economic benefits" (Joint Review Panel and National Energy Board 2014b, 10). These benefits largely consist of employment opportunities (mostly temporary) and potential tax revenues, but also include investment into research projects by Enbridge (mostly regarding marine biology and engineering improvements) and community supports for Indigenous groups along the pipeline right-of-way (Joint Review Panel and National Energy Board 2014a, vol. 1). Lastly, the JRP acknowledges the significant environmental and financial burdens of a large oil spill, but assesses that risk as very unlikely due to pipeline spill prevention measures (Joint Review Panel and National Energy Board 2014b). However, while acknowledging this myriad of risks, the JRP finds that, if its conditions were met, "Canadians would be better off with this Project than without it" (Joint Review Panel and National Energy Board 2014b, 14)
The JRP announced its conditional approval during the Harper regime, which campaigned heavily for the project; then-Natural Resources Minister Joe Oliver infamously decried any opposition to the project as the work of "foreign radicals" and Prime Minister Stephen Harper approved the project in 2014. In 2015 a coalition of eight Indigenous bands, four environmental groups, and a labour union successfully brought a legal challenge to the Federal Court of Appeal in Vancouver, which overturned the government's approval of the pipeline. Liberal Prime Minister Justin Trudeau (elected October 2015) had run on a promise to reject the NGP, and so with the judicial ruling the project was cancelled.

4.7 Discussion: Regulatory Uncertainty and Declining Public Trust

Ultimately, in both cases there is a significant disconnect between what these regulators do, what they were initially created to do, and what large segments of the general public thinks they should do. The NEB was created as an economic regulator and took on the burden of additional regulatory responsibility without any specific goal-setting or explicit changes in mandate. In a similar position, the Bureau of Energy Resources, situated in the State Department, was created to evaluate the American national interest, the definition of which is a matter of precedent and convention. The public comment data indicates that people expect much more from their regulators; and due to both organizations' explicit reference to representing the public/national interest, this is entirely logical. But despite the addition of environmental impact assessments, Indigenous consultation, public

hearings, etc., the weight of economic benefit vs. socio-environmental risk has never been clearly or explicitly defined in either the United States or Canadian processes; instead, both fall back on vague appeals to “the public interest” or “the national interest”.

The disconnect between issues raised in the public comments versus the standard compliance documents submitted for both projects suggests that neither Canadian nor American governance mechanisms were developed with large-scale, cross-jurisdictional socio-environmental issues in mind, nor with the concept of effective public participation at the forefront. The development of the NEB initially placed most emphasis on economic/financial factors, and despite the inclusion of significant socio-environmental assessment since the 1970s has largely persisted with an emphasis on resource development. In theory, the NEB maintains independence from the final decision-makers in Cabinet, as opposed to the American process where the process is embedded in the executive. Unlike the United States, the process is fairly judicial in nature, with public hearings and an effort towards non-partisanship, although the goal of the NEB is generally to allow rather than constrain industrial development; the NEB approved NGP, albeit with a long list of conditions. The project was cancelled due to judicial challenge and a new Liberal government.

In the United States while there is a greater opportunity for differing opinion within the process as a variety of federal departments issue assessments, some of which are extremely detailed and technical in nature (i.e. those prepared by the EPA), the division of expertise and authority amongst these departments results in a patchwork of regulatory responsibility. And ultimately, the State Department gives the final advice to the President, rendering the regulation of international pipelines in the United States a largely executive process with few legislated standard operating procedures.

In both Canada and the United States, the lack of consistent federal energy strategy has left these regulatory processes largely with mandates that are vague in wording and narrow in scope, with an emphasis on market potential and financial technicalities. Ideally, regulatory reform which centres the public interest with explicit parameters, and ambitious sustainable development goals, would assuage many of the concerns raised here and in previous papers. The CER, which superseded the NEB in 2019, emphasized the centrality of sustainability in its mandate but made few changes to the public interest component. In fact, in a survey of public interest tests for infrastructure decisions in Canada, only 6% had explicit definitions of the public interest (Goodday, Winter, and Westwood 2020). Explicit public interest parameters are extremely rare, and so there is much room for evolution in Canada, the United States, and around the world.

In both these cases, comprehensive and complex socio-environmental assessments were produced, and did address in some fashion many of the concerns raised in the public comments: climate change, Indigenous consultation, emergency management and spill prevention, etc. But despite the heavy regulatory burden that both firms and other interested stakeholders take on when these projects are proposed, decisions mostly depend on who is sitting in the White House and 24 Sussex Drive. In the NGP case, regulatory assessments ultimately approved the project, albeit with a much longer list of conditions than the Harper administration (which explicitly and actively supported the project would have preferred); based on similar information, the incoming Trudeau administration signalled the project's cancellation. In the KXL case, the social, environmental, and economic information was in many places identical; what changed was the State Department's conclusions. Regulatory systems that are flexible enough to respond to rapidly changing environments, with increased avenues for participation and accountability and ambitious but broad policy goals may be the way forward, although this would require significant overhaul of the current institutional landscape (Young 2017a; Balleisen and Brake 2014). The Canadian process has performed more effectively with regards to standardizing the regulatory process and allowing for public participation than the American approach. However, in terms of responding to public opinion, the KXL process allowed for Presidents Obama and Biden to reject the pipeline on climate grounds—suggesting a welcome turn towards more ambitious climate action (although some evidence suggests that canceling pipelines is a cumbersome and expensive method for decreasing emissions[15])—executive supremacy in the American process results in a precarious regulatory environment. American regulatory governance of oil pipelines remains fragmented and dispersed, rarely allowing for an assessment of the pipeline's impacts as a whole and focusing instead on specific, localized impacts that are assessed individually. The Keystone XL pipeline, under the authority of the State Department due to the fact that it is an international project, is one of the most coordinated regulatory processes in the US in the last several decades but is still much more fragmented and has a less strict process than the NEB in Canada.

The theory of regulatory capitalism, which proposes that the goal of regulation is not to protect the public good but rather as a tool of commodity accumulation supports these pro-development tendencies (Castree 2008b; Jordana and Levi-Faur 2004). Despite an increase in regulatory oversight by including significant socio-environmental assessment and public consultation,

[15] See (Toombe 2016)

the primary goal of these regulatory processes is to encourage oil development; although safer and less environmentally destructive than pre-1985. This holds with the 'regulatory explosion' of the 1980s/90s where these additional regulatory requirements were added to institutions with an initially narrow mandate and a small universe of stakeholders (Braithwaite 2008). However, while the universe of interested parties has expanded to, essentially, every Canadian and American citizen (and beyond if we focus on global impacts like climate change), regulatory mandates have not significantly changed. The public comments suggest a desire for a broader interpretation of risk and impact, but neither the NEB nor the State Department is required to integrate these public comments into their final advice.

Regulatory capitalism does not perfectly explain the role of executive decision-making in this process; as has been discussed here and in the previous papers, while the regulatory mechanisms in both countries produce a lot of complex, technical impact assessments, the decision is ultimately made by the ruling political party. Theories of regulatory capitalism would suggest that this type of executive interference is not necessary as the regulators will pursue strategies of capital accumulation on their own; and in these cases this is accurate. Both NGP and KXL were approved by their regulators at different times in their respective processes. One interpretation of the KXL case would be that Presidents Obama and Biden represented the national interest in a more environmentally conscious manner as the project was rejected by both on environmental grounds. Additionally, regulatory capitalism does not neatly explain the way that both Canada and the States are leaning towards decarbonization and a clean energy transition, and using executive power to (sometimes) cancel these pipelines rather than push them through. What we are seeing in these institutions is a failing regulatory capitalism, that is at odds with bigger, more complex problems that are increasingly politically relevant.

This paper identified three trends in the public comments that speak to legitimate discontent with the interpretation of pipeline regulators public interest mandate. The regulatory requirements speak for themselves. Localized socio-environmental impacts are heavily prioritized, which makes sense as these are usually the most immediately damaging or the highest risk to public/environmental health; however, there is little emphasis on the diffuse and indirect impacts of these pipelines which, commenters argue, still matter in a public interest determination. Additionally, these projects both epitomize an increasing regulatory uncertainty for these projects, as they were both approved and rejected at different times under different conditions; there was significant procedural volatility in both these cases. Lastly, a lack of public trust in these institutions did not come out of thin air; Prime

Minister Harper did slash environmental regulations and proclaim his support for the project, and President Trump did re-invigorate a rejected project. So the risks identified in these comments are applicable to these pipeline projects, and reveal a governance gap between the interpretation of the public interest mandate by regulators and the public itself (or one segment of the public that feels excluded from these regulatory processes. However, there is a potential for alienation of expert assessment in favour of less-informed public participation, as institutions grapple with this declining public trust (Wynne 2002). Conversely, the reliance on narrow, technical risk assessment has thus far not been able to eliminate complex socio-environmental threats like climate change or energy poverty. Ultimately, the issues at stake here are not simply technological problems; they have social, cultural, and political impacts. Our assessment of those risks needs to address those broader anxieties, even if they do not originate with perfectly informed experts.

The takeaway for the dynamics of regulatory institutions analyzed in this paper is that the way that states conceive of and take part in risk mitigation is at odds with the ways that individuals are perceiving the risks of these large pipelines. To the commenters in both projects, the risks associated with fossil fuel transportation and extraction are simply too great; to regulators and firms, these risks are worth the potential economic benefit.

However, two pipelines do not represent the entirety of the Canadian and American oil industries. Oil development will not be noticeably hindered by the cancellation of these projects; in fact, the Trudeau government purchased Kinder Morgan's Trans Mountain Expansion pipeline in an effort to see that project completed and increase pipeline capacity to the west coast after NGP was cancelled. Many of the issues raised in the NGP public comments also exist in the TMX project, but market forecasts do indicate need for enhanced pipeline capacity in the short-term; without it, transport via train and truck will likely increase. The United States will still import large amounts of WCSB crude with or without the KXL project, utilizing the existing Keystone system, the Enbridge Mainline and Express network, and a variety of smaller pipelines. The cancellation of these projects by centre-left political leaders, on grounds of climate impacts, lack of Indigenous consultation, and environmental assessment, does not necessarily indicate a broad turn away from pro-resource development regulation, but rather indicates that the controversy of these particular projects precluded their completion.

4.8 Conclusion

This paper aimed to examine the characterization of the public interest in oil pipeline regulation in Canada and the United States by utilizing public comment data and regulatory compliance documents to compare the Northern Gateway and Keystone XL pipeline projects. While the regulatory mechanisms in both these cases have integrated socio-environmental assessment to a significant extent in the last several decades, both institutions maintain a pro-resource development stance. The State Department/President and Cabinet/Prime Minister are the final decision-makers in both cases, exacerbating the inherently political nature of these processes (despite theoretical independence of the NEB).

In both cases three trends were identified: a lack of clarity regarding regulatory mandates, perceived interference by government, and insistence on a broader assessment of risk and impact. The regulatory applications submitted by both NGP and KXL included significant technical and environmental assessments, as well as records of public consultation, but the interpretation of the public/national interest for both projects rested on a market-focused project justification. The role of executive decision-makers is paramount in the interpretation of the public interest, as in both cases different ruling parties made different decisions based on very similar regulatory information.

The Canadian process theoretically maintains an independence from government, but the NEB generally approves of projects with a number of conditions and Cabinet makes the final deliberation (in the NGP case, a judicial challenge resulted in an overturning of the approval by the Conservative Harper government). The American process is more explicitly political, as it is led by the State Department which is partisan by nature. Presidential decisions rarely contradict State Department advice, but the State Department (and every other federal department that contributes to pipeline assessment) is a part of the administration.

There are several avenues for future research building on the data collected here; as was referenced throughout, the dynamics of risk perception are not the focus here, but they could be given the extremely detailed and accessible public comment data for these projects. Additionally, further case studies would strengthen the claim that these regulators are disconnected from the public's idea of the public interest. Finally, an international comparison of regulatory institutions, to investigate for best practices beyond Canada and the United States, could provide some inspiration for regulatory reform. Both the NGP and KXL projects were ultimately cancelled, but this does not on its own represent a significant turn away from oil development in either country. However, these processes do reveal a disconnect between public expectations and regulatory mandate, as well as between partisan

decision-makers and regulatory processes that are perceived as independent. These regulatory mechanisms are inherently and actively political. In the absence of a clear, ambitious, and legislatively protected mandate, these institutions will continue to rely on a narrow, market-focused characterization of the public interest.

Chapter 5
Discussion: Institutional Defects in Pipeline Regulation

Canada and the United States have struggled to balance the economic benefits of their fossil fuel resources with the socio-environmental toll of this industry. Oil pipelines play a crucial role in this balance, as their construction places vulnerable ecosystems and communities at risk and locks in fossil fuel development for decades; conversely, they also create regional employment opportunities and facilitate the export of a valuable global economy. Regulatory mechanisms, built mostly to oversee the market conditions and maintain continuous supply and demand of these resources, are also responsible for representing the public interest and mitigating the socio-environmental impacts of these pipelines. But while these impacts have increased in breadth, intensity, and political salience in the last several decades, regulatory institutions have not evolved to the same extent or at the same pace. Socio-environmental assessment is a huge part of the regulatory processes for pipelines; but vague mandates, partisan interference in decision-making, and the geographically diffuse nature of contemporary risks associated with fossil fuel development and transportation have left these institutions unable to fulfill their mandate to its fullest extent. To be clear, while this dissertation has found inadequacies and weaknesses in these regulatory mechanisms, it should be stated that the extent of socio-environmental assessment and public consultation for these pipelines is, compared internationally, fairly comprehensive. These findings are not meant to detract from the extensive technical risk assessment undertaken for these projects, but rather to identify ways that these institutions, already best in class by many metrics, can improve. The bar is set low for pipeline regulation internationally, as few institutions go beyond hyper-localized risk assessment and narrowly defined impacts. Canadian and American institutions perform better than many of their peers, but have not adequately addressed problems with scope and integrating complex socio-environmental issues. The issues presented here are complex, and there are no easy answers. But there is room for improvement, both incremental and transformative, to make these institutions work better for more people.

Questions remain regarding the ability of regulatory mechanisms to address an ever-expanding and increasingly complex universe of interests. In this project, I examined three topics—climate change, energy security, and the public interest—which epitomize the nuance and complexity of contemporary socio-environmental impacts from oil pipelines and how regulatory institutions in Canada and the United States have interpreted these impacts.

Utilizing comparative analysis of two large and controversial pipeline projects, Enbridge's Northern Gateway and TransCanada's Keystone XL, I compared the interpretation of each of these issues by the National Energy Board in Canada (now superseded by the Canada Energy Regulator) and the State Department in the United States. Initially, this thesis asked three questions, and each was addressed in one paper. However, there are also several cross-cutting themes that can be identified through the theoretical lens of regulatory capitalism and the political economy of energy, upon which this project rests.

This discussion will briefly recap each of the research questions asked at the start of this thesis, with reference to the three empirical papers. I will then propose three cross-cutting themes: the role of partisanship and executive power; the re-definition of interested stakeholders in the question of oil pipelines; and the inadequacy of institutional mandates that, despite significant advancements in socio-environmental assessment, continues to privilege economic development over other fundamental public issues. These themes reveal that the capacity of regulatory institutions has not evolved at the same pace as the impacts they are meant to assess, and the lack of clear and specific institutional goals has left these decision-making processes opaque and easily coopted by partisan actors. I will then move on to discuss the theoretical contributions and limitations of this project, with particular attention paid to the novelty of the data sources and the contribution to regulatory capitalism and energy security frameworks. Finally, I will address potential reform for these regulatory institutions, as well as avenues for future research.

5.1 Research Objectives

The overarching objective of this project was to examine how national regulators address cross-jurisdictional issues with broad and diffuse socio-environmental impacts in the context of pipeline governance in Canada and the United States. In pursuit of this analysis, three specific topics were addressed: climate change, energy security, and the public interest. Climate change has rapidly increased in salience for energy producers in the last several decades, but to date pipeline regulators have kept their assessment narrow, focused on the direct GHG emissions from constructing and maintaining pipelines despite the long-term fossil fuel development to which these infrastructure assets commit. Energy security has traditionally been considered by states largely in terms of continuous, affordable oil supplies, but concerns about the accessibility and acceptability of fossil fuels, especially now compared to renewable energies, mean that this conventional definition is no longer acceptable. Lastly, the universe of interested parties affected by these pipelines has exploded

since the 1970s; consumer safety groups, environmental activists, and Indigenous communities demand more attention and nuanced assessment of indirect impacts, many of which are difficult to quantify and assess. The concentrated benefits and diffuse risks of these pipelines demand a broader look at different types of impacts.

These particular topics were chosen due to their relevance for theories of political economy and regulatory capitalism, which focus on the intersection of state-market power, as well as the vagueness with which they are defined by regulatory mechanisms. It is important to note, and this will be elaborated upon later, that this thesis took a deep look at two pipeline projects, rather than a broader examination of many projects. Consequently, while some interesting results and dynamics can be gleaned, it is not possible at this time to characterize the whole of pipeline governance in Canada and the United States. Both Northern Gateway and Keystone XL illustrate some of the most pressing issues in energy sector governance, and so their selection is valuable in that it allows close examination of some of these dynamics. Additionally, while both projects are distinctive in their respective institutional landscapes due to their size and controversy, both are subject to standard regulatory requirements that all pipelines of their ilk must satisfy to be constructed, and so while the social, political, and economic context is specific to each pipeline, the regulatory dynamics for Northern Gateway and Keystone XL are fairly typical for each country.

The first empirical paper, *Chapter 2: Utilizing pipeline regulation to manage the diffuse risks of climate change* answered **RQ1**, which asked how climate change is interpreted in regulatory processes for oil pipelines, with regards to the public interest, private interest, and government. This chapter concluded that pipeline regulators in Canada and the United States interpret the risks of climate change in extremely narrow and site-specific contexts, despite the global nature of climate impacts. While both regulatory institutions accept that climate change does not respect national borders, both processes assess climate change in a vacuum, focusing mostly on the direct GHG emissions from constructing and operating the NGP and KXL pipelines. The KXL process, which went through several cycles of proposal and re-proposal due to turnover in the White House, did more explicitly acknowledge the indirect impacts of climate change but given the concentration of decision-making power in the executive branch, this is more a reflection of party ideology rather than a standard regulatory procedure to assess broader climate impacts (Department Of State 2015; 2017). In the analysis of public comments, both cases revealed a significant dissonance between the impacts that regulatory institutions focus on (direct GHG emissions) and public concerns. Both sets of comments revealed concerns regarding the need to reduce fossil fuel dependence now in order to

mitigate climate change, the need to invest in renewable energies, and that the particular oil marked for transport through these pipelines is especially carbon intensive. None of these issues are clearly addressed through regulatory compliance guidelines for oil pipelines; however, due to significant pressure from environmental and other civil society groups starting in the 1970's in both countries, socio-environmental impact assessment makes up the bulk of these project proposals (J. M. Baker and Westman 2018; Doern and Gattinger 2003). In terms of quantity, at least, environmental assessments are by far the most thorough and detailed section of project applications. But the extent to which climate change is taken into account for the approval or rejection of these projects is largely left to final executive decision-makers, rather than embedded in regulatory procedures. Neither the NEB nor the Bureau of Energy Resources (in the State Department) were originally created to assess global issues like climate change; they were created based on an oil-centric view of the political economy of energy, and a market-based regulatory mandate (Gunningham 2013; Moran 2002). In the 21st century, they were charged with assessing a much broader and more complicated set of issues, but their core mandate did not drastically change. Ultimately, these institutions rely on patchwork and inconsistent assessment of climate change, resulting in a state of regulatory uncertainty that increases costs for firms, decreases public confidence, and contributes to a disconnect between energy governance and climate goals.

Chapter 3, *Cheap, Local, Ethical: Addressing Energy Security through Pipeline Regulation* investigates **RQ2**, which asks how energy security is interpreted in regulatory processes for oil pipelines, with regard to the public interest, private interest, and government. This paper utilizes the Four A's framework of energy security (Benjamin K. Sovacool 2011c) to compare the characterization of energy security in both cases. Relying on public comment data and industry compliance documents, this paper explores the characterization of energy security in both projects and discusses the broader implications for regulatory governance. Analysis of the public comment data revealed several points of similarity between the two cases. Commenters in both cases were concerned about the energy independence of their states, with an emphasis in the Northern Gateway case on increasing domestic refining capacity (as opposed to shipping oil to Asia for refining/selling), whereas the Keystone commenters desired an increase in domestic oil extraction, refining, and consumption. These comments did simplify or disregard some facts of the global energy marketplace; Canada does refine a significant amount of oil (and produces more than domestic demand), and the United States produces a lot of oil (although not enough to satisfy domestic demand). Additionally, the goal of 'energy independence' may be at odds with concerns regarding affordability, which were

also examined in both cases. Finally, and most novel for the study of energy security, both sets of comments revealed an unwillingness to allow certain states with poor human rights records to receive the benefit of these pipeline projects; namely China and Saudi Arabia, whose NOC owns the largest oil refinery in the United States. Conversely, regulators addressed these issues of availability and acceptability from a very different perspective; in both cases, the prospect of market diversification (from both a demand and supply perspective) was frequently utilized as justification for the projects, and the potential economic benefits were proposed to outweigh any changes in fuel prices that would result from the pipelines' operation. Ultimately, this shows that regulators are (for the most part) emphasizing narrow and conventional interpretations of energy security, focused on maintaining continuity of a relatively inexpensive supply of oil, and are not integrating more complex energy security issues into their standard assessment procedures.

Finally, Chapter 4, *In Whose Interests? Interpreting the Public Interest in Pipeline Regulation* dealt with **RQ3**, which asked how the concept of 'the public interest' is characterized and represented in the governance of oil pipelines in the United States and Canada. This paper aimed to examine the characterization of the public interest in oil pipeline regulation in Canada and the United States by utilizing public comment data and regulatory compliance documents to compare the Northern Gateway and Keystone XL pipeline projects. From the public comments submitted in the regulatory processes for NGP and the second round of KXL, several trends concerning the public interest/public participation can be identified: first, that the impact assessments required by regulators tend to be very localized in terms of tangible effects, but an increasingly broad perception of social, cultural, and environmental risk that is not well captured by current regulatory mechanisms. Second, that there is a significant lack of understanding of the regulatory requirements and the mandate of regulators, particularly with regards to explicit industry planning and development. Lastly, there is a lack of trust from a significant portion of the general public that believes that regulatory processes are at least partially captured by industry or have no power to make and enforce decisions. These trends all point towards regulatory processes that are out of step with contemporary challenges and problems, and institutions that rely on a narrow interpretation of the public/national interest. While the regulatory mechanisms in both these cases have integrated socio-environmental assessment to a significant extent in the last several decades, both institutions maintain a pro-resource development stance (Doern and Gattinger 2003; Renfro 2018). The State Department/President and Cabinet/Prime Minister are the final decision-makers in both cases, exacerbating the inherently political nature of these processes (despite theoretical independence of the NEB.

Table 5: Key Similarities/Differences in the NGP and KXL Cases

	Northern Gateway	Keystone XL	Similarities/ Differences
Interpretation of Climate Change	Direct GHG's during construction/operation of pipeline only; upstream/downstream impacts not considered. Secondary factor in project rejection.	2014-2015 (Obama): A critical factor in denying the Presidential permit 2017-2019 (Trump): Direct GHG emissions from project are mentioned. 2021 (Biden)): Climate change cited as justification to reject, although no further regulatory assessments are completed.	In the NGP case, there was a consistent interpretation of climate change, but it was extremely narrow during the hearing process. In the KXL case, interpretation depends on current administration.
Interpretation of Energy Security	Focused on market diversification and access to Asian markets.	Focus on maintaining continuity of supply for the United States.	Both maintain narrow interpretations of energy security, focused on supply/demand.
Interpretation of the Public Interest	The NEB was meant to maintain "a balance of economic, environmental, and social interests that changes as society's values and preferences evolve over time"	The State Department's mandate is to "develop and execute international energy policy to promote: energy security for the United States and its partners and allies; U.S. economic growth that benefits American business and people; and global political stability and prosperity through energy development"	Mandates are extremely vague. The NEB, over its tenure, tended to find almost all projects within the public interest if certain conditions were met. The State Department's characterization was acknowledged as variable and based on convention.

These regulatory processes reveal a disconnect between public expectations and the regulator interpretation of the public interest, as well as between partisan decision-makers and regulatory processes that are perceived as independent. These regulatory mechanisms are inherently and actively political. In the absence of a clear, ambitious, and legislatively protected mandate, these institutions will continue to rely on a narrow, market-focused characterization of the public interest.

5.2 Cross-Cutting Themes

The overarching objective of this project is to investigate how effectively national regulators address complex, cross-territorial problems with diffuse socio-environmental impacts in the context of pipeline governance in Canada and the United States. The three empirical papers presented here focused on three issues that epitomize this type of problem: climate change, for its global impacts and

capacity to enhance other negative socio-environmental impacts around the world; energy security, due to the volatility of oil and gas markets and the rise of renewable energies; and the public interest, due to the increasing universe of interested and affected parties, all of whom have competing priorities. It is concluded that with regards to the characterization and interpretation of these issues in the two cases of Keystone XL and the Northern Gateway pipeline, Canadian and American regulatory mechanisms have tended to rely on outdated, narrow mandates that do not appropriately assess these issues, due to a lack of capacity or policy mandate, and executive-level decision-makers are the deciding factor, resulting in a largely ideological process rather than the quasi-judicial mechanisms that these regulators aspire to. I identify several cross-cutting themes across the three empirical foci, that contribute not only to the scholarship on the political economy of energy, regulatory capitalism, and the energy sector, but to policy advisors and decision-makers as these institutions are targeted for reform.

5.2.1 Partisanship & Executive Power

First, and as has been briefly mentioned, is the role of executive power and political ideology in these regulatory decisions. Both the State Department-led federal processes for international pipelines and the National Energy Board (until its replacement by the CER in 2019) have immensely increased the amount of environmental assessment and community consultation required in any major pipeline project in the last several decades, to the point where these components make up the vast majority of any project application. For context, the NGP project contained eight volumes of compliance documents; five were concerned with community consultation, socio-environmental impacts, and spill response, while only one was dedicated to economics and financing. KXL's Environmental Impact Statement was similarly large, with four of six sections (excluding appendices) dedicated to socio-environmental impacts. This is largely due to the CEAA, passed in 1992 and updated in 2003, and the NEPA, passed in 1970 and significantly updated for the first time in 2020. However, with regards to climate change, energy security, and the public interest, vague wording and a lack of explicit mandate leaves these issues largely up to the regulator and firm to navigate. The NEB was plagued with uncertainty over the calculation of pipeline-related GHG emissions from 2010 onwards; the general convention was to exclude upstream and downstream emissions and only account for those directly generated by the pipeline itself, but this was contested by environmental activists on

several occasions and there were exceptions made.[16] Both the NEB and State Department have relied on narrow definitions of energy security that privilege availability and affordability of oil supply despite increasing attention paid to other facets of energy security, like the acceptability of certain energy sources given increasing environmental degradation caused by fossil fuel extraction or the ethical aspects of exporting oil to countries with dire human rights records. Lastly, both regulatory mechanisms are meant to represent the public/national interest; but due to the placement of the State Department in the American executive, as well as the final decision-making power resting in the hands of Cabinet in Canada, calling into question any façade of institutional independence.

In the American case, it is not clear that independence was ever the goal for international pipeline regulation. These regulatory processes, unlike their state-level counterparts, have been led by the State Department for decades, which is an inherently partisan department that changes with Presidential administrations. This results in a flexibility that Presidents can take advantage of, for better or worse. President Joe Biden explicitly cancelled the KXL project in 2021 on climate grounds, and Prime Minister Justin Trudeau cancelled the NGP project after legal challenges brought by several Indigenous communities revealed a lack of consultation by Enbridge. But both of these projects had at one time been approved by their regulators—so there is clearly a disconnect between regulators and the public interest since these projects are getting cancelled at the eleventh hour by ruling parties.

There are some key differences in the Canadian and American cases. While both have significant partisan influence in their processes, the Canadian NEB (now CER) is more independent than the American institutions. The NEB does not change over with each new government, and is meant to be a 'quasi-judicial tribunal' of experts that conduct public hearings, assess evidence, and give informed advice to the Cabinet. By contrast, the State Department is partisan by nature and its mandate is given by the President; it is extremely unlikely that the State Department would provide advice contrary to the President's policy goals, although some federal departments do submit testimony that may be qualified in some way. In the NGP case, the NEB issued advice to permit the pipeline but this approval was struck down judicially and then by Prime Minister Trudeau.
All of this is to say that these regulatory mechanisms, which can be perceived as apolitical and largely administrative, are mostly subject to partisan policy goals. These institutions provide an important service in transparency by compiling socio-environmental assessments and records of community

[16] See the Energy East Project

consultation. But ultimately, they are mostly part of macro-level political processes that prioritize certain policy goals. For Presidents Obama and Biden, that goal was environmental conservation and the mitigation of climate change. For Prime Minister Trudeau, environmental conservation and appropriate consultation with Indigenous communities. For Prime Minister Harper and President Trump, the goal was oil development and the economic benefits that would result. While some civil society groups will rejoice at the cancellation of these projects, there is a serious issue in the application of executive power in these regulatory processes. The role of executive power in these processes results in a lack of procedural transparency for citizens, a high financial burden for firms, and a state of regulatory failure where these institutions cannot fulfill their role to represent the public interest because they have been co-opted by party ideology. There is no doubt that had Donald Trump won the 2020 American presidential election, or if Stephen Harper's Conservatives had won another term in 2015, then oil would be pumping through both of these pipelines today.

5.2.2 Beyond the State and Market: Re-defining the universe of interests

The second theme which persists throughout all three papers despite their differentiated theoretical underpinnings is that of defining the universe of interests in pipeline governance. In Chapter 2, analysis of public comment data and compliance documents for each project revealed a disconnect in the ways that the general public (or at least the segment thereof that opposed these projects to the point of public comment) and the regulators defined the impacts of climate change. Commenters pointed out the global impacts of climate change, and how a continued dependence on fossil fuels would have significant impacts on our ability to mitigate GHGs in the short term. Regulators focused solely on the project-specific emissions, dismissing the upstream and downstream impacts of oil extraction and consumption as beyond their purview. Chapters 3 and 4 reveal a similar disconnect in the ways that 'interests' and 'impacts' are defined by regulators, with an emphasis on security of supply and demand in the context of energy security and a vague definition of the public interest. With regards to Chapter 2 and climate change in particular, the KXL case shows the ability of Presidential administrations to accommodate different subsets of interests, depending on their own policy goals.

Since the 1970s/80s, these pipeline regulators have been asked to take on a much greater burden of socio-environmental assessment (Doern, Prince, and Schultz 2014). But as that universe of interests and interested stakeholders has expanded, the fundamental underpinnings of these institutions have not expanded at the same rate. Socio-environmental impacts like climate change are

usually defined as locally as they can be by regulators; although President Joe Biden, upon cancelling the KXL project in early 2021, explicitly referenced the broader climate impacts of fossil fuel infrastructure (McKibben 2021). Broader impacts like climate change, ecosystem degradation, and community opposition are difficult to quantify, and so difficult to assess using a scientific evidence-based framework, as both the NEB and State Department have done.

Additionally, these regulators are bound by their territorial jurisdiction, and so do not assess impacts beyond that jurisdiction. This is seen most clearly with regards to climate change and energy security, where the NEB and State Department stop assessment at their national borders. But climate change does not respect states, and the energy sector (and the security concerns that result) is global, and these issues cannot be adequately identified or interpreted via a state-centric lens. When a state-centric regulatory lens is applied, the global consequences of the fossil fuel sector are diminished. On the one hand, these are national regulators with no jurisdiction beyond their territory; but these pipelines do not end at the border, and are emblematic of the globalized nature of the energy sector, which has few international standards to govern it. No regulatory institution with any enforcement capabilities is assessing these global issues, and no country-level institution will bear the responsibility for fear of losing a competitive advantage.

Additionally, both Canada and the United States have to reckon with their federal systems. As Chapters ***2, 3***, and ***4*** all indicated, the benefits and risks of these large infrastructure projects are not equitably or equally distributed; while one region may benefit from economic growth bolstered by oil extraction, another may take on disproportionate environmental risk. In the NGP case, this manifested in an Alberta-versus-British Columbia sentiment in the public comment data, where commenters from B.C. lamented the risks to sensitive ecosystems like the Great Bear Rainforest as well as local tourist economies while Albertan firms and workers would reap the economic benefits. In the KXL case, commenters were also concerned about the risks to sensitive ecosystems like the Nebraska Sandhills (which the pipeline was re-routed away from after the Obama administration rejection) where they questioned the benefit to the states that KXL would pass through on its way to the Gulf Coast refineries. In the American context particularly, state-level regulation is most often utilized for oil pipelines and there are rare opportunities for total project assessments. On the one hand, this allows states to protect their own interests to an extent, but on the other there is rarely a chance for assessment of an inter-state pipeline as a whole (except for certain safety issues), and some states have extremely spare regulatory processes. The Canadian system, conversely, utilizes federal regulation every time a pipeline crosses a provincial border, allowing for total project assessment but

at the cost of regional authority within the regulatory process. The KXL and NGP projects are international and interprovincial, respectively, and so are subject to federal oversight. Both the NEB and State Department are national regulators and so are making national decisions, but it is clear that some regions feel ignored no matter the final outcome. Balancing regional interests should be of significant concern to these institutions in future, both to avoid political fragmentation and to better support communities—those resource-dependent as well as those that take on disproportionate risks of these pipelines—as we transition away from fossil fuels.

5.2.3 Vague Institutional Mandates

The last cross-cutting theme across all three empirical papers and issue areas is that of institutional mandates that do not explicitly indicate the extent to which complex, international issues like climate change or energy security should be addressed by either regulator. Both regulators have mandates to act in the public/national interest, passed down by legislation in the NEB and executive directive in the State Department; both the NEB and State Department are largely free to interpret that interest. This vagueness does have advantages—it means that regulators can take into account context-specific factors for any given project—but it also means that the public interest is decided without any clear parameters for what that interest means. Without clear and explicit assessment criteria for public interest factors, these institutions both emphasize the parts of their mandates that are better defined; these are mostly market factors like the setting of tolls and tariffs, financing, and economic benefits, as well as ensuring continuity of supply and demand. As was discussed in all three empirical papers, these regulatory institutions were not built to assess these complex issues with large numbers of interested stakeholders, but rather out of the need to regulate market conditions in the case of the NEB and ensure domestic energy availability and economic growth in the case of the State Department and Bureau of Energy Resources.

A logical pushback against these alleged regulatory failures would be the meteoric rise of socio-environmental assessment in both countries, with both the Canadian Environmental Assessment Agency and the Environmental Protection Agency contributing significant technical expertise for individual pipeline projects in the last several decades. Firms are also expected to produce extensive field assessments and records of community engagement, either via mandatory compliance guidelines or requests by the regulator. In fact, the bulk of interprovincial/international pipeline applications consist of these assessments. There has been a clear expansion of both regulatory capacity and

responsibility. So why do we need a clearer public interest mandate if there is such attention paid to social and environmental issues?

Regulatory uncertainty has been on the rise in the Canadian and American energy sectors, and these two cases exemplify that uncertainty. KXL was rejected, re-rejected, approved, and then rejected again; NGP was conditionally approved, overturned, and then cancelled. Major pipeline projects are almost universally controversial and contested, leading to uncertain ground not just for firms but for sector-dependent labour forces and ultimately, consumers. Perhaps these are the inevitable growing pains of two countries struggling to uncouple themselves from fossil fuel dependence. But how we navigate this transition depends in part on the strength of our institutions, and neither the NEB nor the State Department is in possession of an explicit public interest mandate that integrates issues that consistently arise over oil pipelines; climate change and energy security, but also Indigenous consultation, ecosystem conservation, and risk management. These institutions were built to privilege capital accumulation over sustainability, and without a clear change in policy objectives this will continue despite the addition of extensive socio-environmental assessment.

5.3 Research Contributions

This research contributes to a more nuanced analysis of the relationship between regulatory institutions, the sectors they govern, and the interests they represent. This project strengthens theoretical understanding of how regulators characterize and interpret complex, cross-jurisdictional problems like climate change and energy security, and further exposes some institutional failures that hinder long-term strategies for sustainable natural resource management and decarbonization. Additionally, this project adds to the empirical literature on regulatory capitalism, energy security, and the political economy of climate change via novel data sources and underexplored facets of energy sector governance. Finally, I propose two takeaways for policy-makers in terms of regulatory reform. Below, I discuss how this research enhances our understanding of regulation and energy governance in each of these theories, as well as the implications this research has for policymaking going forward.

This project contributes to our understanding of the *international political economy of energy*, which investigates the uniqueness of energy systems in global political and economic structures. Energy has long been a case study of interest for IPE scholars, but the debate over whether energy is a commodity like any other or holds a singular position due to its underpinning of most social and economic activities remains contested; critical scholars in particular tend to posit that

traditional IPE theories do not fully explain the relationship between states and markets when it comes to developing and consuming energy (DiMuzio 2014). **Chapter 2,** which focuses on the interpretation of climate change in energy regulation, emphasizes the distinctiveness of energy systems by examining the state-market-climate nexus. Energy regulators require that projects submit intensive technical assessments for localized impacts on communities; and in fact, many of the risks from pipelines are local and specific, like accidents or spills (Spence, n.d.). However, the indirect impacts of fossil fuel extraction and the pipelines that facilitate that extraction contribute disproportionately to climate change relative to most other industrial infrastructure projects (Davis, Caldeira, and Matthews 2010). And the material commitment to long-term fossil fuel development that these pipelines represent works against the climate actions that both Canada and the United States are taking at the national level. This 'have our cake and eat it too' mentality emphasizes the supremacy of global market forces in state decision-making processes (MacLean 2017; Matthew Huber 2009). These countries—two of the largest fossil fuel producers in the world—are unwilling to fully decouple their economic growth from fossil fuels, and so despite both rhetorical and policy commitment to climate action in other contexts, neither country is at this point asking their fossil fuel industries to fully account for the consequences of its actions. This chapter corroborates a burgeoning sub-field of the IPE of energy which examines the ways that market-focused governance institutions are at odds with the deep decarbonization efforts required for ambitious climate governance (Falkner 2018; MacNeil and Paterson 2018). This chapter also reiterates the role of specific powerful actors in international political economy, regarding the evolution of these regulatory institutions. Climate change is a deeply partisan issue in the United States, and less so in Canada, but the extent to which these regulatory mechanisms account for climate change is very much affected by the political priorities of government leaders.

Second, this thesis contributes to the literature on *energy security* in two distinct ways. First, it examines regulatory institutions, which are under-explored in the energy security literature despite the fact that decision-making processes in these institutions explicitly address issues of availability, affordability, and accessibility. **Chapter 3** adds to the empirical literature, contributing to a trend within the energy security scholarship to expand beyond a focus on supply and demand of fossil fuels (Goldthau and Sovacool 2012; Bradshaw 2014). This chapter examines regulatory governance within the Four A's framework and finds, similarly to other case studies focusing on other sectors/institutions, that there is a need to focus on other aspects of energy security like accessibility and acceptability, and to evaluate different energy sources based on these aspects (Benjamin K.

Sovacool 2012b; Indriyanto, Fauzi, and Firdaus 2011). National-level regulatory institutions are under-examined in the energy security literature, which tends to focus on broader globalization processes (Benjamin K. Sovacool and Brown 2010; Bradshaw 2014). While I do find an emphasis on international trade issues in the comment data for both projects, commenters were largely unconvinced that the benefits of this trade would trickle down. This is at odds with the proposal documents submitted for both projects, which emphasize a much rosier look at the benefits of export growth. These findings support recent forays in energy security that interrogate the supposed benefits of fossil fuel development, despite their relative affordability and accessibility (Proskuryakova 2018; Matt Huber 2016). Secondly, *Chapter 3* presents a novel understanding of 'acceptability' within the energy security framework, focusing on the trade partners that will purchase oil flowing through these pipelines. In energy security scholarship specifically, 'acceptability' usually refers to the type of energy source that is being extracted/consumed, or the inequities inherent in one type of energy extraction vs. another, rather than which regime is doing the extracting/consuming. The concept of 'ethical' international trade is not new in academia, but it is relatively novel when applied to energy security frameworks. And its inclusion is logical; if we contend that energy security needs to expand beyond simple, state-level calculations of supply and demand, and that social/environmental issues need to be integrated both into energy security scholarship and policy-making processes, then the issue of which regimes are benefiting from the extraction of these resources is pertinent.

Thirdly, **Chapter 4** contributes to the literature on *regulatory capitalism* by adding to the case study empirical literature via an examination of energy regulators specifically. Chapter 4 proposes that, in line with regulatory capitalism theory, that energy regulators were created to serve capitalist impulses of commodity accumulation as opposed to limit firm's behaviour for social/environmental/cultural reasons (Braithwaite 2008; Levi-Faur and Jordana 2005b). However, despite these origins, these institutions have been asked to take on the assessment of these issues (which may result in the impairment of capital accumulation). Due to a lack of clear, entrenched policy mandate in favour of sustainable development, these institutions are struggling to assess complex socio-environmental issues, leading to almost constant controversy when these large projects are proposed. This chapter gives a systematic look at relatively novel data—public comments— and adds to the growing body of empirical literature on regulatory governance (Spence, n.d.; Ashford and Hall 2018; Carrigan 2013). Additionally, theories of regulatory capitalism are tested in new case studies, in this case energy regulators), and are found to support the hypothesis that despite an exponential expansion of regulatory authority in the 1990s/2000s, these institutions are not account

for the larger universe of interests for which they are now responsible. The public comment data supports this hypothesis, as commenters contest the legitimacy of regulatory procedures that assess pipelines.

Finally, I propose two main takeaways for policy development and institutional reform. First, as I have emphasized repeatedly throughout this project, these institutions need an explicit definition of public interest criteria, which should include sustainable development. Both these regulators state that they aim to balance the economy and the environment in their processes, but these institutions need a more detailed and transparent mandate in order to standardize their processes and rely less on executive decision-making. What are the thresholds for environmental degradation, social impacts, and community opposition? Ideally, regulators would start with an explicit sustainable development mandate and expect firms to meet a higher threshold of social and environmental requirements. Second, and more difficult to implement, there needs to be less regulatory volatility between administrations. This is a tall order, especially in the United States where the regulators are *in* the administration. But increasing institutional autonomy, alongside clearer thresholds for sustainable development, would go a long way in restoring public trust in these institutions. This would also reduce uncertainty for firms and allow for longer-term energy sector planning.

Complex, cross-jurisdictional issues—like climate change, like energy poverty, like risks to drinking water and indigenous rights and treaties, and vulnerable ecosystems—are increasingly more important to the electorate, and therefore to the democratic state, than the rapid economic growth that fossil fuel development allowed for. Both Canada and the United States are actively pursuing decarbonization on the one hand, while continuing to promote fossil fuel development via pipeline regulators (among other mechanisms) on the other.

Governments are ultimately asking these institutions to implement a national energy strategy, without giving them the tools to do so. These regulators have come a very long way and engage in significant socio-environmental assessment. But they are helping make big, long-term decisions about our energy future on an unstable institutional foundation. Their decision-making processes are vague, and their mandate is huge.

This project adds to our understanding of how institutions that operate at the nexus of state and society try to balance these problems for states (while also mindful of the importance for markets) and finds an unresolved tension that reveals core defects in the design of these regulatory institutions.

This dissertation has contributed to the literature on the international political economy of energy, energy security, and regulatory capitalism largely through new case studies (energy regulation) and relatively novel data sources (public comment data for pipeline projects). However, there are several limitations of this data which should also be noted, in order to contextualize these contributions.

5.4 Research Limitations

Public comments are not a perfect sample of public opinion; the submission process will inherently attract people with strong opinions rather than moderate, generally opposed rather than in favour, and civil society groups may be over-represented due to information campaigns (G. Brown and Eckold 2020). Additionally, further case studies and large-N analysis would allow for broader conclusions about the pipeline industry and what its development means for climate change, energy security, and the public interest (Gravelle and Lachapelle 2015). While the contributions of this thesis are important, they must be contextualized in order to strengthen the validity of the conclusions made. First, two pipelines were examined, one each in Canada and the United States. While this small-N comparison allows for depth of analysis, and for a nuanced contextual investigation, it means that conclusions cannot be definitively drawn regarding pipeline operations and fossil fuel development as a whole. As Barack Obama noted in 2015,

> *"for years, the Keystone pipeline has occupied what I, frankly, consider an overinflated role in our political discourse. It became a symbol too often used as a campaign cudgel by both parties, rather than a serious policy matter. All of this obscured the fact that this pipeline would neither be a silver bullet for the economy, as was promised by some, nor the express lane to climate disaster proclaimed by others" (The Obama White House 2015).*

The Northern Gateway and Keystone XL pipelines do not represent the whole of the pipeline industry in Canada and the United States. Both were ultimately rejected, which for now has had little to no impact on the amount of fossil fuels extracted in Western Canada.

Second, it is important to take note of the biases present in the public comment data. This is a useful data source in that it is an easily accessible avenue for any citizen to submit their opinion and provide detailed rationale of that opinion. However, the responses for both projects skew

overwhelmingly in opposition (less so in the Keystone XL case), and in the NGP case there was a clear regional concentration of commenters in British Columbia (commenters were not required to give addresses for the KXL process). Other groups may also be over-represented, such as property owners, those with higher levels of education, or English-speakers (although in the NGP case a French comment form was available, and for this project French comments were translated), but most commenters did not self-identify according to these identifiers. Those neutral or in favour of these projects are less likely to submit a public comment, but less detailed polling data suggests that there is a 'silent majority' of citizens that do passively support these projects (Gravelle and Lachapelle 2015). It is also crucial to emphasize that just because a project decision is not in one groups favour, this does not automatically equal regulatory failure; these are huge projects with cascading effects across multiple groups and communities, as this thesis has proposed, and as a result there is no decision without negative impact. An approval of a new Canadian pipeline may disappoint climate activists, but may encourage economic prosperity for some communities, allow market diversification in a traditionally bilateral trade relationship, and encourage new trade partners to import comparatively better-regulated Canadian resources.

Nevertheless, these comments represent **perceived gaps in the regulatory process** because there are clear trends and issues that are consistently referenced. If these issues were being well addressed within existing regulatory mechanisms, they likely would not be the subject of public comment *en masse*. Additionally, both projects drew huge numbers of comments; over two million for both phases of the KXL process (although this included many petitions and form letters) and over 8000 for the NGP process, which provides a large dataset from which to draw samples, and indicates a high level of interest in these projects from the general public.[17]

Despite the limitations of this data and research, important contributions to scholarship were made in the form of adding case study support to three bodies of scholarship which are all evolving to better understand contemporary energy challenges. And while this public comment data skews heavily towards opposition, it tells us a great deal about the nature of contested energy projects in Canada and the United States, and the myriad aspects of the public interest that citizens expect their institutions to consider.

[17] For context, Enbridge's Alberta Clipper expansion in Minnesota (meant to upgrade the pipeline to 800,000 bpd capacity) proposed in 2016/2017 received 90,000 comments; the Trans Mountain Expansion in Canada received about 400 during its initial application process in 2013/2014.

5.5 Future Research

This project has investigated how effectively national regulators address complex, cross-territorial problems with diffuse socio-environmental impacts in the context of pipeline governance in Canada and the United States. Via a comparative analysis of two cancelled and contested pipelines, the Keystone XL in the United States and the Northern Gateway in Canada, the interpretation and characterization of three issues were examined: climate change, energy security, and the public interest. Ultimately, it is concluded that pipeline regulators in Canada and the United States originated as market-focused rules enforcers that were beholden largely to industry and the relevant government department. There has been an attempt to equip these institutions with the tools to address a broader set of issues, mainly focused on public safety and environmental protection. However, the fundamental structures of these institutions are built to encourage oil development in support of high levels of economic growth, and under these circumstances cannot appropriately evaluate complex contemporary issues like climate change and energy security which have significant but diffuse impacts on a wide variety of stakeholders. If these regulatory mechanisms are to persist with expansive mandates of representing the public interest, encouraging energy security, or balancing economic and environmental goals, they need an even bigger toolbox that, at the very least, defines what it means by these terms. And perhaps entirely new institutions are needed. In the American case in particular, taking the bulk of regulatory processes out of the State Department and placing it in an arms-length structure, like the Federal Energy Regulatory Commission or something new, may be the only way to mitigate some of the inconsistencies of these processes. Having said that, as seen in the NGP case, government priorities tend to impose themselves on these regulatory decisions regardless.

This project contributed to the scholarship on the international political economy of energy, energy security, and regulatory governance by examining a relatively novel data source—public comments submitted for oil pipeline projects—to draw the boundaries of the gap between what these regulatory institutions do and what some segments of the population think they should be doing. In particular, a desire to weigh environmental protection more heavily in the economy-environment balance, to define ‘energy security’ as more than ‘oil security’ and to consider the global impacts of the fossil fuel trade, and to reform regulatory institutions to more explicitly represent aspects of the public interest apart from potential economic benefit.

There are several avenues for future research from this project. First, there is significant space for a focus on the ‘acceptability’ and ‘accessibility’ aspects of energy security with regards to energy regulation. Energy security in this context is often defined with a focus on ensuring continuous supply

and demand of oil resources. But it is becoming increasingly clear that this is a narrow and shallow definition of energy security, not only due to the climate and environmental aspects of fossil fuel extraction and the rise of renewable energies, but also because the benefits of those oil resources have never been equitably distributed. Local dependence on the industry at the point of extraction, impacts on communities and public health along pipeline routes, and energy poverty at the point of consumption globally have always been associated with oil (Healy, Stephens, and Malin 2019). And so to rely on this antiquated definition of energy security as justification for pipeline approval, as both of the projects studied here did in some contexts, points to a gap between how states define energy security, and how energy security actually manifests. More work can be done with regards to pipelines but also the fossil fuel sector as a whole to define and close this gap.

Related to this issue of energy security, but also to broader questions within climate justice and deep decarbonization scholarship is the role of fossil-fuel dependent communities in a just transition away from fossil fuels (Healy and Barry 2017; Delina and Sovacool 2018). Many of the issues raised in this thesis run parallel to the just transition scholarship; the need to decarbonize rapidly but equitably, concerns of how industry-reliant communities figure into the contestation of these large pipeline projects, defining the public interest at a local, regional, and national level. A focus on utilizing principles of a just transition to reform regulatory institutions to be flexible and ambitious while also protecting vulnerable regions and communities is a logical next step for this line of inquiry.

There is also the question of what a truly reformed regulatory mechanism for the energy sector might look like. Some suggest the need for flexibility, to adapt to changing social and environmental circumstances. Others posit that regulation needs to have an ambitious sustainable development mandate in order to balance the economy-environment scale (Young 2017b; 2017a). We also need to further examine the role of executive power in our regulatory institutions (Goldthau 2012). While in Canada, the NEB (and now CER) maintains a quasi-judicial independence, in the United States the regulator *is* the Cabinet. Complex issues like climate change and energy security are increasing in salience to the average citizen, but these regulators were not built to answer these types of questions. The NEB started as an economic regulator, and despite the addition of significant socio-environmental assessments to its processes, it never fundamentally changed in mandate (and the CER is built on the same institutional scaffolding). The State Department's priority is the President's priority, which changes depending on administration leading to a state of regulatory uncertainty for firms, and incentive for those firms to materially support Presidential candidates that would approve

their projects. The supremacy of Cabinet does allow for some maneuverability; President Joe Biden was able to cancel the KXL project almost entirely on climate grounds, a welcome turn for environmental activists fighting fossil fuel extraction. NGP's approval was overturned judicially, but Prime Minister Justin Trudeau halted a potential re-application by Enbridge by rejecting the project. But it also results in institutional uncertainty and a policy mandate that no longer matches the impacts these institutions assess. Examining the power hierarchies in these institutions more closely, and designing a regulator that is: ambitious, flexible, with a clearer public interest mandate, and more capable of assessing systemic socio-environmental impacts is the natural next step from this project.

Ultimately, we need to actively interrogate what we want regulation to accomplish: is it industrial development? Is it to support climate change mitigation? Is it to encourage energy independence? We are asking these institutions to bear a lot of responsibility for issues that they were not built to assess. While we have built up the institutional infrastructure necessary to address some of these issues, the fundamental epistemological questions of what these regulators are meant to do have not been adequately answered, leading to outrage from all sides. But these bigger socio-environmental issues cannot be removed from energy regulation; as we are increasingly aware, energy does not exist in a vacuum. This industry impacts and is in turn impacted by climate change, issues of energy security, and an increasingly discontented populace. The way that these regulators define complex socio-environmental issues, like the three discussed in this thesis, does not line up with what (some) groups expect from their institutions. Going forward, the public interest should be re-interpreted to better align with issues in which the public is most interested

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Appendix A

Public Comment Coding Scheme (Chapters 2/3/4)

Name	Description	Comments	References
CAPTURE	Reference to regulatory processes; specifically industrial influence on these processes.	27	29
OPPOSITION	General opposition to pipeline, no supplementary information	67	74
ECONOMICS	Discussion of revenue/trade/employment as reason for opposition	37	41
COMMERCIAL JUSTIFICATION	Reference to lack of economic benefit generated from pipeline, references to domestic production over international (includes refining capacity for NGP)	29	42
EMPLOYMENT	Reference to employment related to pipeline	57	69
OTHER SECTORS	Impact (negative) of pipelines on other sectors (e.g. tourism, fishing)	70	81
EMERGENCY MANAGEMENT	General opposition based on accident response, spill cleanup/liabilities	275	524
SPILLS	Reference to specific spills/accidents in specific regions	224	344
ENVIRONMENT	General opposition based on environmental impact	208	316
CLIMATE CHANGE	Specific reference to relationship between pipelines and climate change (often but not always related to decarbonization)	135	358
DECARBONIZATION	Reference to renewable energies, need to decarbonize (often but not always correlated to climate change)	214	316
ECOSYSTEMS	Reference to specific impacts on specific ecosystems (ie. Great Bear Rainforest in BC for NGP, Sandhills region in Nebraska for KXL)	188	228
WILDLIFE	Reference to specific wildlife populations	82	101

EXTRACTION	Opposition based on issues with fossil fuel extraction, rather than pipeline itself (e.g. Tailings ponds)	48	82
FUTURE	Reference to creating a 'better future'; for children and society	29	32
GOVERNMENT	Reference to issues with current government as opposed to the pipeline itself (e.g. Trump, Harper)	59	86
HEALTH	Impacts on human health (e.g. Carcinogens, air pollutants)	24	37
INDIGENOUS ISSUES	Broad reference to Indigenous issues within the process	99	242
CONSULTATION	Specific reference to inadequate consultation	13	15
TREATIES	Specific reference to ceded/unceded territories and specific treaty arrangements	8	19
INTERNATIONAL RELATIONS	Reference to international socio-economic trends and relationships; often cited with regards to risk/benefit (ie. Canada benefits from KXL, but USA takes on risk)	108	195
LAND USE	Issues with land use; often private landowners	14	24
MARINE TRANSPORTATION	NGP specific; related to Kitimat tank terminal	199	211
NECESSITY	Reference to broad oil supply/demand forecasts, capacity of other pipelines	76	90
PROCESS	Issues with the regulatory process itself, usually related to lack of public participation; often but not always correlated with "capture" code	146	250
PUBLIC INTEREST	Direct reference to the public or national interest with regards to the pipeline	141	226
WATER	reference to water contamination, water crossings	40	147
DRINKING WATER	Specific reference to certain drinking water sources/ aquifers	59	65
SUPPORT	General support for the project	21	40
ECONOMY	Reference to economic benefits generated from pipelines	31	76

SAFETY	Reference to safety of pipelines vs. train/truck	19	21
TRADE	Benefits of pipelines regarding trade relationships	18	32

Appendix B

Code Breakdown for Chapters 2/3/4

These tables represent each time text was coded in the 750 comments each for Keystone XL and Northern Gateway. Since most comments had multiple codes, these numbers correspond to discrete coding instances, not number of comments.

Chapter 2: Climate Change

Nodes	KXL	NGP	Total
ENVIRONMENT	101	215	**316**
CLIMATE CHANGE	208	150	**358**
DECARBONIZATION	97	219	**316**
ECOSYSTEMS	32	196	**228**
WILDLIFE	17	84	**101**
EXTRACTION	34	48	**82**
Total	**489**	**912**	**1401**

Chapter 3: Energy Security

Nodes	KXL	NGP	Total
ECONOMICS	5	36	**41**
COMMERCIAL JUSTIFICATION	7	35	**42**
GOVERNMENT	25	61	**86**
INTERNATIONAL RELATIONS	78	117	**195**
NECESSITY	10	80	**90**
Total	**125**	**329**	**454**

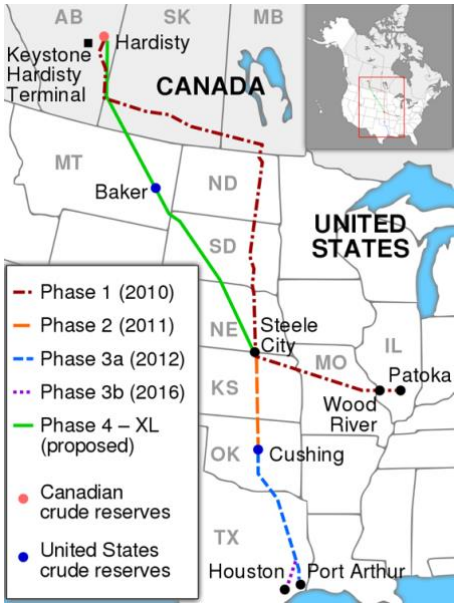
Chapter 4: Public Interest

Nodes	KXL	NGP	Total
CAPTURE	2	27	**29**
GOVERNMENT	25	61	**86**
NECESSITY	10	80	**90**
PROCESS	67	183	**250**
PUBLIC INTEREST	69	157	**226**
Total	**173**	**508**	**681**

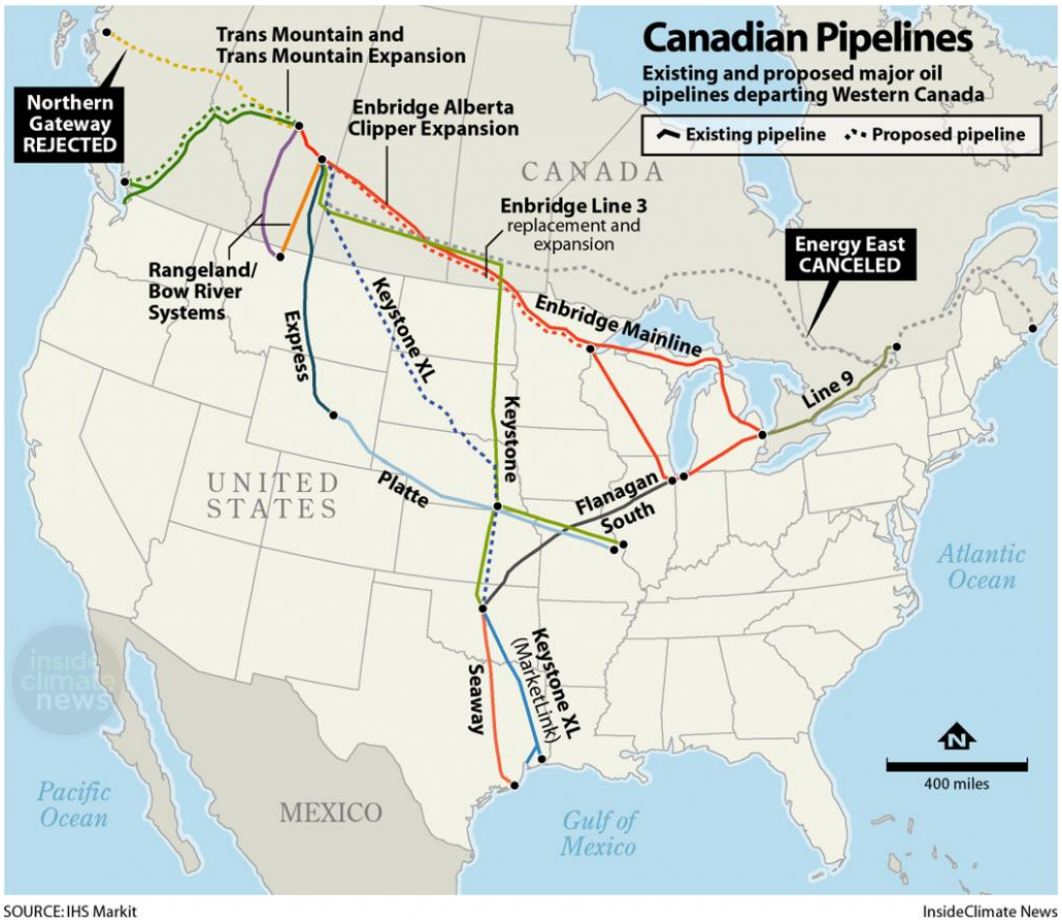
Appendix C

Maps of Keystone XL and Northern Gateway Pipelines (Proposed)

Northern Gateway Pipeline Route, Enbridge



Keystone Pipeline System



Major Oil Pipelines in the United States and Canada