ENVIRONMENTAL POLICY IN A PETRO-STATE: THE RESOURCE CURSE AND POLITICAL ECOLOGY IN CANADA'S OIL FRONTIER

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ENVIRONMENTAL POLICY IN A PETRO-STATE: THE RESOURCE CURSE AND POLITICAL ECOLOGY IN CANADA'S OIL FRONTIER

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This dissertation analyzes environmental policy trends in frontier oil developments in two major Canadian oil dependent provinces: Alberta's tar sands and Newfoundland and Labrador's offshore oil fields. It attempts to account for how the environmental policy systems in these cases permit or do not prevent the environmental impacts of oil development.

The theoretical frameworks of the resource curse and political ecology literatures guide this analysis within the broader context of work on petro-capitalism. I use qualitative methodologies, primarily semi-structured interviews and a review of scholarly, government, and publicly oriented literature, alongside basic economic data analysis to understand the impact of oil on these provinces.

I argue that petro-political dynamics in these cases result in weak environmental policy regimes that, in turn, lead to undesirable environmental outcomes. The provinces I study are marked by the symbiotic relationship between governments and oil companies. Given shared economic interests in oil development, the provincial (and also federal) government ensures the continuation of the industry via financial subsidies, by actively defending and promoting the industry at home and abroad, and

by abrogating its regulatory responsibility and authority. The oil industry simultaneously reinforces the governmental approach through coordinated lobbying efforts.

The shared interests of government and industry amount to strong consent for oil developments and translate into biased environmental policy regimes: the petro-politics at work forward rapid, extensive oil development while not meaningfully restraining the resulting environmental impacts. Notable ways in which regulatory structures are weak or underdeveloped involve critical gaps in regulations and research as well as ineffective public consultation, monitoring and enforcement.

However, there are viable policy alternatives available and growing oppositional movements are pressing for these changes. Building from those perspectives, the dissertation closes by presenting two paths forward. The first adjusts current policies to avoid the worst outcomes of the resource curse and to reduce environmental impacts. The second challenges the petro-political system more profoundly, suggesting alternatives that are environmentally sustainable and politically and economically just.

BIOGRAPHICAL SKETCH

Angela V. Carter commenced doctoral work at Cornell University's Government Department following a Bachelor of Arts (Honors) in Communication from the University of Ottawa in 2001 and a Master of Arts in Political Economy from the Institute of Political Economy at Carleton University's Faculty of Public Affairs and Management Program in 2003. In the Government Department, she specialized in the fields of comparative politics and political economy.

Carter focuses her research on environmental policy using a political economy approach. She is currently a collaborator on the Social Sciences and Humanities Research Council Strategic Research Grant, "The Environmental Assessment Processes of Canadian Frontier Oil and Gas," with Dr. Gail Fraser (principal investigator, York University) and Dr. Anna Zalik (York University).

Since 2008, Carter has worked in her home province of Newfoundland and Labrador, Canada, as an Assistant Professor of Environmental Studies and Political Science. Her teaching focuses on environmental politics, environmental policy, and public policy in resource dependent economies. As Co-Facilitator of the Environmental Policy Institute at Grenfell Campus, Memorial University, Carter has also played a lead role in developing the Environmental Policy Institute and the Master of Arts in Environmental Policy.

To John, with hope.

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LIST OF ABBREVIATIONS

AA – Atlantic Accord
AB – Alberta
ACCA – Accelerated Capital Cost Allowance
AENV – Alberta Environment
AER – Atlantic Energy Roundtable
AERI – Alberta Energy Research Institute
AOSTRA – Alberta Oil Sands Technology and Research Authority
BC – British Columbia
C-NLOPB – Canada-Newfoundland and Labrador Offshore Petroleum Board
CNA – College of the North Atlantic
CAPP – Canadian Association of Petroleum Producers
CBM – coal-bed methane
CCG – Canadian Coast Guard
CCS – Carbon Capture and Storage/Sequestration
CEA Act – Canadian Environmental Assessment Act
CEAA – Canadian Environmental Assessment Agency
CEMA – Cumulative Environmental Management Association
CEPA – Canadian Environmental Protection Act
CIRL – Canadian Institute of Resource Law
CIT – corporate income tax
CMDRC – Crown Mineral Disposition Review Committee
CWS – Canadian Wildlife Service
DFO –Fisheries and Oceans Canada
DIAND – Department of Indian Affairs and Northern Development
DND – Department of National Defense
E&T – education and training
EA – environmental assessment
EAB – Environmental Appeals Board
EAD – Environmental Affairs Department
EC – Environment Canada
ECRC – East Coast Response Corporation Ltd.
EEM – environmental effects monitoring
EIA – environmental impact assessment
EISA – Energy Independence and Security Act
ELC – Environmental Law Centre
ENGO – environmental non-governmental organization
EPEA – Environmental Protection and Enhancement Act
EPP – environmental protection plan
ERCB – Energy Resource Conservation Board
ESRF – Environmental Studies Research Fund
EUB – Energy and Utilities Board
FPSOs – floating production, storage and off-loading vessels
FTA – Free Trade Agreement

GBS – gravity based structure
GDP – gross domestic product
GHGs – greenhouse gas emissions
GOM – Gulf of Mexico
IBES – Institute for Biodiversity, Ecosystem Science & Sustainability
IEA – International Energy Agency
ISEEE – Institute for Sustainable Energy, Environment and Economy
MB – Manitoba
MOSS – Mineable Oil Sands Strategy
MUN – Memorial University of Newfoundland
NAFTA – North American Free Trade Agreement
NAICS – North American Industry Classification System
NEAC - Newfoundland Environmental Advisory Committee
NEB – National Energy Board
NEG/ECP – New England Governors / Eastern Canadian Premiers
NEP – National Energy Program
NGO – non-governmental organization
NHS – Natural History Society
NL – Newfoundland and Labrador
NLEA – Newfoundland and Labrador Environmental Association
NLFL – Newfoundland and Labrador Federation of Labour
NOIA – Newfoundland and Labrador Oil and Gas Industries Association
NPRI - National Pollutant Release Inventory
NRCan – Natural Resources Canada
NRDC – Natural Resources Defense Council
NS – Nova Scotia
NWT – Northwest Territories
ODF – Offshore Development Fund
OECD – Organisation for Economic Co-operation and Development
ON – Ontario
OPEC – Organization of the Petroleum Exporting Countries
OSDG – Oil Sands Development Group
PADD – Petroleum Administration for Defense District
PC – Progressive Conservative
PIP – Petroleum Incentive Program
R&D – research and development
RAC – Regional Advisory Council
RO – response organization
RSDS – Regional Sustainable Development Strategy
SAGD – steam-assisted gravity drainage
SEA – Strategic Environmental Assessment
SK - Saskatchewan
SRD – Sustainable Resource Development
SREM – Sustainable Resource and Environmental Management
TC – Transport Canada
TN – Terra Nova
WCEL – West Coast Environmental Law
WTI – West Texas International
WWF – World Wildlife Fund

CHAPTER 1: A FRAMEWORK FOR UNDERSTANDING PETRO-PROVINCES

The tension between oil and the environment is a central problem of our time. Obtaining this fundamental global commodity results in multiple negative environmental impacts and risks along the entire oil production chain, from exploration to consumption. This is particularly evident in the recent shift in global oil production. Intense expansions in unconventional oil production over the last ten years signal a transition from relatively accessible conventional reserves to frontier oil that is farther North, farther offshore, and in ever more fragile environments. These projects have created some of the worst ecological impacts of oil development in scale, intensity and duration. This new form of oil development is a harbinger of the future of production of this critical commodity and, if peak oil theories prove correct, it could represent the final act in the great scramble for oil that has defined our modern period.

In this dissertation I attempt to understand environmental policy trends in oil dependent governments, specifically two major Canadian frontier oil development sites: Alberta's (AB's) tar sands and Newfoundland and Labrador's (NL's) offshore oil fields. Specifically, I aim to account for how the serious environmental impacts of oil development are permitted or not prevented via weakened or ineffective environmental policy and institutions. Stated most succinctly, I argue that to protect oil developments (and under pressure from industry), oil dependent petro-states create weak environmental policy regimes that, in turn, result in undesirable environmental outcomes. The environmental policy regimes in petro-states exhibit an obvious sacrifice of environmental integrity for petro-dollars.

"Petro-polities" are marked by the symbiotic relationship between governments and oil companies, with governments highly dependent on revenues from private oil developments and oil companies earning impressive profits from extraction on public lands. Given these interests, the provincial (and also federal) government ensures the

continuation of the industry via funding or subsidies (such as tax breaks), by actively defending and promoting the industry at home and abroad, by being reluctant to dig deeper into the environmental questions raised, and by not intervening to protect the environment where regulatory authority exists (and instead emphasizing regulatory "streamlining"). The oil industry reinforces these governmental approaches via coordinated lobbying efforts, political financing, and media and community "engagement" of public relations campaigns.

This context of the petro-state results in environmental regulation processes and institutions that forward rapid, extensive oil development and do not meaningfully restrain the resulting environmental impacts. The shared interests by government and industry in oil development amounts to strong consent for oil developments and it translates into an environmental policy regime that is biased toward oil development. The regulatory system is configured or retooled to support, permit, or not obstruct oil development and this system is legitimated and defended by the state. Notable ways in which regulatory structures are weak or underdeveloped include critical gaps in regulations and research as well as ineffective public consultation, monitoring and enforcement.

This chapter lays the foundation for the above argument by first discussing the dissertation's overarching theoretical framework of petro-capitalism. From here, I elaborate on the two theoretical approaches guiding this work, the resource curse and political ecology. The chapter then introduces the cases, and, finally, describes the methodology.

I. Broad Theoretical Context: Petro-Capitalism

> At the centre of the analysis of capitalism's relation to nature is its inherent and unavoidable dependence on fossil fuels, and particularly on oil (Altvater 2006, 39).

We live in "the fossil fuel age,"[1] or, to borrow Watts' term (2004a, 2004b), the "petro-capitalist" period. The tensions of petro-capitalism are fundamental tensions of our time. On the one hand, fossil fuels are key commodities in the dominant global economic system but more importantly, these fuels—oil in particular—are acknowledged as having *created* capitalism as we now know it. This dominant economic system is extremely dependent on oil, in ever increasing supply, for its maintenance and expansion. Yet at the same time, the system is challenged by the increasingly obvious and pressing environmental impacts of oil developments, the potential "peaking" of global oil supply, and the inequities marking the global oil industry, primarily seen in the great power that private and nationally-owned oil companies hold over the resource as well as the compromised lives of people living in or near extraction sites (Huber 2009, 113).

Fossil fuels created global capitalism, our dominant global economic system. In particular, oil—easily and cheaply found and in seemingly endless supply—was a necessary condition of capitalist production and circulation (Huber 2009, 105). The significant role fossil energy has played in the development of capitalism is notable in the "perfect correlation between the given measures of growth of industrial capital stocks and the consumption of energy from fossil fuels" in the U.S. and UK (Altvater 1998, 40, quoting Martinez-Alier). Fossil fuel provided the energy for a "quantum leap in the speed and reach of human activities" as well as the "enormous growth in labour productivity and social surplus production" (23). Huber similarly notes the close relationship between the transition from solar-powered sources of energy ("muscles,

[1] McNeill is quoted in Huber (2009, 107).

wind and water") to fossil energy (beginning with coal and soon emphasizing oil and gas), and the transition to and expansion of capitalism and "capitalist social relations." This included greatly expanded productivity, the extension of wage-labor relations, mass transportation and consumption on a global scale, resource extraction also on a global scale, and corresponding environmental crises (2009, 106, 110-11).

Why this link between fossil energy and capitalist development? Altvater explains that fossil energy fulfills "almost perfectly" the "requirements of the capitalist process of accumulation" and, among fossil energy sources, "oil is the one which has above all been key to capitalist development over the last hundred years." This is because fossil fuels, and oil specifically, allow for the geographic expansion of capitalism globally. Oil is our most energy-intensive transportation power—it offers the highest "energy return" of all available power sources. It is also a form of power that is cheaper and easier to transport than the previous locally bound forms of energy (such as water-power). Without fossil energy, capitalism could not move beyond the "boundaries of biotic energy (wind, water, bio-mass, muscle-power, etc.)" (2006, 42, 46; see also Clark and York 2005, 405). Second, fossil energy can be used constantly, unrestrained by seasons or the biological needs of previous energy sources (Altvater 2006; see also Altvater 1998, 41, footnote 17). Oil is key among resources that have "extreme importance for the accumulation of capital as a whole" given its flexibility of use and high energy return (Labban 2008, 6) that allow for the expansion and acceleration of capitalism over space and time.

Oil allowed for the development and expansion of capitalism and now it maintains the system. Capitalism requires "constant access to, and an increasingly large supply of, natural materials (e.g., petroleum)" (Clark and York 2005, 407). But as capitalism has expanded thanks to energy provided by oil, the pace of oil extraction and consumption has increased and this has led to the dual problems of peaking oil supplies and environmental degradation associated with the extraction of oil. Altvater

summarized this contradiction well as follows:

> the key role of fossil energy in this congruence ['capitalism, rationalism, industrialism and fossil energy'] makes it an obstacle to further development. First, it will eventually run out; and second, its combustion produces so much harmful emissions that living conditions on earth are deteriorating (2006, 45).

Capitalism tends to deplete the "productive power" on which it depends, primarily labor and land (including energy) (Burkett and Foster 2006, 129). In particular, the capitalist mode of production "broke the budget constraint of living on solar income and began to live on geological capital" (Daly is quoted in Burkett and Foster 2006, 110) that could not be restored as quickly as it was used up. And in so doing, it emits massive amounts of carbon into the atmosphere (Clark and York 2005, 406).

As for the first problem noted above, shrinking supply and rising oil prices, Buck predicts it will "threaten the kind of radical time-space de-compression" it permitted and result in the "collapse of the vast systems weaving together industry, agriculture, and our cities and modern societies" (2006, 60-61, 67). Similarly, as Nikiforuk warns, "the end of cheap oil would challenge every aspect of our economy as well as 100 years of lazy, oil-induced thinking" (2010). This idea is growing familiar in public debate. See, for example, Rubin's (2009) book on the subject.

With regard to the second problem of environmental impacts, Huber describes the risk as follows:

> the unbelievable productivity of fossilized production ensures a concentrated production of industrial waste and pollution, a vast increase in material and energy throughput, and the degradation of the most seemingly natural processes—climate, soil fertility, and hydrological cycles. In particular, the emission waste produced from burning fossil fuels have surely shifted important global-scale atmospheric processes in the direction of climate change sites (2009, 113).

Worse, the solution to dwindling oil supplies is resolved in a way that exacerbates the environmental impacts of oil. Clark and York note this tension. They describe capitalism as "disrupting the carbon cycle by adding CO_2 to the atmosphere at an accelerating rate," while simultaneously "continually plundering of the earth for new

reserves of fossil fuel" (2005, 409). Indeed, in response to the fears of oil supply and rising oil prices, new oil reserves are sought on the oil "frontiers," in unconventional fuels (such tar sands and shale oil) or farther north, farther offshore and in ever more fragile landscapes.

These new sites present opportunities for oil development but also new and ever deepening environmental impacts as oil is extracted in riskier and more fragile environments, often farther from public awareness and scrutiny. The ecological impacts associated with this shift to frontier oil have increased in scale, intensity and duration. Hence Nikiforuk's (2010) description of this phase of the industry "chasing 'junk crude' in the tar sands or the ugly, difficult and tough stuff at the bottom of the barrel" now that the large and easily accessible reserves have been tapped.

Of course, as frontier oil is increasingly explored, even greater emphasis is also placed on the remaining major conventional oil reserves, which take on great "geo-strategic significance" (Watts 2004b, 52). This is particularly true for the U.S. where oil demand continues to increase but where domestic production has long been in decline and alternatives to oil are woefully slow to come on line. Given this, the U.S. is dependent on foreign supplies, primarily from the Middle East (Harvey 2003, 23) but competition for this oil is growing given the new oil demands of countries such as China. (I elaborate on these points in chapter 4.)

Closely related to the environmental impacts of oil development are the issues of social inequity in petro-capitalism. Rather than being understood as a key element of the "global commons" or "global public good," oil supplies are restricted to those who can pay for it (Altvater 2006, 58, footnote 42) or to those who can fight for their "oil security" (Harvey 2003). Meanwhile people living at or near the sites of extraction are negatively impacted by the environmental damage and are often denied access to oil. Altvater puts this plainly: "It is not very likely that fossil resources will be distributed through a democratic, solidaristic rationing of oil reserves" (2006, 50). And we are

certainly nowhere near that point now.

What real alternatives are there to this system? This reconstructive aspect of the petro-capitalist literature is weakest but there are common suggestions proposed. These include shifting our primary energy sources from oil to renewable energy (solar, wind, water, geothermal, and so forth). And with this change in energy system would come—Altvater argues this change would *require*—a change in economic and social arrangements as well, ones that are more solidaristic and cooperative (2006, 54). There is agreement in this literature on the need for what Huber refers to as the "democratization of energy"; "a broad anti-capitalist politics of energy" (Huber 2009, 113). This would include a fairer distribution of the right to emit carbon, perhaps through emissions rationing (Clark and York 2005, 415).

The concept of petro-capitalism is a useful place to start this analysis as it elucidates in broad strokes the central tensions and paradoxes of our time: the economic system is dependent on a commodity in potentially finite supply that poses considerable threats to the broader environment and society in which this system is embedded; new oil supplies are sought to address the supply problem and to maintain the economic system as we know it, but these new supplies exacerbate environmental impacts; alternatives exist, but they are not easy fixes. The concept of petro-capitalism is helpful to orient our thinking about the role of oil in the current dominant economic system and the ensuing environmental and social impacts. However, to flesh out the more specific environmental, economic, and political dynamics at work, I sought a more developed theory of the paradoxes of the political economy of oil states and the unintended consequences of oil abundance and dependence. Hence my turn to resource curse literature.

II. Theoretical Frame 1: The Resource Curse

Resource curse theories respond to the optimism of early modernization theorists who suggested that dependence on natural resources would bring economic development. Rosenstein-Rodan (1943, 1961), Hirschman (1958), and Baldwin (1966), for example, forwarded the idea that developing countries would industrialize based on the exportation of natural resource windfalls. Viner (1952) and Lewis (1955) similarly claimed dependence on abundant natural resources would help states develop by gaining foreign capital through exports. Likewise, staples theorists asserted that natural resource booms would develop the economies of poorer areas and lead to local investments and economic diversification. But perhaps the now most famous of this modernization theory group was Rostow (1961) who claimed natural resource abundance would allow developing nations to "take off," following Britain's path to development. Other more recent examples of work in this vein, as suggested by Rosser (2006), include Balassa (1980), Drake (1972), and Krueger (1980). At the same time, there developed a cultural myth of oil having the power to bring all good things and being the saviour of underdeveloped or poor societies. Coronil (1997) described this well in his discussions of how oil wealth seizes the imagination and creates a culture of miracles. This sentiment was expressed more recently in reference to Iran by Polish journalist Kapuscinski who stated:

> Oil creates the illusion of a completely changed life, life without work, life for free … The concept of oil expresses perfectly the eternal human dream of wealth achieved through lucky accident … In this sense oil is a fairy tale and like every fairy tale a bit of a lie (quoted in Watts 2004b, 51).

Since the late 1980s, this myth of the fairy tale of oil and the optimism of modernization theories have been challenged by what would become known as the resource curse literature.[2] This body of research identifies a basic logic: states'

[2] Of course, modernization theories were challenged before this period by early dependency theorists like Prebisch (1950) and Singer (1950) who thought developing nations

dependence on natural resources, in particular oil, leads to undesirable economic and political outcomes. Note also the common threshold of "high dependence": when oil represents one third of exports, GDP or government revenues (Atkinson and Hamilton 2003; Goldberg et al. 2005; Ross 2001a; Sachs and Warner 1995, 1999, 2001; Stevens 2003; Weinthal and Jones Luong 2006).

At the outset of this literature, economists showed that dependence on natural resources often results in slowed economic growth. Then, beginning in the late 1990s, the research agenda expanded to include political effects. Through these kinds of analysis, the resource curse theory is useful in understanding precisely how oil abundance does not create a simplistic state of wealth and prosperity. Rather, it turns out to be a "double-edged sword" (Bergevin 2006, 2).

Economic Impacts of Oil Dependence

> Oil booms, such as we are seeing today, promote bursts of temporary headline economic growth, followed by hangovers so deep that growth in the very long term is often lower than it would have been without the resource (Shaxson 2007, 1123).

The early literature originating from economics demonstrated that as dependence on natural resources increases, economic growth (commonly measured in terms of GDP) stagnates or declines. The negative long-term economic impacts of natural resource dependence generally, and oil dependence in particular, include declining per-capita GDP over time, the export of development benefits (as the industry is often dominated by foreign investment by multinational corporations that do not reinvest profits into the region of extraction), and risks to other key economic sectors. As for the latter, referred to as the "Dutch Disease," the oil sector tends to inhibit other sectors by increasing general production costs and drawing labor away from manufacturing and agricultural

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were disadvantaged in international commodity markets by dependence on natural resources. For other examples of early criticisms of modernization theory, see Baldwin (1966), Hirschman (1958), Levin (1960), and Nurske (1958).

industries. Also at issue is the tendency for large revenues from the export of natural resources to cause state currencies to appreciate, thereby making the export of other goods more costly and therefore less competitive. In short, instead of invigorating other industries and creating positive spillover effects into other sectors, a strong oil sector has a tendency to choke off other industries. General economic volatility is also a key problem: oil-dependent states are exposed to the booms and busts of unpredictable oil prices, therefore their revenues are volatile and their capacity to provide public and social services is vulnerable and erratic. Below I give a sense of the key contributions to this sub-literature of the resource curse that is focused on economic impacts of resource dependence.

Early in the debate, Nankani (1979) demonstrated the slow growth of hard-rock mineral exporters in the developing world, findings echoed in Wheeler's (1984) work on Africa as well as in Gelb's (1988) World Bank study on oil and hard rock exporters. Auty's (1993) study of iron-ore exporters confirmed these findings and summarized many economic and political problems (more on the political problems below) associated with natural resource exporters: they tend to be marked by capital intensity rather than labor intensity; a lack of local linkages to other parts of the economy; the exportation of development benefits out of the country; risks to other sectors; governments' misuse of the windfall which creates problems in slump periods; and inflation and scarcity in boom times.

Resource curse evidence has continued to accumulate. In a foundational article in this debate, Sachs and Warner (1995) demonstrated the correlation between economies with high natural resources export to GDP ratios and slower economic growth in developing countries. Their subsequent research showed declining per-capita GDP in seven Latin American countries experiencing resource booms and concluded that "resource booms seem to have done little to generate long-term growth, and may in fact have hindered growth on average" (1999, 63). Their 2001 article also found that since

the Second World War, "high resource intensity tends to correlate with slow growth" (828) and they described the resource curse as a "reasonably solid fact" (Sachs and Warner 2001, 837). Also notable in the recent economic resource curse literature are Gylfason et al. (1999) who demonstrated how natural resource abundance attracts labor to the natural resource sector, rather than towards more growth-enhancing entrepreneurship. Likewise, Neumayer (2004) confirmed previous resource curse findings ("natural resource-intensive countries really do suffer from a 'resource curse'"), but got to this conclusion by showing how resource abundant economies grow slower over time in terms of genuine income rather than GDP. And very recently, as nuances continue to develop in the research, van der Ploeg and Poelhekke (2010) find that countries with relatively stable growth rates experience economic growth from resources rents and exports, but countries with more "volatile" growth rates experience slower economic growth from resources due to the volatility of natural resource prices. Their research confirms the resource curse theory: "Growth performance thus depends also negatively on the share of natural resources in exports" (1444), they note.

Political Impacts of Oil Dependence

In a more recent turn in the resource curse literature, studies now focus on the negative political impacts of natural resource dependence. First, an entire sub-literature has developed linking the dependence on natural resources to the commencement, intensity, or duration of civil war (Ballantine and Sherman 2003; Basedau and Lay 2009; Collier and Hoeffler 2002, 2004, 2005; Doyle and Sambanis 2000; Fearon 2004; Le Billon 2001; Reynol-Querol 2002; and Ross 2004). Klare's more popularized comments on U.S. intervention for oil are also relevant here (2001, 2004). These conflicts develop over the sharing of oil rents and costs of oil development.

Second, and more relevant for my cases, another sub-literature is developing on the broader political impacts of resource dependence. Here correlations are shown

between natural resource abundance and political conservatism, authoritarianism, and weakened state capacity, for example, Goldberg et al. (2005), Jenson and Wantchekon (2004), Karl (1997), Leite and Weidmann (1999), and Ross (2001a).

Key data substantiating the claim that resource dependence weakens democracy were provided by Ross (2001a) in his analysis of the impact of oil on democracy in 113 states from 1971 to 1997. He found a correlation between oil dependence and authoritarianism and concluded that oil has a tendency to "hurt democracy" (356). Similarly, Jenson and Wantchekon (2004) analyzed the political impact of resource dependence in African states, finding that countries more dependent on natural resources were also "more likely to be authoritarian" and more likely to have "worse governance" (817). More recently, Stevens and Dietsche show that "Natural resource wealth tends to consolidate and conserve '*bad*' political regimes and undermines the social and cultural changes that have facilitated democratic transitions and consolidations elsewhere" (2008, 57).

With regard to the tendency of resource dependence to weaken state capacity, the major contribution here is Karl's *The Paradox of Plenty*. Here she develops the idea of the "petro-state" which tends to become a rentier state that replaces "statecraft" with oil rent collection, "thereby weakening state capacity" (1997, 16), see also Chaudry (1997). Governing for a broader notion of public good is replaced with strategic spending to maintain power and protect the oil industry. This vein in the literature highlights how the state begins to govern in a biased way, favoring the oil industry.

One important shift at work here is how the state's dependence on various sources of taxes, particularly personal income taxes, changes to a dependence on resource rents. This can lead to an erosion of a strong, broad-based tax system and thereby alter governments' lines of accountability. For Shaxson, oil money creates "misplaced lines of accountability" (2007, 1129): rather than being focused on accountability to citizens, the state is focused on the oil industry. At the same time,

Stevens and Dietsche argue that the replacement of taxes with natural resource rents will "undermine" citizens' "demand for and the supply of channels for political representation" (2008, 57).

Due to this, when oil revenues are disrupted or lower than anticipated, as during the recent decline in oil prices, the state cannot draw on the now eroded tax revenue and instead often cuts social services or spending. Karl also showed that economic growth based on resource dependence has long term institutional "inertia" effects that keep the state focused on oil rather than working for diverse (and more resilient) development. As the power of those developing oil and benefiting from natural resource development is enhanced and reinforced through oil rents, these benefiting groups work hard to keep the state focused on oil development, as opposed to developing more economically and environmental sustainable industries. An "inertia" results that keeps the state focused on oil to the detriment of more sustainable, productive industries. Resource rents are shown as empowering and maintaining the power of certain social groups that impede growth and diversification.

Wasting of the resource rent is another common political problem emphasized in this literature. Instead of saving the windfalls from natural resources, state actors often act irrationally in response to the "feeding frenzy" pressures from citizens, corporations, and other "rent seekers" (Weinthal and Jones Luong 2006, 39). Corruption and overspending on projects of only short-term value are frequent. Leite and Weidmann (1999) also studied "natural resource induced" corruption which, they argued, explains slow economic growth in resource abundant states, particularly in developing nations. Two kinds of politically motivated waste and corruption prevent societies from capturing the full economic benefit of oil resources. First, when politicians or bureaucrats "rob" resource rents (Stevens and Dietsche 2008, 57), particularly to gain or maintain power (primarily through remaining in political office). This is often seen in patronage spending or in investments of large-scale projects of

national symbolic value but limited long-term growth or development. The second kind of domestic corruption involves capitalists "grabbing" resources rents rather than creating wealth more productively (Mehlum et al. 2006b), a tendency notable in powerful industry lobby groups pressuring governments for access to more resource revenue (Costantini and Monni 2008, 870). But corruption, as Shaxson (2007, 1125) rightly points out, is not restricted to domestic actors: the international financial system plays an important role as well. To date the resource curse literature has not dealt in depth with this aspect of natural resource corruption, for example, how the international community provides banking services and tax havens to those siphoning off oil money (ie. Switzerland) (2007, 1130).

Said most succinctly, the resource curse literature demonstrates the unexpected negative economic impacts of resource dependence as well as the negative political outcomes such as deteriorating democracy, weakened state capacity, and political corruption. And more recently, within the political turn in this literature, there is a more specific and rapidly growing discussion on the relationship between resource dependence, development outcomes, and institutions.

Is the Resource Curse Institutional?

> We don't like to call it the oil curse, we prefer 'governance curse' (André Madec of Exxon quoted in *The Paradox of Plenty; The Curse of Oil* 2005).

This newest institutional turn in the resource curse literature comes after exceptions to the resource curse become increasingly obvious. States increasingly cited as avoiding the resource curse include Australia, Botswana, Canada, Chile, Indonesia, Malaysia, Norway, and the U.S.—literature on the exceptions is summarized in Stevens and Dietsche (2008, 58).[3] The growing discussion of the exceptions led to the

[3] See also Brunnschweiler and Bulte (2008), Brunnschweiler (2008), and Stijns (2005).

acknowledgement that there is no *deterministic* relationship between resource dependence and political-economic growth or decline. So how had some countries managed to avoid the curse? The common answer, drawing on the more general literature on the relationships between economic institutions and economic performance (outlined in Stevens and Dietsche 2008, 59), is now institutions (or "governance"), or, more specifically, policy. The role of institutions is increasingly acknowledged as tempering the negative impact of natural resources dependence on economic and political outcomes. Of course, the resource curse literature had long noted the negative impact that resource dependence can have on institutions (such as eroding state capacity or institutions necessary to the management of natural resource rents). But in this new development in the literature, institutions are not outcomes but mediating variables.

The growing consensus is that the resource curse is not due to resource dependence alone but to the effect of institutions that direct those resources. For instance, Mehlum et al., contrary to previous literature explaining the resource curse in terms of the Dutch disease and rent-seeking, first hypothesize that "a poor quality of institutions is the cause of the resource curse and […] good institutions can eliminate the resource curse entirely" (2006b, 12) and then find that "institutions are decisive for the resource curse" (1)—"the quality of institutions determines whether countries avoid the resource curse or not" (16). As a test of this, Mehlum et al. divided their group of forty-two countries in half, into "bad" and "good" institution categories, to find that the resource curse disappears in states with good institutions but it is *deepened* in states with bad institutions (2006b, 2). Institutional quality seems to drive resource curse outcomes. There is a great deal of agreement on these findings, for example, Ahrend (2005), Damania and Bulte (2003), Murshed (2004), and Robinson et al. (2006). The most recent example of contributions in this vein comes from Jones Luong and Weinthal who, in studying five oil-based former Soviet Union states, argue that these states "are 'cursed'

not by their wealth but rather by the structure of ownership" used to mange the wealth. Ownership structures are critical as they influence the develop of institutions that create the fiscal regime on which economic success or failure depends (2010, 9).

This institutional turn in the resource curse literature, however, raises numerous issues yet to be resolved. First, what is driving differences in institutions and their ability to cope with resource curse impacts is unclear. There are now as many as four major explanations in this literature for institutional variance: institutions vary depending on whether (1) states that are developmental (focused on broader economic development) versus predatory (where elites tend to hoard resource wealth); (2) resources are point source or diffuse; (3) societies that are more equal and socially "cohesive" versus those of greater inequality and wealth concentration; and (4) depending on historical legacies, for example, patterns of development set by colonial powers. Researchers also struggle with the variable impact of institutions. Stevens and Dietsche write that "different institutions can lead to similarly good outcomes" while "similar sets of institutions do not need to produce the same outcomes" (2008, 61-62)—the impact of the particular kind of institution at work can vary from case to case.

Perhaps more fundamentally, defining or measuring institutions is complex. Costantini and Monni use an index developed by Kaufman et al. (2003) including "rule of law, political instability, government effectiveness, control of corruption, regulatory framework, and property rights and rule-based governance" (Costantini and Monni 2008, 871) while Robinson et al. use a slightly different index including rule of law, bureaucratic quality, government corruption, expropriation measures and measures of government repudiation of contracts (2006, 27). Different again, Olayele (2010) uses the Fraser Institute's Economic Freedom Index as a proxy for institutional quality. But this institute is widely acknowledged as a Canadian right-wing think-tank supporting government deregulation. Hence AB, even where the regulatory system has been gradually eroded over decades of an explicit political neoliberal agenda, scores high on

this index of institutional quality.

As Stevens and Dietsche note, "it is not objectively clear what institutional quality entails" and "there are serious conceptual flaws in the measurement of institutions" which entail the "risk that subjective assessments of what good institutions are will be based on more ideological perspectives than on scientific knowledge."

Further, even if we can define what institutional strength is, we might not have the data to measure it to do large-scale quantitative studies. And even if we were to figure out clearer causal chains, how would we then explain how institutions change or remain stable, or how they can be transferred to new settings? Another complicating factor is that institutional quality might be an indicator of some other variable—some other element might be driving institutional capacity. As elaborated by Humphreys and Sandbu (2007), for example, what made effective natural resource fund possible in Norway (which was key to averting the resource curse), was not the fund itself but political factors that facilitated the development of the fund in the first place and ensured its maintenance.

The institutional turn in the resource curse literature is promising but it raises highly complex questions relating to the basic issues of defining institutions, measuring them, and explaining differences, stability and change. Still, this shift in the debate is very useful in challenging what appeared to be a deterministic relationship between resource dependence and political-economic outcomes. That "governance" (however ambiguously understood for the moment) could be a remedy to the resource curse is some cause for optimism. Of course there is an obvious conundrum: institutional quality or strength may be the way to avoid the resource curse yet one major impact of high resource dependence is the corrosion of that very institutional capacity. One important potential remedy to the resource curse is weakened by the resource curse.

The resource curse, combining these major streams in the literature discussed above, makes a compelling and ultimately simple point that is fundamental for my

thinking in this study. The possession of large oil resources is not a blessing; fairy tales do not result where oil flows. Rather, oil wealth often produces effects diametrically opposed to our expectations or aspirations: slowed, vulnerable economies and tumultuous politics marked by receding democracy and institutional capacity (which, coincidentally, could temper or remedy the "curses"). Thus this body of work brings to light a puzzle that is central to my questioning of oil states. Yet is it also marked by an obvious environmental gap, hence my pairing of this theory with political ecology.

An Environmental Blind Spot (and Turn to Political Ecology)

The environment is an underlying but widely understated element of the resource curse theory: dependence on natural resources like oil poses a particular problem to states in great part because oil is a non-renewable, one-time asset that might bring high rents to states for a time, but is unsustainable in the long-term. The entire process of oil development also comes with an increasingly costly environmental price tag. Exploring for, extracting and transporting oil causes multiple forms of local environmental pollution and degradation (most obviously oil spills). Refining oil means still other negative environmental consequences (inefficient use of other energies; air and water pollution). Consuming oil represents more global and longer-term costs we are just beginning to understand (climate change). The economic and political costs faced by oil dependent states due to environmental impacts are growing. Yet the resource curse literature rarely accounts for the negative impacts on the environment, and the resultant economic and social impacts.

That said, the resource curse literature does provide potential insight on the environmental impacts of oil dependence. Specifically, the literature elaborates on the "institutional molding" (Karl 1997, 16) of political and economic institutions caused by dependence on oil revenues. We can imagine the same patterns hold for *environmental* institutions with, for example, the petro-state not being accountable to citizens'

environmental concerns; government capacity to regulate environmental impacts being weakened or incapacitated; and there being a regulatory inertia keeping the economy focused on oil development rather than shifting to renewable energy; or the state pandering to the interests of oil developers to the detriment of the environment.

Some resource curse literature has made the link to the environment, however tangentially. A first hint comes from Auty (1993) who explains the risks of basing an economy on depleting resources:

> the economic staple is a fund (non-renewable) resource, unlike most soft commodities which may be regarded as flow (renewable) resources. Sustainable development therefore requires that mineral economies should adopt safeguards to ensure that future generations are not disadvantaged by the present generation's depletion of the mineral asset.

What is needed, according to Auty, is a "pattern of resource extraction which substitutes alternative wealth-creating assets for the depleting natural resource" (176). Stevens (2003) likewise notes that one dimension of the resource curse is the "regional impact" which includes local environmental damage (9) but he focuses only on the traditional outcomes (like "Dutch disease") and does not elaborate on the environmental aspects. Humphreys et al. (2007) mention the resource curse risk of haphazardly draining a finite environmental asset as well, but without further elaboration. Tynkkynen (2007) also dealt with integrating resource curse and environmental issues in the case of Russia's periphery.

Perhaps the most thorough attempt to integrate arguments on the impact of natural resources on economic growth (via institutions) captured in the resource curse literature with arguments on the impact of economic growth on the environment dealt with in research on the Environmental Kuznets Curve was made by Costantini and Monni (2008). Their piece ends by arguing for ways to avoid the resource curse and environmental degradation—they combine both concerns.

There are ideas to borrow from the resource curse literature to inform studies of

environmental issues and the new (albeit limited) work in this area. But the environment is far from the central focus of this approach. Instead, I take the resource curse literature as providing a general theory of the institutional impact of oil on states but giving little direction on environmental impacts. Therefore, to more solidly support my interests in understanding how environmental policy is molded by the political-economic context, I sought a theory that could explain political-economic-*environmental* interactions. Hence my turn to political ecology theory, following the theoretical shift to political ecology undertaken by Le Billon (2001), which is the subject of the next section.

III. Theoretical Frame 2: Political Ecology

Political ecology[4] is rooted in dependency theory, world systems theory, and staples theory (Biersack 2006, 3 and 35, note 2; M'Gonigle 1999, 15-16), but came of age in the 1980s with the seminal work of Piers Blaikie (1985; Blaikie and Brookfield 1987; see also Wolf 1972, who had first used the term as it now understood). Put most succinctly, political ecology is a multi-disciplinary analysis of the "human-nature nexus" (Bryant and Goodman 2008, 711) with a clear focus on political human relations.[5]

By political, we mean *power*—or as Paulson et al. put it, the "practices and processes through which power, in it multiple forms, is wielded and negotiated" (2003, 209). Political ecology initially captivated researchers for this reason: rather than seeing environmental degradation as a natural process of modernization or analyzing it in seemingly "objective" scientific, legal or rational choice terms, the field recognizes

[4] Here I draw primarily on Adkin 2000, 2003; Alperovitz et al. 2000; Benton 2000; Blaikie and Brookfield 1987; Brynt 1992; Gale and M'Gonigle 2000; Keil et al. 1998; Neumann 2005; Panitch et al. 2006; Peet and Watts 1996, 2004; Peluso 1992; Peluso and Watts 2001; Robbins 2004; Walker 2003; Watts 2000 and other key pieces of research cited throughout this section.

[5] For example, Greenberg and Park define the field as studying the "interaction between political and environmental variables broadly conceived" (1994, 8), while Nygren and Rikoon describe it as focused on "the strategic confluence of political and ecological processes in the analysis of environmental change" (2008, 767).

environmental degradation as driven by politics (Forsyth 2008, 757; see also Le Billon 2001, 563; McCarthy 2005, 954). These political relations produce deeply unequal social outcomes. Hence the issues of "justice, inequality, poverty, [and] exploitation" (Walker 2006, 388; see also Walker 2005, 74) are central to the field and political ecologists have an "unabashed commitment" to addressing them.

Given the focus on power and inequality alongside the attempt to elucidate the "interrelationship between environmental destruction and social inequality" (Muldavin 2008, 688; see also Kepe et al. 2008, 2540), the field is sometimes referred to as "ecological political economy" (M'Gonigle 1999, 12). This resonates well with Blaikie and Brookfield's early definition of the field as combining "the concerns of ecology and a broadly defined political economy" (1987, 17). Also important, as discussed in more detail in the methodology section of this chapter, is political ecology's "multi-scalar" approach. It is concerned with the mutual impact of the local on the global and the embeddedness of the local in global political economy contexts (Nygren and Rikoon 2008, 769).

One resounding criticism of political ecology has been the charge of theoretical incoherence (Peet and Watts 1996, 6), primarily due to its multi-disciplinarity and multi-scalar approach. Is political ecology an unwieldy "everything pill" (Robbins and Monroe Bishop 2008) offering "explanations of everything" (Bryant and Goodman 2008, 709) with little theoretical guidance? Is the field's "intellectual eclecticism" really a "cover for anarchic development" (Bryant is quoted in Blaikie 2008, 767)? While I agree with Blaikie's concern that the scope of political ecology research can be daunting,[6] I would argue the field's diversity is a strength rather than an obstacle as researchers in this field can draw on multiple pools of literature to accumulate insights required by the complexity of real problems (on this, see Kepe et al. 2008, 2541; Muldavin 2008, 688).

[6] Blaikie noted that the "sheer bibliographic overload of adequate research necessary for PE [political ecology] can be problematic in maintaining its intellectual quality" (2008, 767).

I also would not settle for calling political ecology merely an "approach" without theoretical force (this is sometimes presented as a response to the theoretical criticisms of the field). It is true that political ecology does not provide a "single, overriding, or dogmatic set of inevitable conclusions," (Robbins is quoted in Bryant and Goodman 2008, 713). However, there are indeed valuable theoretical insights in political ecology. As discussed below, I understand the field as theorizing particular relationships between dominant state and economic systems that negatively impact environments and the communities dependent on them. And I stress how these impacts occur in great part through policy that manifests the interests of these dominant political and economic systems.

A Theory of the Market

When political ecologists write of the market, reference is predominantly being made to the dominant capitalist system (Benton 2000) or, more precisely, to its current neoliberal character.[7] What specific dynamics are identifiable with regard to environmental extraction in this system?

Political ecology theorizes that the current economic regime systematically results in ecological crises due to its requirement for continuously expanding and accelerating profit growth through increased mass production and mass consumption. This is facilitated, of course, by advances in extraction technologies that enable oil production from previously inaccessible fields at ever decreasing costs. Mass production requires a constant throughput of new material and energy often drawn from "distant elsewheres" (Adkin 2003, 396-8; Altvater 1998, 29),[8] aided by

[7] Here I am following Heynen et al.'s position that "neoliberalism *is* capitalism, although a particular historical variant of capitalism. It is the most recent form of capitalism" (2007, 287, original emphasis).

[8] In Heynen et al.'s words, neoliberalism's great environmental failing is due to "its ravenous craving for markets, commodities, and sites of accumulation across the planet" (2007, 290).

technological development. This implies the continuous exploitation of environments that are finite and therefore often oversubscribed.

In this production process, the environment is misunderstood as a mere factor of production rather than as the foundation of the economy (as well as human existence more generally) (Keil et al. 1998, 4-5). In Polanyi's (2001) conception, the environment, like labor, is a false commodity (a "fictitious commodity") as it was not created by the market and it exists for purposes far beyond those of the market. But it is mistaken as such. Worse, environmental costs and impacts tend to be "externalized" in the great competition for profit. Exacerbated by the longstanding difficulty in assigning dollar values to the environment and environmental "services," environmental costs are often held "external" to corporate accounting—that is, many resources are used cheaply (or freely) and environmental impacts are not paid for by the user or polluter. Political ecology understands capitalism's competitive nature as requiring the surplus extraction from (that is, exploitation of) labor and nature which, in terms of the environment, is accomplished by "expropriating nature's capital and underinvesting in restoration or repair of impacted ecological systems" (Robbins 2004, 46, 51). The result is often extraction beyond the regenerative capacity of resources.

At the same time, the dominant economic regime is resulting in social inequalities as environmental degradation and risk concentrate on marginalized communities. Blaikie and other political ecologists saw ecological problems such as erosion as "a symptom of dysfunctional societies and economies, and impacted mainly on the poorest and most vulnerable people" (Forsyth 2008, 757). Just as capitalism is defined by inequalities in power between those who control production and those who produce, the distribution of the environmental costs of production is also unequal with, for example, environmental degradation tending to concentrate on marginalized groups (Peet and Watts 1996).

The capitalist system is in crisis due to how it undermines two essential elements

of its base: the environment and people (those working in the system and consuming its production). As M'Gonigle noted, there is a contradiction between capitalism's "'internal' dynamics of growth" and its "expanding 'external' social and environmental imbalances" (2000, 8).[9]

Two major tensions are notable in causing this crisis. First, firms experience a reduction in the scale or profitability of production due to the degradation of resources or environmental services. Environmental degradation adds costs to capitalist development that threaten profitability. Second, oppositional movements protest capitalism's degradation of the environment and its effects on health, quality of life and other values (Benton 2000, 98). There is civil outcry against the degradation leading to a legitimacy problem (O'Connor 1994), a key argument developed by Prudham (2004). Theorists in the Marxist tradition have long noted the problem of capitalism undermining its labor base. Political ecology adds another dimension to this, what J. O'Connor (1998) described as capitalism's "second contradiction": its expansion via the extraction of resources resulting in environmental degradation means that capitalism erodes its fundamental ecological base.

But political ecologists are also attuned to how the crises do not result in the total demise of the system because capitalism is constantly reconstituted. In response to profit risks, firms adjust by profiting from environmental destruction, for example through "green capitalism," carbon markets (Panitch et al. 2006, xi), or new energy markets. As Buck argues, capitalism "may well accumulate itself out of, or through, an ecological crisis" (2006, 66), perhaps via some kind of "green capitalism." Ultimately, however, these readjustments do not alter the systematic anti-environmental bent of

[9] Perhaps a great deal more than an economic regime is in crisis: Keil et al. paraphrase Altvater, Déléage and Martinez-Alier who argue that "current capitalist production is geared towards a relentless increase in entropy and will first lead to an undermining of the conditions of production (as Marx said: land and labour) and finally to an end to human existence on earth as we know it" (1998, 14).

capitalism and, worse, they may generate new and worse environmental problems (Alperovitz et al. 2000, 166). Further, in response to political threats to the system's legitimacy, those benefitting from the system, the "political and economic élites," work to "defuse protest, emasculate resistance, and reaffirm extant power relations" (Brynt 1992, 27). There is also the risk that in an effort to have a place at the table, some factions of the environmental movement may buy into the "TINA" ("there is no alternative") argument of neo-liberal capitalism and begin using market-based language, for example in calling for the development of pollution markets (Heynen et al. 2007, 11), rather than proposing system alternatives.

Political ecology provides a theoretical framework for discerning the ecological and social contradictions of neoliberal capitalism. Political ecology's understanding of the market-ecology interaction is also paired with theoretical positions on the state's role in this pattern, elaborated below. But, to be clear, I should emphasize that in this work I am concentrating on the *ecological* contradictions of frontier oil extraction. I intermittently note the social inequalities leading to and emanating from this production but the social impacts are not the focus of the current analysis.

A Theory of the State

Capitalism works within—indeed *requires*—a context established by the state. Where capitalism threatens its production conditions (labor and the environment), state intervention could in theory offer correctives for the broader public good (Benton 2000, 94). But political ecology has a far more critical view of the state's role in ecological problems.

Through the lens of political ecology, the state is seen as a primary resource owner yet it is not a neutral actor or mediator in debates over environmental extraction due to its own economic interests. Governments are greatly dependent on revenues from resource extraction (often generated by private corporations) and are therefore

reluctant to constrain or impede resource extraction. As M'Gonigle argues, there is a "structural antipathy" to regulations that restrain capital accumulation on environmental grounds: often "the administrative or bureaucratic arm of the state is as resistant to environmental innovation as would be any industry or corporation" as both the state and industry have a "shared commitment to economic expansionism" (1999, 19). Governments support extraction given the confluence of interests with industry (both government and industry are motivated to continue and expand development to continue accessing natural resource oil revenues). Furthermore, reinforcing its dependence on revenue from extraction is the strong pressure exerted on the state by lobbyists of concentrated private interests gaining from the extraction.

Hence the state is not autonomous from capitalists' interests; rather, political ecology understands the state as possessing "at most only a relative autonomy from powerful societal forces," as Gale notes, given that it is "structurally dependent on capital in a globalizing political economy" (2000, 203-04). As the state and its agencies are often dependent on and gain from environmental extraction, they cannot be expected to regulate to provide environmental protection that would "constrain the very sources of economic flow on which those agencies themselves depend" (M'Gonigle 2000, 13).[10] Governments are strongly influenced by industry (via well-funded expert lobby efforts) and also dependent on industry for oil revenues). Note that there is also the problem of the revolving door between government and industry that blurs the distinction between the two. Simultaneously, the state's policy capacity is restricted by the limited time horizons of electoral cycles. Few political leaders seeking re-election will burden the electorate with the often significant immediate cost of shifting to sustainability. Coping with long-term change is therefore structurally difficult for

[10] Similarly, Gale argues that the current political economic system "is incapable of ushering in an era of genuine sustainable development. This is because its two central institutions—the state and the corporation—benefit too greatly from unsustainable growth" (2000, 195).

governments (Gale 2000, 205).

Political ecology, therefore, interprets the state as compromised in terms of its ability to provide environmental protection by its dependence on revenue from environmental extraction, the lobbying force of capitalist interests, and the structure of the electoral cycle. Therefore, the view from political ecology sees the state as assisting the dominant class in its environmental extraction based accumulation: states are agents of capitalist expansion and, therefore, of environmental degradation.

This is a long-standing observation noted in Blaikie and Brookfield's early theoretical framing of the field. In 1987 they noted how "The state commonly tends to lend its power to dominant groups and classes, and thus may reinforce the tendency for accumulation by these dominant groups and marginalization of the losers" (1987, 17). This theoretical imagining of the state continues in political ecology literature.

Combining these two pieces, political ecology's theory of the market and the state, we understand the field as analyzing and challenging, as Brynt and Goodman put it, the "national and global political economies based on capitalism in general and state support for capitalist production in particular" (2008, 712). Political ecology theory then goes a step farther, I argue, to lay out the mechanics of how these market and state interests are mobilized: through *policy*.

A Theory of Policy

> *Neoliberalism hinges upon the active mobilization of state power*. Neoliberalism does not entail simply the 'rolling back' of state regulation and the 'rolling forward' of the market. Instead, it generates a complex reconstitution of state/economy relations in which state institutions are actively mobilized to promote market-based regulatory arrangements and to extend the process of commodification (Brenner and Theodore 2007, 154, original emphasis).

The question underpinning Heynen et al.'s (2007) recent work is how neoliberal capitalism has altered environmental governance and with what effect. A similar question is of great relevance to this study: how has oil dependence (driven by the

demands of neoliberal fossil capitalism) impacted environmental policy and with what environmental effect? Political ecology provides some theoretical guidance to answering these questions. But first it is worth noting that political ecology has sometimes struggled with policy. At the time of writing his key article on this subject, Walker described the field as "divided and ambivalent in its attitude toward and engagement with environmental and social policy. Indeed, it is possible at times to feel that political ecologists perceive policy as a kind of uncouth distant cousin to be kept at a safe distance" (2006, 382).

However, political ecology literature does provide theoretical guidance on policy issues. Primarily, I see the literature as theorizing that policy is a manifestation of the compromised or development-biased state and the anti-environmental, dominant economic system. Here policy is understood as a key state tool to expand economic growth that often results in sacrificing environmental integrity.

Which policies are most relevant here? Political ecologists focus on policies that structure access to or power over environmental resources or services, and the valuation thereof. There is also a focus on the kind of extraction or uses that are permitted (M'Gonigle 1999, 13; Watts 2000, 257). Further, the policy *absences* are as important as the policies enacted, as Blaikie noted:

> conservation practices left undone, legislation remaining unheeded, projects that only serve to keep research officers in salary and which never leave the experimental station (those things *not* done) are also political acts and not just omissions, or non-events which do not need explanation (Blaikie is quoted in Dove and Hudayana 2008, 744).

Noting the policies that do not exist or not enacted may be as important as studying what exists.

What is the general trend in policy for the cases at hand, at this political-economic moment? Government regulatory capacity has been weakened by the turn to neoliberalism and the movement toward corporate self-regulation. Of course,

neoliberalism does not always result in *de*regulation; rather, it is often a *re*regulation in the service of deepened capital accumulation. Peluso, for example, emphasizes how privatizing environments or environmental services for enhanced capital accumulation requires the legislative framework and enforcement of the state. A "state-capital alliance" is "inevitably" required (2007, 89), she argues.

From this alliance we can expect particular kinds of environmental policies such as (1) privatizing environmental regulation (outsourcing it to industry or volunteer organizations), (2) extending private and decreasing common ownership (that is, extending the commodification or pricing of environments or environmental services and "enclosing" more and more of nature), (3) reducing regulations that impede corporations or not regulating corporations' interactions with the environment, (4) reducing governmental programs protecting the environment, (5) devolving environmental regulatory responsibility to lower levels of government such as provinces or cities which have fewer resources, and (6) using market mechanisms to regulate rather than "command and control" government regulations (Heynen et al. 2007, 5-6). These policies amount to facilitating capital accumulation while reducing wealth redistribution or public protection measures.

To summarize, then, as Brynt observes, for political ecology, policy is "the embodiment of societal divisions and struggle and the narrowed interests of the state itself" (1992, 18)—policies arise out of political struggles and conflicts that are marked by power inequalities (for instance, inequalities between well-funded professional corporate lobbyists against poorly-resourced volunteer environmental organizations), as well as by the interests of the state in its own revenue generation via private resource development. So rights to resources are unevenly distributed, historically contingent and structured by relations of power. As Adkin explains, "the question of who gets what share of the resources available is not a scientific or environmental question per se but a political one—one having to do with relationships of power" (2003, 396). And this

is about *state* politics and power: access to environmental resources is not directed by some neutral "invisible hand" of the market; rather, "the *state* makes access to the market unequal through specific policies and incentives" (Sundberg 2007, 269, my emphasis).

Political ecology presents a theoretical framework elucidating how the state tends to forward environmental extraction by private capitalist actors rather than to strengthen environmental regulation that would constrain it. The trend "is not one of state institutions protecting their citizens and territories, but rather of their establishing regulations to gain or maintain a piece of their sale" (Peluso 2007, 90). Hence, from this perspective, the one also taken in this research, policy is inherently political. It is a tool wielded by those with political-economic power to forward their interests under the guise of bureaucratic objectivity, thereby providing legitimacy. But this does not imply other groups cannot challenge *status quo* regulatory regimes and advocate more radical policies to develop alternative state-market relations.

The policy playing field is certainly not an even one. But we can also see evidence of policy debates occurring in ways that fundamentally challenge political-economic-environmental systems, rather than simply tweaking them at the margins (and, therefore, maintaining those systems). Regulatory regimes can reproduce destructive human-ecological interactions. But, at least in theory, they have the potential to be used to transform current conditions. This potential is important in political ecology's reconstructive commitments noted in the methodology section below.

Given the discussions above, how can we succinctly define political ecology theory? I argue it is not as opaque or "messy" (Muldavin 2008, 695) as critics purport it to be. Instead, the field provides a clear framework for understand state-market interactions and the role of state policy in supporting these interactions. This theoretical perspective echoes recent work on the "mutually constitutive" (Neumann 2005, 42)

character of ecological change and the mode or relations of production or extraction. Attention is directed toward who accumulates wealth through environmental extraction (and who does not), where wealth and environmental degradation accumulate, and the logic organizing who has access to and control over resources and extraction (Peluso and Watts 2001, 27-29). I proceed forward in the current study from this basis.

The Dynamics of Concepts, Theories and Narrative Description

Together, the concepts and theories at the core of this research provide a rich and dynamic understanding of the realities of contemporary oil development and petro-states or petro-provinces.

First, the concept of petro-capitalism situates us within the most recent and highly problematic period in a long, global history of the struggle to create and maintain the energy necessary for human life. It places us at the tail end of the carbon age where the unexpected consequences of widespread dependence on fossil fuels has exposed humanity to hard new and perhaps now irreversible environmental realities. It is at this point that oil from the frontiers—often the "dirtier" fuels in ever more fragile and remote sites with growing environmental price tags—is increasingly more important to maintaining the energy supply. To understand the policy dynamics in these sites at this particular moment in our energy history, I use the resource curse and political ecology theories as complementary bodies of literature.

From resource curse literature, I glean a basic paradox and logic. Rather than oil wealth resulting in the assumed positive economic and political outcomes of greater wealth and democracy, as governments become more dependent on oil development, we find, over the long term, stagnating economic growth and political development. This occurs in great part because of how oil dependence restructures and weakens economic and political institutions.

To this insight, I add theoretical contributions from political ecology. As elaborated above, I use understand political ecology as "ecological political economy." Here I interpret political economy as the study of the interaction between politics and economics with emphasis on how dominant economic system—inherently marked by inequality with obvious winners and losers—gives rise to political systems that legitimate that economic system and permit its continuation. In this light, political ecology provides a rich theory of market and state relations with an emphasis on the ecological impacts of these relations. Thus I use political ecology as an environmentally relevant theorization of market and state interactions.

The conjunction of these two theories, the resource curse and political ecology, permits an analysis of the environmental policy implications of oil dependent political economies. While coming from vastly different perspectives, there is a close link between political ecology and resource curse literatures in that they both show the declines—political, economic and ecological—associated with the pressures of dominant state and market systems.

These concepts and theories then guide the narrative account of two crucial Canadian frontier oil sites; together, they provide good traction on the problem of environmental policy in frontier oil dependent cases.

In the detailed description in the following two chapters, I discuss the recent environmental, economic and political circumstances of these frontier oil extraction cases. And at the very center of this discussion is a nuanced and critical analysis of policy that I interpret as formed or informed by political economy constraints revealed in the theories of the resource curse and political ecology. The narrative chapters ultimately capture the meaning of "petro-politics," or what it means to be a "petro-state" or "petro-province," with concerted emphasis on the ecological consequences of anemic, compromised environmental policy.

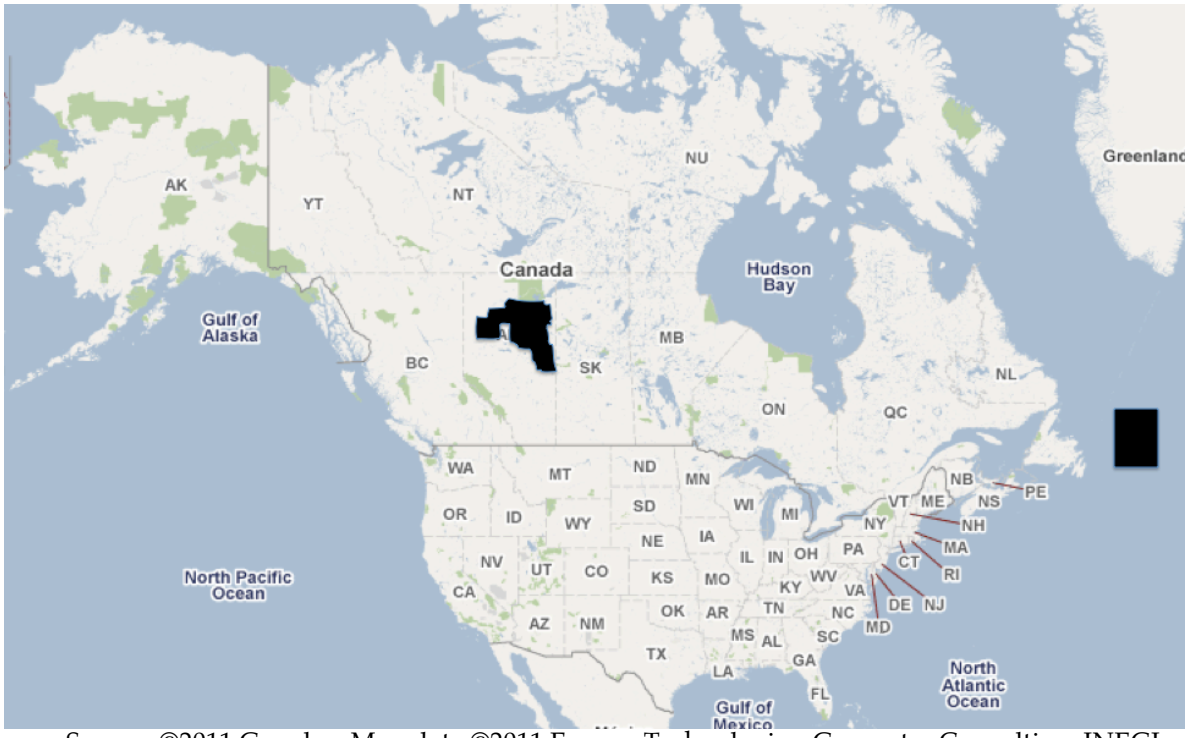
IV. The Research Process

In commencing my doctoral research I aimed to understand the environmental impacts of oil development in highly oil dependent cases, and more specifically, how these environmental impacts are not prevented or are permitted by government regulatory regimes that are reshaped by the constraints of oil dependence. Early on, I recognized a clear absence of research on environmental policy and oil development in Canada. This is unexpected given Canada's significant dependence on the oil sector (with regard to oil revenue, GDP and exports), its large and increasing oil production (and exportation to satiate American intense and growing demand for oil), alongside the growing environmental impacts that were gradually being noted, particularly in frontier oil sites. I found that environmental impacts had not been a common subject of political debate. Instead, Canada was frequently assumed to have averted the resource curse—it is frequently listed as among the "resource blessed." Yet there is rarely any analysis of this assumption. Given the highly federal nature of Canada, I felt that a study of the provinces, where resource curse impacts would be concentrated was needed.

Cases

To trace out regulatory patterns at work in areas of Canada with the greatest exposure to resource curse and environmental impacts, I selected two cases, AB and NL, as both are major oil producers that meet or exceed the threshold in the literature of high dependence on oil. The extraction sites that are the focus of this work are identified in the map below.

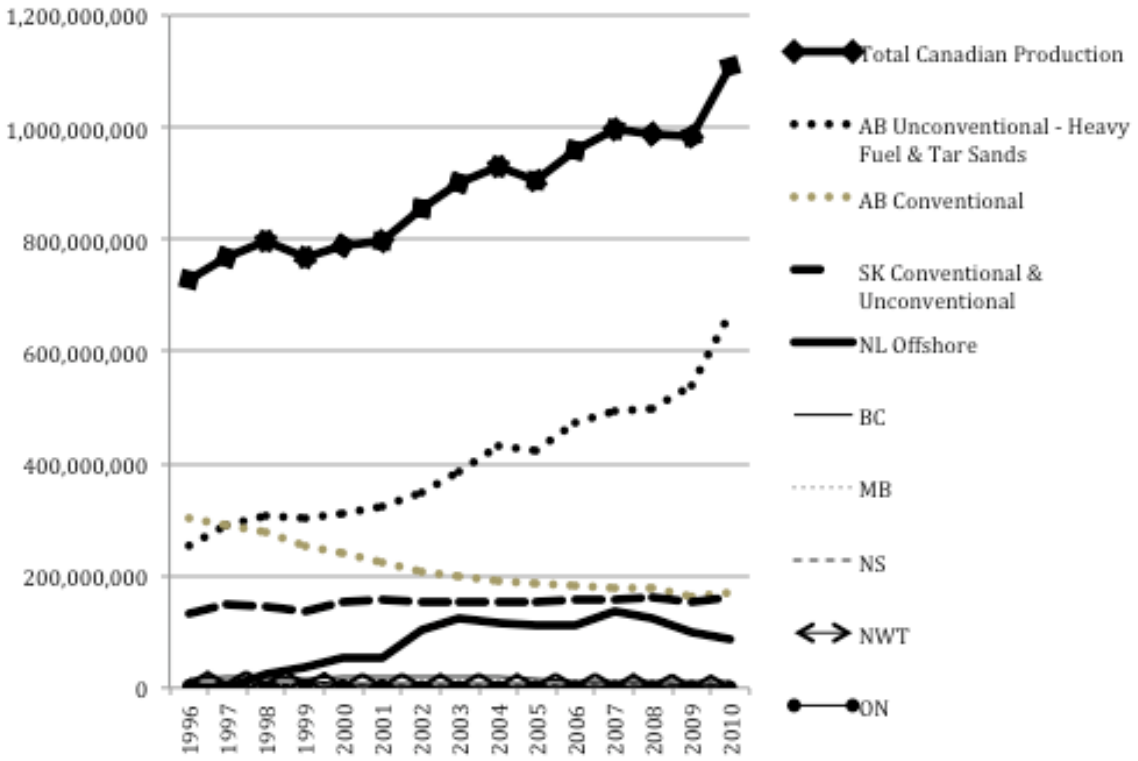
Figure 1: Map of Oil Extraction Cases:
Regions of AB's Tar Sands Deposits and NL's Offshore Oil Fields



Source: ©2011 Google – Map data ©2011 Europa Technologies, Geocentre Consulting, INEGI, Tele Atlas

Why the choice of these two cases? Over the last decade, eight provinces and territories have produced oil but, as demonstrated in figure 2 below, production is highly concentrated on AB, SK and NL.

Figure 2: Total Oil Production in Canada and in All Producing Provinces and Territories (in barrels)

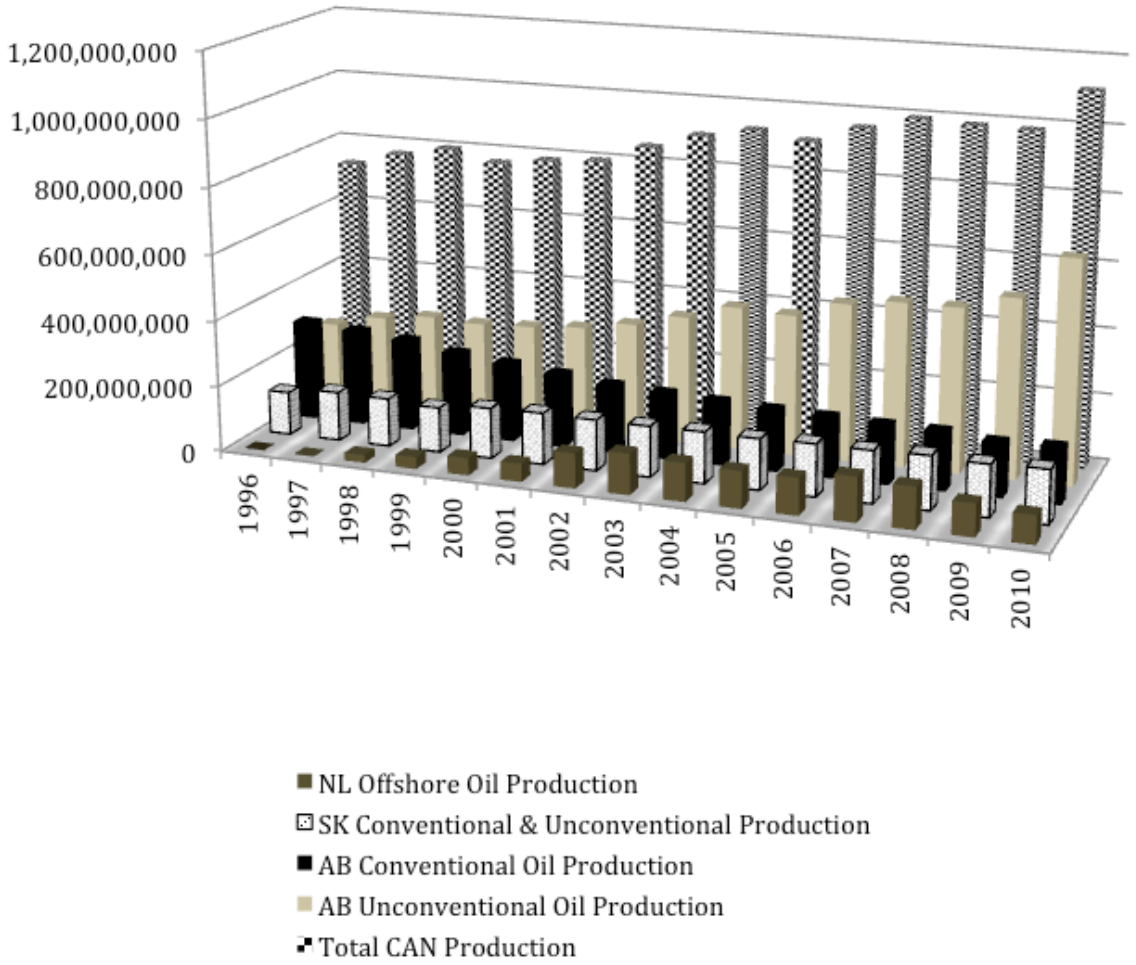


Source: Data on oil production are from the National Energy Board (NEB) of Canada's "Estimated Production of Canadian Crude Oil and Equivalent Tables" (converting from cubic meters to barrels by multiplying cubic meters by 6.29287). Crude oil refers to hydrocarbons that are in a natural liquid state and remain so after extraction as well as condensate (which exists naturally as a gas but is liquid upon extraction), and oil produced from sand or rock, as in the case of tar sands extraction.

In the above figure, it is clear that AB (with its production disaggregated by conventional and unconventional fuel production), Saskatchewan (SK) and NL are leading the country in oil production. All other oil producing jurisdictions (British Columbia, Manitoba, Nova Scotia and Northwest Territories) pale in comparison.

The comparative production of these three oil producers as shares of total Canadian production is made clear in figure 3 below which concentrates on just the top three provincial producers.

Figure 3: Total Canadian Oil Production and Top 3 Provincial Producers (in barrels)



Source: Data on oil production are from the National Energy Board (NEB) of Canada's "Estimated Production of Canadian Crude Oil and Equivalent Tables" (converting from cubic meters to barrels by multiplying cubic meters by 6.29287). Crude oil refers to hydrocarbons that are in a natural liquid state and remain so after extraction as well as condensate (which exists naturally as a gas but is liquid upon extraction), and oil produced from sand or rock, as in the case of tar sands extraction.

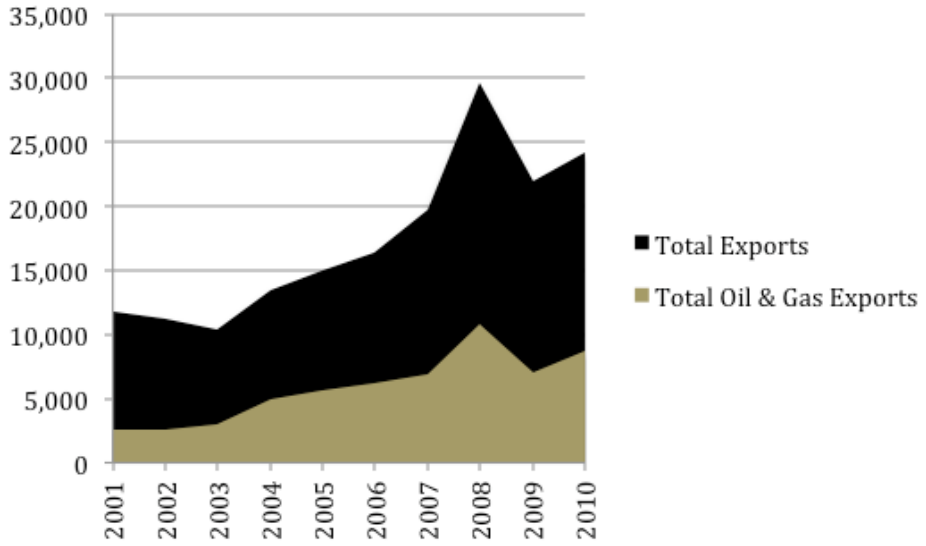
Here we see AB's growing unconventional oil production represents an increasing proportion of Canada's total projection, with conventional production declining, SK's production held constant, and NL's production rising since 2002 but showing declines since 2009.

However, comparative production volumes do not mean these provincial cases are equally dependent on or equally impacted by the oil industry. As noted in the discussion of resource theory above, the common threshold for determining high

dependence on oil is typically when oil represents one third of government revenues, GDP, and exports.

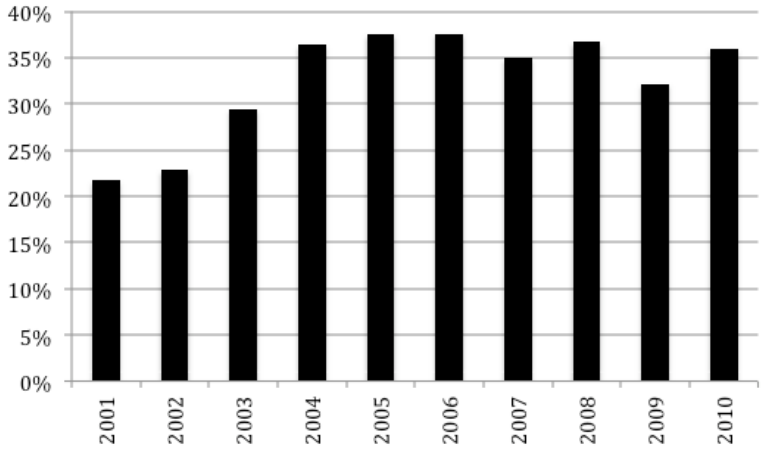
AB and NL meet all three of these standard thresholds (I present detailed data on these two cases in chapter 4). However SK, while it is a steady, major oil producer—ranking as the second largest oil-producing province in Canada—does not exhibit the same extent of economic dependence on oil across revenue and GDP. Oil and gas exports do make up a significant portion of SK's total exports, as high as 38% in 2005 and 2006, as shown in figures 4 and 5 below. But the impact of oil on revenue and GDP is much lower.

Figure 4: Oil and Gas Exports & Total Exports in SK (in millions of Canadian dollars, in current dollars)



Source: Data on total and oil and gas sector exports are from Industry Canada Trade Data Online, Canadian Industry Trade By Industry (NAICS codes), available via strategis.ic.gc.ca.

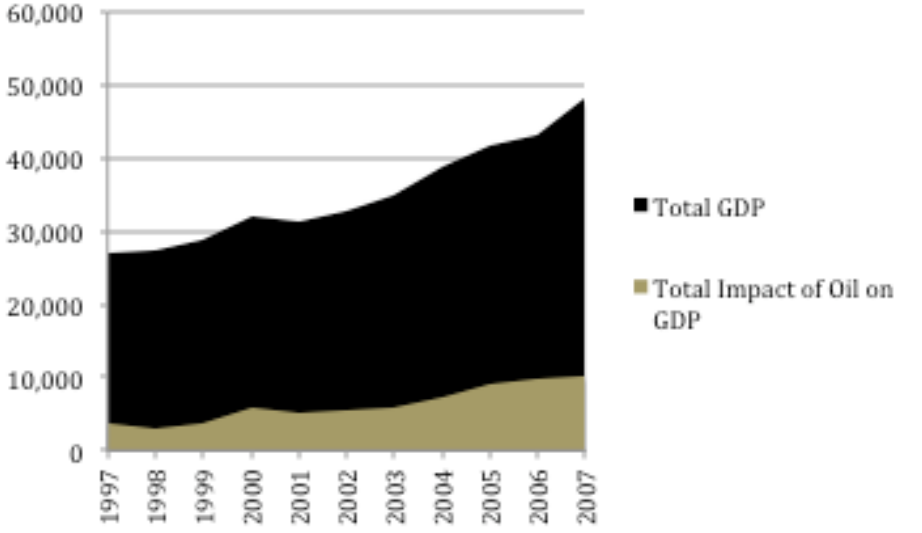
Figure 5: Percentage of Total Exports from Oil and Gas Sector in SK



Source: Data on total and oil and gas sector exports are from Industry Canada Trade Data Online, Canadian Industry Trade By Industry (NAICS codes), available via strategis.ic.gc.ca.

As depicted in figure 6 below, the impact of SK's oil and gas sector on total GDP falls below the standard threshold and well below the levels seen in AB and NL (again, data on these cases is demonstrated in detail in figures 10 to 21 in chapter 4).

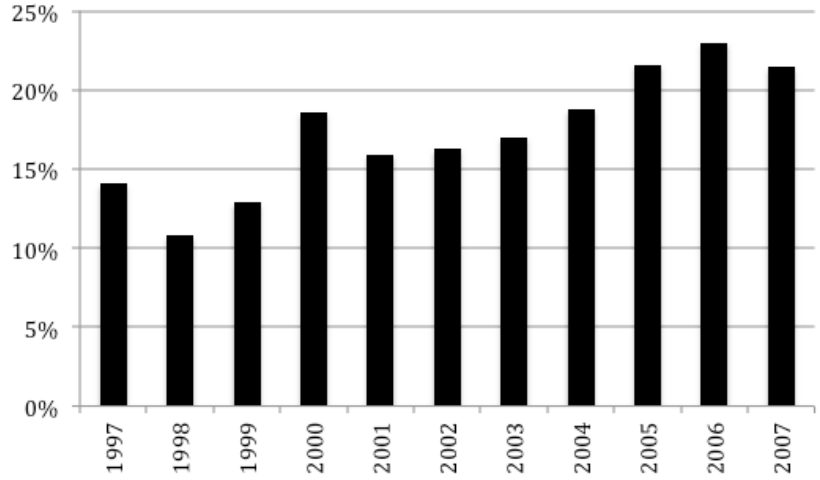
Figure 6: Oil and Gas Sector's Contribution to Total GDP in SK (in millions of Canadian dollars, in current dollars)



Source: GDP data are from Statistics Canada CANSIM Table 3810015 - Provincial gross domestic product.

Oil and gas sector accounted for 23% of total provincial GDP at the peak in 2006, as shown below in figure 7.

Figure 7: Percentage of Total GDP from Oil and Gas Sector in SK



Source: GDP Data are from Statistics Canada CANSIM Table 3810015 - Provincial gross domestic product.

As for the impact of oil and gas on total government revenue in SK, data are not readily available to conduct the same kind of comparison over time as I do for AB and NL in the forthcoming analysis chapter. But the piecemeal available data indicate that the Government of SK's total revenue is also much less impacted by revenues from oil and gas than in AB and NL. In 2010, the Government of SK had a total revenue of $10.3 billion with $1.3 billion from oil and gas revenues, or 13% of the total (Province of Saskatchewan 2010). Compare this, for example, to the situation in NL just a year earlier in 2009 where oil revenues accounted for 30% of total provincial revenue.

Therefore, although SK's exports are strongly marked by oil and gas, the intensity of SK's revenue and GDP dependence on oil is comparatively much less than in NL and AB. The reason for SK's weaker dependence on oil is that this province has an economy that is comparatively more diversified. Alongside oil and gas production, the province is a global leader in uranium and potash production, with significant production of coal and other minerals, as well as agricultural products.

The singular impact of oil is, therefore, less pronounced in SK that in AB and NL. So while SK is indeed a major oil producing in Canada, it is not a pronounced oil-dependent province, certainly not to the same degree as in AB and NL; hence my focus

on these two provincial cases.

Another valuable way to think about the comparative impact of oil on different jurisdictions might be to consider *per capita* oil production. This allows us to see how intensely oil production is on the population. Figure 8 illustrates Canadian production in this way.

Figure 8: Annual Oil Production in Canada and Top Provincial Producers (in barrels *per capita*)

Source: For this per capita comparison, I used data on oil production from the National Energy Board (NEB) of Canada's "Estimated Production of Canadian Crude Oil and Equivalent Tables" (converting from cubic meters to barrels by multiplying cubic meters by 6.29287). Crude oil refers to hydrocarbons that are in a natural liquid state and remain so after extraction as well as condensate (which exists naturally as a gas but is liquid upon extraction), and oil produced from sand or rock, as in the case of tar sands extraction. Population data are from Statistics Canada's CANSIM table 51-0001.

Production data displayed above demonstrate how Canadian *per capita* production is fairly flat across time, at an average of 29 barrels per person per year over the 1997 to 2010 period. SK has a much higher average of 152 barrels per person per year with AB averaging higher again at 193. The data in NL, of course, tells an even more dramatic tale. The province went from virtually no production in 1997 to a high of 265 barrels per

person by 2007. Oil production is particularly concentrated in NL, followed by AB and SK.

I have focused on AB and NL given that they are major oil producers in Canada and have economies that are intensely impacted by this oil development. Both AB and NL also experience significant, though frequently under-emphasized, environmental impacts and risks associated with these developments. These are, therefore, critical cases of the tensions between oil development expansions and environmental impacts. Studying these cases closely allows me to identify regulatory patterns to test in further comparative research.

Oil extraction, particularly in frontier sites, results in negative environmental outcomes that environmental policies are expected to diminish or prevent. Yet environmental policy is often severely crippled to the point that it cannot serve this function. What are the specific trends in ineffectual environmental policy in these key cases of oil development in new unconventional and frontier sites? What interplay of governments and industry can explain these trends? Is the pattern anticipated in the theory above—weakened environmental regulation from a particular entrenched petro-political regime—at work in these two key Canadian cases? I argue it is, with nuances of course. And from here, I ask: what are the policy solutions to avert this situation and from where does (or might) political pressure for change come? Therefore, this dissertation seeks to "document the workings of the regulatory process" (following Adkin's intent, as noted in her 2008 *Political Ecology of Alberta* book proposal), and explain these "workings" in terms of petro-political power. It then concludes with reconstruction, with an analysis of the current or potential sources of resistance to this system and required policy recommendations.

This research has centered on the recent period bookended by two significant American events over the last decade (alongside rising oil prices, of course) that had tangible policy impacts on these cases: the 2001 *National Energy Policy* and 2010 BP

Deepwater Horizon disaster in the Gulf of Mexico (GOM). The former event signaled amplified pressure for increased domestic or near-domestic oil production to meet American oil demand, and the latter, after nearly a decade of intense pressures for oil development, signaled a (potential) shift in public debate. There is a moment of opportunity now to raise questions about the environmental costs of oil extraction, conduct assessments of regulatory regimes, and, hopefully, redesign environmental policy regimes.

Note that while this work is focused on Canadian cases, the research that informed it included analysis of oil dependent American cases, Alaska and Wyoming. From the current analysis, I am developing a continental study of oil dependence and environmental policy that will eventually include other obvious international cases such as Norway. Walker notes the need for more "comparative broader-scale studies" that can "synthesize [local, individual case] studies into broader, integrated regional or global analysis (2006, 386-87). This dissertation lays the foundation for such a larger-scoped comparative analysis.

Methodological Framework and Methods

To study these cases, I use political ecology's methodological framework that I understand as tri-fold in its direction: it is descriptive, explanatory and normative/reconstructive. It encourages highly contextualized but also globally situated analysis of intertwined economic and political power. It also attempts to account for dynamic change (crisis, resistance, reconstitution, and a return to crisis), with a consistent eye to building greater environmental and social justice.

First, with regard to description, the political ecology methodology entails a richly nuanced understanding of development processes in reference to the larger political-economic systems informing it with close attention—in the middle ground between the two—to state regulation patterns. The latter sets the context for human-

environment relations, particularly the conditions of access to and use of resources.

Strongly influenced by materialism, political ecology research often begins at the impacted landscape, often very local cases that are described in detail (Robbins 2004, 22), with attention to ecological research (Walker 2006). It is "grounded engagement," as Heynen et al. put it, "with actual places, people, and ecologies" (2007, 12). At the outset, the focus is on the direct causes of the problem, typically due to the people who are working directly in or extracting directly from the environment. Although rooted in these specific ecological contexts and an analysis of the economic and political systems at work in them, political ecology sees local crises as situated in a broader political economy. The analytical starting point is at the level of a particular ecological problem in a particular place, but attention is then turned to how the broader extraction patterns or the capitalist mode of production puts pressure on this environment. It entails a "rigorous cataloguing and contextualizing within broader political economic constraints" emphasizing, for example, commodity prices and subsidies, finance issues (investments, loans, debts), and building to the "complex contradictions" of the global economic system (Robbins and Monroe Bishop 2008, 748).

Hence political ecology is methodologically committed to understanding the "multiscalar" and "intersecting processes" influencing resource extraction over space and time[11] (Neumann 2005, 6, 10). The point is to study the interactions (as opposed to linear influences or hierarchies[12]) occurring between multiple layers of analysis from

[11] Time here refers to political ecology's recognition that current modes of production and state regulation trends, and their consequent environmental outcomes, are historically rooted. Patterns of human-environmental relations and extraction methods are often long-standing.

[12] Robbins suggests thinking in terms of networks as opposed to linear "chains" that give the impression of a clear top-down flow of power from global institutions to local places with little interaction between the levels. The approach is to understand complex multi-level, mutually-constitutive relations, or "the influence of variables acting at a number of scales, each nested within another" from local to global (2004, 11). For example, "Producers control landscape outcomes, their behaviour is prefigured by community dynamics, set within state politics, controlled by trade agreements, all within a vast system vaguely described as 'global capitalism'" (211).

local communities to global institutions, particularly local ecological problems and actors, world politics and economics, and state interests and policies (Nygren and Rikoon 2008, 773). Each case is studied as a coherent unit, but also, following McMichael (1990), connections are sought between each case, and in the relationship between the cases and their local, federal, and North American context in an "incorporated" manner. I similarly aim for comparison within a grounded context and through multi-level analysis.

As the second major element of political ecology methodology, from this grounded, material ecological problem understood in a rich multi-scalar context, the approach attempts to explain how the extraction patterns or the mode of production (capitalism) puts pressure on this environment. Areas of attention include who has access to or who controls the extraction process, who labors within it, how surplus production is extracted, and who profits (versus who is burdened with the costs). There is also attention on the opposition arising from these patterns (Nygren and Rikoon 2008, 769).

Central to an analysis of the extraction patterns is an analysis of regulation patterns that set the context for these human-environment relations, particularly the conditions of access and use of the resources. Extraction patterns are embedded within a system of property rights and other policies that regulate the appropriation and exploitation of nature. Therefore, identifying and studying the land managing institution and how it manages meting out access to resources and then controls these property rights is key in political ecology research. Questions typically raised include inquiries into how the land manager distributes property rights to whom, how it regulates how these rights are used, and what this means in terms of environmental change. Of course the state is often the owner and land manager, hence political

ecology's renewed close attention to political institutions and power.[13]

Finally, there is a commitment to normative reconstruction. Political ecology methodology directs researchers to understanding environmental problems in rich detail and explaining the multi-scalar political-economics that led to the problem. But the work is incomplete without emphasis on solutions. As Blaikie stated early in the field's development, political ecology is "explicitly normative": it offers the "opportunity to admit that something [is] *terribly wrong* with the state of politics and the environment and that, starting from there, an opportunity might be seized to make some kind of difference" (Robbins and Monroe Bishop 2008, 748, original emphasis).

To do this, political ecology analysis must first develop alternatives to the *status quo*. Convincing "counter-narratives" (Walker 2006, 384) are needed. These must represent a more "just, accountable, egalitarian and democratically environmental future" (Blaikie is quoted in Dove and Hudayana 2008, 745) and more "socially-just environmental policy" (Blaikie is quoted in Muldavin 2008, 694). Hence the call to action in the last pages of Heynen et al.: "We require utopian forms of environmental praxis to help us imagine alternative possibilities, emancipatory projects, and an end to social and environmental destruction at all scales" (2007, 291).

However, the development of critique and of these alternatives is still not enough. As Walker cautions, "Critique alone is insufficient to generate change. […] Critique by itself is not engagement" (2006, 392). Political ecology methodology requires actually working at the local level. It has "come to mean that you are concerned with inequality and environmental conservation enough that you want to theorize but also do something about it"; political ecology "without praxis does not make sense"

[13] Here I draw on Blaikie's early "chain-of-explanation" that he employed to, using Neumann's words, "differentiate between proximate and ultimate causation and to emphasize the structural context of degradation, including national land law, differential access to capital, the state's role in regulating class relations, and geographic and social patterns of agricultural surplus extraction" (2008, 729).

(Muldavin 2008, 695). Political ecology is unapologetically involved in solving real-world problems. It provides the "hatchet" of criticism but also the "seeds" of better alternatives (Robbins 2004). This, of course, means engagement with policy debates or as Walker metaphorically puts it, moving beyond arcane ivory tower debates—"crossing over between academy and policy" (Rocheleau 2008, 720)—and figuring out how to "get the camel's nose of radical critique under the tent of mainstream policy" (Walker 2006, 338).[14]

As Heynen et al. note, neoliberal-inspired changes to environmental policy have become focal points for opposition to neoliberalism, for example, via social movements (2007, 11). The solutions proposed are potentially radical ones that involve not just tweaking policy to ensure better regulation but perhaps "re-designing the institutions of central power" and rethinking economic systems so that they "fit within the needs of maintaining ecosystem integrity," for example through "steady-state" economics and "self-maintaining" economies (M'Gonigle 1999, 19-20, 22). Neumann makes a similar point: solving the political-economic problems uncovered by political ecology might require, for example, "major, if not revolutionary, redistributions of power and wealth" (2008, 729).

To "do" political ecology, therefore, means to understand local ecological problems well, both in terms of what they are (description) and in terms of how they came to be (explanation). Further, political ecology methodology insists on criticism, the development of more socially and environmental political-economy alternatives, and active engagement with the policy world to work toward these changes. This methodological framework guides my approach in this project.

[14] Of course, contributing to real-world policy is no uncomplicated matter given the constraints against engaging with policy within academia as entrenched in the incentives of promotion and tenure. In addition, those who do engage seldom have a clear and direct impact on policy development and implementation (Blaikie 2008, 769). But this is hardly an excuse for non-engagement.

Methods

In terms of specific methods, this research has relied on three forms of qualitative research. First, I conducted semi-structured interviews beginning in the spring of 2007 with people directly involved in these debates. These interviews directed my research and analysis by identifying important material and actors in the debate and, more importantly, by clarifying key problems in the environmental policy processes and trends therein over time. Interviewees included current and former policy makers at the provincial and federal levels, elected government officials, representatives of involved environmental non-governmental organizations (ENGOs) and social justice non-governmental organizations (NGOs), researchers at public policy and law institutes, and independent researchers.

Ethics clearance for the interviews was required and granted by the Interdisciplinary Committee on Ethics in Human Research at Memorial University of Newfoundland. Following the requirements of this clearance, the interviewees are not identified. Where direct quoting is necessary, I refer to the interviewee's general position in his or her organization. See Appendix I for the complete list of the interviews.

In addition, in the earlier days of this project when I was anticipating a broader comparative analysis including two American cases, I conducted an additional thirty interviews in both Alaska and Wyoming. Then, later in the research in the summer of 2010, I extended interviewing to SK for further Canadian context. The analysis in this dissertation does not involve these additional cases directly. But this work did help to provide a clearer North American context for the Canadian cases. And it also lays the groundwork for the next step in this research, a larger pan-Canadian or Canada-U.S. comparative project.

How did the interviews figure into the present writing? The presence of the interview data is sometimes muted in the following chapters because of how I have

used the interviews to guide the research. I began the research with a rough and preliminary analysis of public policy institute reports, government publications and media coverage of oil and environmental policy issues to get a general sense of the issues and people involved. From here, I spent time in each site to get an on-the-ground sense of the issues and to interview a range of people involved in the debates. As the interviews progressed, I began to identify trends in the environmental policy systems. I then used the interviews to focus my attention on the primary regulatory issues of concern. The interviews helped me to easily and quickly identify problematic patterns noticed by those working directly with these issues in these cases—they served as a rough cut into the cases. Guided by these insights, I then did further research using the public, government and scholarly literature used throughout the chapters (the second method discussed below). As the months passed, the interviews, although the initial starting point for the analysis, faded into the background of the writing and were overshadowed by written sources. Nonetheless, the interviews were essential starting places for my understanding of the cases.

The second method at work here involved an extensive search and review of the relevant literature on oil and environmental policy. This included the following sources, used throughout this work: scholarly publications across the disciplines of political science, geography, economics, biology, environmental studies and beyond; "grey" literature such as government reports and policy documents; research institute, NGO and industry reports; and media coverage.

Periodically I have also been actively involved in these debates and so able to observe them first hand. While conducting this research, I have lived in both provinces and become actively involved with the policy debates in these cases. My involvement included participating in meetings and workshops, writing policy recommendations to government, providing media commentary, making public presentations and conducting volunteer work with ENGOs. This work provided me with experiences that

informed my understanding of these cases, issues and policy trends.

Of course, as evident in the figures throughout the chapters, I have also used basic quantitative data and statistics to identify economic and oil production and consumption trends essential to understanding these oil economies.

Based on the information gathered through these methods, in the following chapters I present each case in detail in separate chapters. Each emphasizes the environmental impacts and who bears them, and explains major problematic trends in regulatory system surrounding oil developments. I then account for these trends by analyzing the petro-politics in each case, primarily government dependence on (and therefore various kinds of support for), the oil sector and the oil industry's simultaneous strong lobby for non-obstructive environmental regulation systems. Opposition in response to this political-economic system that demands environmental policy change is also noted.

After these case chapters, I analyze the cases together, drawing out comparative trends in oil dependence, political-economic outcomes and environmental policy. I then embed these cases in the larger continental and global context of petro-capitalism, showing how these provinces are major contributors to Canada's role as an American oil colony. I conclude with policy recommendations to move from an environmental resource curse to a more sustainable energy economy in these cases. I present two ways forward, policy solutions that tweak the *status quo* and others that challenge the dominant system more fundamentally.

CHAPTER 2: THE PETRO-POLITICS OF ENVIRONMENTAL POLICY IN ALBERTA'S TAR SANDS

Alberta's tar sands[15] developments are the most recent example of the province's historical dependence on natural resource extraction for exportation that began with the eighteenth century westward expansion of the fur trade and then agriculture exports in the twentieth century. But the discovery of the Leduc oil field in 1947 and other major fields set off an unprecedented boom that was a "turning point" in AB from an agricultural to oil economy (Mansell and Schlenker 2006, 10). As Laird notes, petroleum resources "fuelled Alberta's long run of prosperity that spanned much of the 20th century […]. Energy built modern Alberta" (2005, 156): the (predominantly foreign) capital investment, technology, and skilled labor required for developing AB's oil extraction, upgrading and refining economy stimulated regional development and urbanization, and provided revenues to government independent of taxing citizens (Mansell and Schlenker 2006, 11).

Although rich in multiple forms of energy including conventional oil, natural gas, natural gas liquids, coal, tar sands, coalbed methane (CBM) and renewables such as wind, the resources primarily exploited in AB over the last decade have been conventional oil and gas deposits. However, since the early 1970s and late 1990s respectively, conventional oil and conventional natural gas production have been declining. Conventional oil production peaked in 1973 and has fairly steadily declined since then; natural gas production is also now in decline. From the late 1990s until 2004, there was a steep increase in the number of gas wells drilled but this growth ended in

[15] "Tar sands" was the term originally used for the resource, and the geologically correct term, and I retain that term throughout this dissertation. But note that the resource has been renamed "oil sands" by industry and government officials (some would say in an act of public relations); therefore, this term is also frequently used as I cite material from these sources. The fuel produced from the tar sands is referred to as bitumen.

2005 and the number of wells drilled per year is expected to remain constant until 2013 (Mansell and Schlenker 2006, ii, 13-14, 34).

These declines in conventional oil and gas are being offset by the exploitation of a new carbon fuel, tar sands bitumen. The production of this fuel has outpaced conventional oil production since 2002 (Mansell and Schlenker 2006, 14). By 2006, tar sands production represented 62% of AB's total crude oil and equivalent production (Alberta Energy 2010) and, by 2014, tar sands production is projected to surpass the combined production of all other energy forms in AB (Energy Resources Conservation Board 2008).

The tar sands, depicted on the map provided in the introduction, are concentrated predominantly in the north in three major deposits, the Athabasca (the deposit with the greatest concentration of extraction activity), Cold Lake and Peace River deposits, underlying 140,200 square kilometers (Alberta Energy 2008) of boreal forest. Top bitumen producers include Syncrude Canada Limited,[16] Suncor Energy (which recently merged with Petro-Canada), and Shell Albian Sands operated by Shell Canada Energy. The resource is extracted using either strip mining or in situ methods[17] but to date these major companies use primarily surface mining methods.

Investment in these projects is massive. According to the Canadian Association of Petroleum Producers (CAPP), in 2007 capital spending in the deposits amounted to $18.1 billion dollars for mining, in-situ and upgrading activities, up from $14.3 billion in 2006. And industry has forecasted $100 billion in new projects and expansions (Alberta

[16] This is a joint venture among Canadian Oil Sands Limited (36.74%), Imperial Oil Resources (25%), Suncor Energy Oil and Gas Partnership (12%), Sinopec Oil Sands Parnership (9.03%), plus smaller shares to Nexen Oil Sands Partnership, Mocal Energy Limited and Murphy Oil Company Ltd.

[17] From 1998-2007, on annual average, just over 60% of bitumen production came from mining techniques and nearly 40% from in situ technology; from 2008 to 2017, in situ mining is forecasted to grow to an annual average of 50% of total bitumen production. Data were provided on October 20, 2008 by e-mail by Jacob Irving, Executive Director of the Oil Sands Development Group in Fort McMurray.

Energy 2007a). These huge investments in the tar sands have supported the production of 1.199 million barrels of per day in 2007, up from 1.127 million in 2006 (Canadian Association of Petroleum Producers), while AB Energy predicts 2020 output will be at 3 million barrels per day and, by 2030, potentially five million barrels per day (Alberta Energy 2008).

Tar sands have become the fulcrum of the AB's energy economy, hence of the entire provincial economy. But this new energy boom is built on environmental devastation far surpassing conventional oil development that has not been prevented by the regulatory regimes aimed at protecting the environment. These environmental impacts and the regulatory inefficiencies that led to them in AB, explained by reference to "petro-politics" dynamics, is the subject of this chapter.

I begin by surveying the most pressing environmental impacts of the developments and briefly note who bears these impacts. The chapter then analyzes three major problematic trends in environmental regulation that permit, or do not prevent, these impacts. These include poorly positioned environmental consideration in the approval processes, important regulatory gaps or inadequacies (relating to greenhouse gas emissions (GHGs), water withdrawals, reclamation and public consultation), and institutional analytical weaknesses regarding cumulative impacts. The chapter then frames out a comprehensive "petro-political" system of entrenched interests at work in AB to explain these ineffective environmental policies.

This system is marked by a symbiotic relationship between governments and oil companies, with governments highly dependent on revenues from private oil developments and oil companies earning impressive profits from oil extraction on public lands. The provincial (and also federal) government ensures the continuation of the industry via funding or subsidies, by actively defending and promoting the industry at home and abroad, by being reluctant to dig deeper into environmental questions raised and by not intervening to protect the environment where regulatory

authority exists. The tar sands industry simultaneously reinforces this governmental tendency via coordinated lobbying efforts, political financing, and media and community public relations campaigns. Therefore, I argue that in the AB petro-state, which is driven by its interest in continuing revenues and pressured by a strong oil industry, environmental regulation processes and institutions have developed that forward rapid, extensive oil development—or at least do not meaningfully impede it.

Resistance to this system is building, however, and demands for slowing tar sands developments and establishing effective environmental policy are articulated clearer and stronger than ever before. The potential for policy change now lies in multi-faceted forms of resistance and opposition occurring at local to international sites that are channeled through media and new leaders to the point that the industry's market, and hence the economic benefits to AB and Canada, are (potentially) threatened—or, at the very least, profoundly questioned.

I. Environmental Impacts of Albertan Tar Sands Development

This intensive, rapidly expanding tar sands development has created serious environmental impacts as summarized in the scientific literature by Timoney and Lee (2009) and Kelly et al. (2009). The Pembina Institute has also provided some of the most thorough, independent public-oriented analysis of the environmental impacts of tar sands developments that I also use extensively.[18]

From 1967 to 2006 tar sands developments had a "cumulative disturbance" of 650 square kilometers (Timoney and Lee 2009) with major expansions expected: as of

[18] Many interviewees also provided guidance on the type and intensity of environmental impacts of tar sands development including an Alberta Environment policy maker with Environmental Policy Branch (1) in a 2007 interview, an Alberta Environment policy maker with Environmental Policy Branch (2) in 2008, a Council of Canadians researcher in 2007, a Sierra Club researcher in 2007 and multiple Pembina Institute, Parkland Institute, and Polaris Institute researchers in interviews in 2007.

2010, 84,000 square kilometers had been leased for tar sands development with additional leasing regularly continuing (Pembina Institute 2010). As for freshwater, tar sands operations had licenses to divert 349 million cubic meters per year from the Athabasca River in 2008 (double Calgary's yearly volume) with new projects potentially raising this to 500 million cubic meters (Dyer et al. 2008, 3, 8). There are now serious concerns about maintaining basic in-stream flow (Griffiths and Woynillowicz 2009; Griffiths et al. 2006; Pembina Institute 2011). Water withdrawals are worrisome but so is water output as toxic waste. Enormous tailings 'ponds' containing toxic materials from tar sands operations—now over one hundred and seventy square kilometers in total area (Energy Resources Conservation Board 2010a)—pose a risk to local ecosystems due to leeching at rates of millions of liters per day (Kelly et al. 2009; Price 2008; Timoney and Lee 2009).

AB's tar sands operations also emit vast volumes of air pollution (Timoney and Lee 2009, 73-74) including GHGs which have made the province the largest GHG emitter in the country (Miller 2007). Tar sands plants and upgraders, according to a recent report by Environmental Defence, Équiterre and the Pembina Institute, are the "fastest growing source of GHG emissions in the country," adding 37 million tons or 5% of total Canadian emissions in 2008. Based on projections made prior to the recession, these emissions were expected to rise to 108 million tons by 2020, representing over 40% of the total increase in emissions in the country over this period (2010, 7; see also Bramley et al. 2005, 5). Tar sands projects are, therefore, significantly exacerbating AB and Canada's growing contribution to the global problem of climate change. The extraction and upgrading projects also entail staggering emissions of nitrogen oxides (NO_x), sulphur dioxide (SO_2), and volatile organic compounds (VOCs) (Dyer et al. 2008, 25-33; Timoney and Lee 2009, 73-74).

The most obvious burdens of tar sands developments on humans are on local communities in the surrounding area, predominantly aboriginal communities

downstream who are at risk of compromised water, air and subsistence food supplies. Connections have recently been made between the environmental degradation associated with the tar sands and illness in communities downstream (Timoney and Lee 2009, 78). These local communities also see landscapes transformed and solely devoted to tar sands projections, limiting traditional uses. Broader still, tar sands developments stress a major river system in an increasingly drought-prone province and result in water pollutants being transported into the fragile inland Peace-Athabasca Delta and through the Mackenzie Basin to the Arctic ocean (Kelly et al. 2009, 22346-22351). Meanwhile, airborne pollutants increase soil and lake acidification in neighboring Saskatchewan and Manitoba (Bytnerowicz et al. 2010; Jeffries et al. 2010).

Further, the consequences of climate-change-causing GHGs will extend to future generations of Albertans, Canadians, and the global community. Emissions from the tar sands are a significant barrier to Canada meeting its national GHG reduction commitments (Bramley, Neabel, and Woynillowicz 2005).

Also, in terms of non-human impacts, the result on the ecosystem of these combined impacts has been a decline of numerous species, many endangered or threatened, for example caribou, lynx, marten, fisher, wolverine and multiple bird species (Schneider and Dyer 2006; Timoney and Lee 2009).

Contrary to the claims made by AB's government, there is convincing and growing evidence of serious environmental impacts from tar sands developments. And they are not being effectively prevented or managed by the provincial regulatory system. The following sections identify the key deficiencies in this regulatory regime.

II. Environmental Regulation Trends

The multiple, far-ranging and long-term environmental impacts are due primarily to a weak provincial regulatory system. Below I outline the regulatory process and major

applicable legislation, then the broad trends in the regulatory system that have permitted, or not prevented, these poor environmental outcomes. But first, a brief explanation is needed on regulatory authority that sets the frame for the analysis.

Given the ownership of and regulatory jurisdiction relating to the tar sands, I focus on the Albertan level of governance.[19] The AB Crown owns 97% of AB's tar sands mineral rights with the remaining 3% are owned by freeholders (Alberta Energy 2006, 1 -1) and, according to multiple sections of the Canadian Constitution, AB has "exclusive" regulatory powers over the tar sands (Vlavianos 2007b, 4-5).

But the federal government also has jurisdiction in specific issue areas such as inland fisheries and environmental impacts, particularly those not easily contained within provincial boundaries, such as air and water pollution, GHG emissions and impacts on wildlife. Where the federal government has clearest jurisdiction, according to Vlavianos (2007b), is via DFO's *Fisheries Act*, Transport Canada's (TC's) *Navigable Waters Protection Act*, the NEB's *National Energy Board Act* (on pipelines crossing provinces or the Canada-U.S. border), Environment Canada's (EC's) *Canadian Environmental Protection Act* (*CEPA*), as well as the Canadian Environmental Assessment Agency's (CEAA) *Canadian Environmental Assessment Act* (*CEA Act*). In addition, the *Species at Risk Act* (administered by the Minister of Canadian Heritage, Minister of Fisheries and Oceans and Minister of Environment) and the *Canada Wildlife Act* (administered by EC's Canadian Wildlife Service (CWS)) are also relevant.

However the extent of the federal government's power via these pieces of legislation is ambiguous, contested, unpredictable and under-tested, unclear and lacking in predictability" (Vlavianos 2007b, 67-68, 72). To avoid two simultaneous environmental assessments at the provincial and federal level, there is now an AB-

[19] The complexity and importance of jurisdictional authority was emphasized in interviews with an Environmental Law Centre lawyer in 2007 and with Canadian Institute of Resource Law lawyers (1 and 2) in 2007.

Canada agreement on a joint process, the *Canada-Alberta Agreement on Environmental Assessment Cooperation*. However, there is a great lack of clarity as to when this joint process will be engaged (some projects include this joint process and others do not and there are few clear trends to explain the path taken) (Vlavianos 2007b, 71-72, 74-75).

It is this kind of uncertainty, combined with the federal government's caution in intervening in Albertan resource development given previous federal-provincial conflicts, that explain the federal government's "reluctance to exercise greater powers in relation to the environmental impacts of oil sands projects" (Vlavianos 2007b, 67-68, 72; see also Richardson 2007, 35-37). Of course, the federal government has had a major role in several projects (projects with joint panel reviews include, for example, the Jackpine, Horizon, Kearl and Muskeg projects). But given the clear lead the Albertan government takes in tar sands environmental regulation, this chapter focuses on the provincial regulatory regime. A summary of the most relevant provincial and federal regulators discussed in the forthcoming sections is below.

Figure 9: Environmental Regulatory Key Actors in AB's Tar Sands

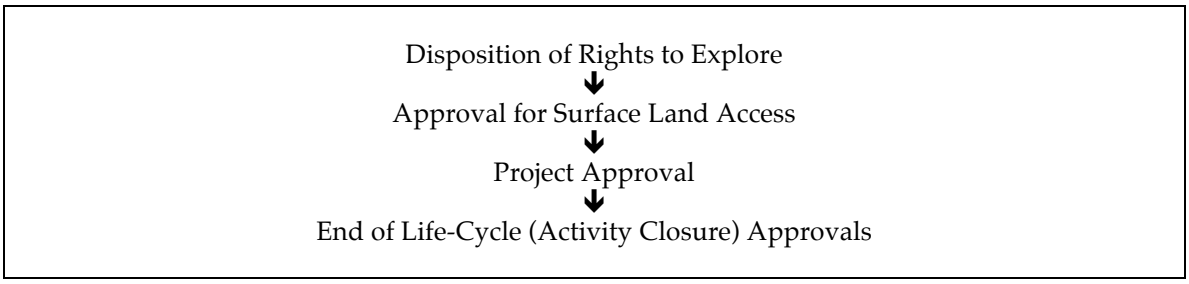
Lead Environmental Authority: Government of AB's Alberta Environment
Involved Provincial Authorities – AB Energy – Sustainable Resource Development (SRD) – Energy and Utility Board
Federal Authorities With Jurisdiction – Fisheries and Oceans Canada (DFO) – CEAA – EC

Note the peculiarity of the AB case compared to global oil and gas developments, 80% of which are nationally owned: the AB government owns the tar sands resource but has no direct role in developing it—tar sands developments are all private (or are

undertaken by oil companies owned by other governments). To access revenues from the tar sands, the AB government depends on and therefore must encourage private developers.

Tar sands regulation occurs in distinct phases: first, the disposition of exclusive rights in the form of a lease or permit to explore for and extract tar sands; second, approval for surface land access; and third, approval for the project including facilities associated with extraction, upgrading and product transport (pipelines).[20] Finally, there are approvals associated with activity closure, such as remediation and decommissioning, although they have been are seldom engaged given the very long life span of these projects. See the simplified flowchart below for the basic framework.

Figure 10: Major Regulatory Stages of AB's Tar Sands Development



The first stage primarily involves AB Energy guided by the *Mines and Minerals Act*, *Oil Sands Tenure Regulation* and *Mines and Minerals Administration Regulation*. It commences with industry requesting that particular parcels of land be included in offers for tender.

[20] Interviewees within the Albertan government were helpful to me in understanding the approval processes. Particularly I note the interviews with an Alberta Energy policy maker, Policy, Planning and External Relations, (1) in 2007 an Alberta Energy policy maker, Policy, Planning, and External Relations, (2) in 2008, an Alberta Environment policy maker, Environmental Policy Branch, (1) in 2007, an Alberta Environment policy maker, Environmental Policy Branch, (2) in 2008, Alberta Environment policy makers, Oil and Gas Policy Sector and Electricity / Minerals Sector, (1 & 2) in 2007, an Alberta Environment policy makers, Oil and Gas Policy Sector and Electricity / Minerals Sector, (3) in 2007, an Alberta Environment policy maker, Strategic Policy and Innovation, in 2008, an Energy and Utilities Board policy maker (Business Operations and Development) in 2007, and an Energy Resources and Conservation Board policy maker in 2008. NGO interviewees were also helpful in clarifying the regulatory process, particularly a professor of Political Science (2) at the University of Alberta in 2008 and lawyers with Canadian Institute of Resource Law and Environmental Law Centre in 2007.

AB Energy than verifies the availability of that parcel and consults with the Crown Mineral Disposition Review Committee to check for restrictions on land access and use. Parcels are then released for auction every two weeks (rights are given to the highest bidder who must pay the amount bid, annual rent, fee for non-producing leases and royalties on extracted resources).

The next stage is managed primarily by AB's Sustainable Resource Development (SRD) as well as Alberta Environment (AENV)—companies seek approval from SRD to explore for tar sands and SRD provides notice to AENV. Both departments are guided by a plethora of policies and regulations, primarily *Public Lands Act* (administered by SRD), *Public Lands Operational Handbook* (SRD), *Code of Practice* (administered by AENV, conforming to AENV's *Environmental Protection and Enhancement Act*), *Surface Rights Act* (SRD), plus, where applicable, *Provincial Parks Act*, *Historical Resources Act*, and *Wilderness Areas, Ecological Reserves, Natural Areas and Heritage Rangelands Act*.

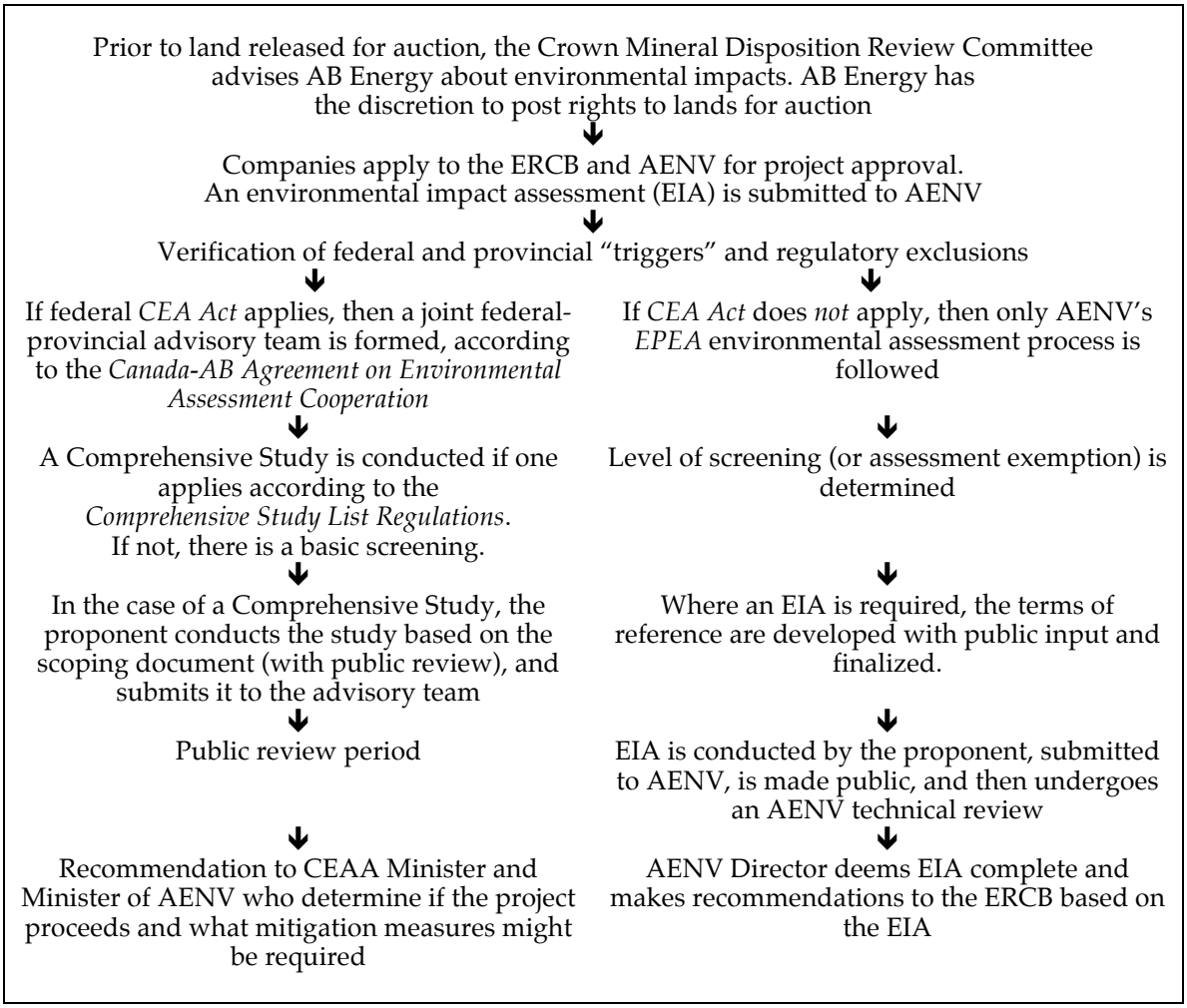
The third stage, project approval, is directed by AB's Energy Resources Conservation Board (ERCB), formerly the Energy and Utilities Board (EUB),[21] and AENV according to, primarily, the *Oil Sands Conservation Act* (ERCB), *Energy Resources and Conservation Act* (ERCB), *Oil Sands Conservation Regulation* (ERCB), *Environmental Protection and Enhancement Act* (AENV), and *Water Act* (AENV). Companies proposing projects conduct public consultation and submit an approval application to the ERCB which can investigate and hold public hearings before an ERCB panel (particularly in the case of unresolved objections raised in public consultation). Ultimately, the ERCB assesses whether the project is in the public interest in terms of social, economic and environmental impacts. Cabinet authorizes ERCB approvals that may be subject to particular restrictions. At the same time, tar sands projects almost always involve

[21] In 2008 the EUB was divided into the ERCB, mandated to regulate oil, natural gas, tar sands, coal, as well as pipeline developments, and the Alberta Utilities Commission, regulating the utilities sector (electricity and natural gas markets).

AENV through the *EPEA* and require an EIA report including publicly commented terms of reference and a final public report. In addition, the project proponents must get several authorizations from AENV based on the *EPEA* and *Water Act* that contain regulations and guidelines relating to pollution and emissions.

To avoid the redundancy of conducting two environmental assessments, one required by AENV's Environment's *EPEA* and another by the CEAA's *CEA Act*, the Government of AB and the Government of Canada have signed the *Canada-Alberta Agreement on Environmental Assessment Cooperation*. This allows for joint AB-Canada environmental assessment where one lead is assigned through federal-provincial advisory teams and joint panels. (On the complications and ambiguities caused by this agreement, see Vlavianos (2007b, 72-73).) Ultimately, the agreement allows for the Government of AB to manage its own environmental assessment processes with limited involvement from federal government authorities. The environmental assessment process, either with a joint process or within AB alone, is sketched below.

Figure 11: AB Tar Sands Development Environmental Assessment Process[22]



This environmental assessment process, as well as the broader system framing it, exhibit three kinds of problematic trends: first, and most generally, poorly timed and incorporated environmental consideration; second, important regulatory gaps (relating to GHG emissions, water withdrawals, reclamation and public consultation); and third, institutional difficulties in addressing cumulative impacts.

[22] See the Energy Resources Conservation Board (2010) for a thorough new government publication on this process with a focus on in situ developments.

Ineffective (Weak and Delayed) Environmental Consideration

AENV, the department responsible for regulating environmental impacts in the tar sands, is in a structurally weak position in the decision making and regulating process, particularly in comparison to the departments forwarding oil development (primarily AB Energy and the ERCB).[23] The regulatory scope of the department is too narrow and its input occurs too late—after the leasing of land has occurred and property rights have been assumed.

At the leasing stage, environmental impacts are considered at the Crown Mineral Disposition Review Committee's (CMDRC) initial review of companies' requests for land auction but only in a cursory manner. As Holroyd et al. note, this is "the one and only opportunity during the tenure process to consider the environmental and social impacts of granting oil sands rights," but this process is too narrowly focused (there is no room for a consideration of cumulative impacts), too rapid, poorly informed, and has no "formalized" environmental assessment process (2007, 21-22). Even if the environmental analysis was improved here, the CMDRC is merely making recommendations for AB Energy to use at its discretion. AB Energy ultimately decides if land requested for auction will be posted. Note that AB Energy, the primary department promoting tar sands development is closely aligned with the oil industry which it considers as its "principal stakeholder";[24] indeed, industry sets the entire tenure process in motion as land leasing commences with corporate requests, not a provincial plan.

[23] This point was raised repeatedly particularly by lawyers and environmental non-governmental organization researchers interviewed for this research. Interviewees emphasizing this problem include lawyers with the Canadian Institute of Resource Law and the Environmental Law Centre as well as Council of Canadians researcher in, Parkland Institute and Pembina Institute researchers, and a Sierra Club researcher (all interviewed in 2007).

[24] This is a quote from an Alberta Energy policy maker interviewed in 2007.

More thorough consideration of environmental effects occurs through AENV's EIA. But even these have limited impact on the decision-making process because the EIA results are simply transferred to the ERCB. And here environmental considerations are continuously overridden by other interests, such as economic benefit. The ERCB, the issuer of project permits, is admittedly under political pressure to approve the projects for which Energy has already sold rights.[25] According to Vlavianos, "it is clear that the EIA process under EPEA [AB's Environmental Protection and Enhancement Act] is not a central feature of the oil and gas development process in the province." The EIA "simply provides the EUB [now the ERCB] with environmental information," then it is the EUB "who will make the final determination about whether a project is in the public interest or not, and environmental impacts are only one consideration in the EUB's decision" (Vlavianos 2006, 46). AENV has no power to reject projects on environmental grounds. Even the results of the Environmental Appeals Board (EAB) (the quasi-judicial tribunal of AENV) hearings are weak, given that their results are non-binding and dependent on the Minister's discretion.

Overall, the ERCB's and AB Energy's interests seem to consistently override AENV in decision making on the tar sands from the very beginning of the development process. This is common knowledge both inside and outside the public service. As AENV policy makers note, even in interdepartmental initiatives that are supposed to offer a "level playing field" for all ministries, energy interests "typically carry the day" (interview with Alberta Environment (Oil and Gas Policy Sector and Electricity / Minerals Sector) policy makers (1 & 2) in 2007).[26] There is also support for tar sands developments within AENV. When asked about AENV's apparent reluctance to slow or

[25] This point was made by an Energy and Utilities Board (EUB) (Business Operations and Development) policy maker in a 2007 interview. Note that this political pressure is easily applied given the EUB staff: the board is a politicized entity with board members appointed by cabinet through non-debated orders-in-council.

[26] On this point, also see Vlavianos' analysis of the relationship between the EUB and Alberta Environment (2007b, 58-59).

reject projects due to environmental impacts, policy makers interviewed in that department noted that "When things are good, you want to reap all the benefits you can. You don't want to stand in the way of that" (interview with Alberta Environment (Oil and Gas Policy Sector and Electricity / Minerals Sector) policy makers (1 & 2) in 2007). Another policy maker with AENV (Environmental Policy Branch), argued in a 2007 interview that not permitting a tar sands development to occur is "stranding" resource revenue potential from Albertans.

At the same time, policymakers committed to environmental protection have inadequate resources and staff to monitor and enforce regulations. Long-term research to compare budget commitments to environmental departments is currently lacking in AB but preliminary data indicate a problem. For instance Woynillowicz, referring to AENV's capacity using statistics from the AB Government's Fiscal Plans from 2001 to 2008, notes declines in that unit's staff since 2000, precisely when tar sands production was expanding significantly. Early numbers suggests, at the very least, that "the department's budget has not grown in parallel with its workload" (Woynillowicz 2006). Boychuk, using more recent Alberta Federation of Labour data, notes that AENV's budget for "monitoring, compliance and enforcement" declined by 26% just as $200 billion was invested in developing an industry that particularly needed strong regulatory capacity (2010, 35).

Key Regulatory Gaps

More specific than the overall structural position of AENV are four specific regulatory gaps or inefficiencies in environmental regulation relating to GHG emissions, water withdrawals, reclamation and public consultation.

The most obvious and pressing example relates to GHG emissions. Tar sands projects are a major—and the most rapidly growing—contributor to Canadian GHG emissions (Richardson 2007, 37-38). For example, in 2008, Syncrude's Mildred Lake and

Aurora North Plant sites were, combined, the third largest GHG emitter in the country (12.2 million tons emitted), and Suncor was the fourth largest (8.8 million tons) (Environment Canada 2010). While per barrel emissions are declining, improvements are outpaced by the continuous expansion of tar sands operations.

The policy response to this situation is notoriously weak. To meet the goal of keeping global climate within two degrees of warming using a carbon emission "budgeting" model, the tar sands industry's proportional share of GHG emissions must be reduced from 37 million tons in 2008 to 24 million tons in 2020 (Environmental Defence, Équiterre, and Pembina Institute, 7). However, current provincial targets will see GHG emissions *rising* until 2020 and only then will they begin a gradual decrease to arrive back at 2008 emission levels by 2035. The Albertan emissions policy, therefore, will delay real reductions in emissions for approximately three decades. And the promised reductions are to come from carbon capture and storage (CCS) projects (Alberta Government 2008b, 24) which are currently still in development and questionable in terms of their efficacy to reduce emissions within the critical timeframe (Le Billon and Carter 2010; as well as Dyer 2010; Thomson 2009). While it is true that AB moved quickest among Canadian provinces to establish a price on carbon emission and targets, the speed of policy implementation perhaps had more to do with wanting to set the bar low for coming federal policies rather than with creating effective policies.

Policies managing freshwater are equally problematic, especially with regard to in-stream flow needs (the level of water needed in a hydrological system to maintain the ecosystem), of the Athabasca River, the primary source for the water intensive tar sands projects. (Multiple interviewees stressed this point, in particular Canadian Institute of Resource Law lawyers in 2007.) Guided by its *Water Act*, AENV issues licenses for water withdrawals from the Athabasca River to tar sands companies. To date, the tar sands industry's net water allocation is 2.3% of the Athabasca River's total flow with licenses to withdraw amounting to 349 million cubic meters annually (double

Calgary's domestic withdrawals from the Bow River) (Pembina Institute 2007b), and approved projects not yet in operation would double this amount (Richardson 2007, 43). Given the problem of drought in a region which has experienced significant decreases in river flow over the last century (Griffiths et al. 2006, 13), withdrawals from the Athabasca River for tar sands developments have been a longstanding concern that has only begun to receive thorough policy consideration.

The Cumulative Environmental Management Association (CEMA) struggled for years to define in-stream flow needs to guide withdrawal policy but, as is typical with this organization, it could not reach consensus by the December 31, 2005, deadline. Therefore, DFO and AENV developed the Water Management Framework (Alberta Environment and Fisheries and Oceans Canada 2007) which places limits on withdrawals during winter low flow periods at 5.2% of weekly historical median flows with maximum withdrawal caps of 15 cubic meters per second. Yet this policy runs counter to the recommendations of environmental organizations and aboriginal communities which advocate permitting no withdrawal during these periods given the risk to habitat (Pembina Institute 2007b). According to the Oil Sands Developers Group (OSDG), a regional oil industry association, by 2010 tar sands projects alone will have exceeded the 5.2% winter weekly withdrawal limit and continue to grow to 6%, at which level withdrawals will stabilize until 2035. In the "growth case" scenario, 15 cubic meter per second water withdrawals—the current maximum withdrawal cap in low flow periods—may be standard by 2015 to 2030 period (Irving 2008). This problem is acknowledged in the framework:

> While current oilsands water use has generally been below the most stringent limits identified within the Phase 1 Framework, current licences have allowed for maximum amounts that *could cumulatively exceed them. Further project development will add to the cumulative demands* that are now subject to the Phase 1 limits (Alberta Environment and Fisheries and Oceans Canada 2007, 18, italics added).

An additional problem with the framework is that its implementation and

enforcement provisions were delayed until 2010 with the results of more studies on in-stream flow needs and broader consultations not available until that time. As these discussions slowly proceed and research accumulates, tar sands projects advance toward their anticipated five-fold expansion and additional water withdrawal licenses continue to be issued. Hence Wenig et al.'s (2006) criticism regarding the "regulatory foot dragging" within the AB government that has not secured in-stream flow needs. As they note, while "bemoaning" the lack of a cumulative effects plan, "the province's Energy and Utilities Board has continued approving, and Alberta Environment has continued issuing new water licences for, successive oilsands operations." This lack of vigilance was admitted by the AB Government's 2006 Oil Sands Ministerial Strategy Committee report which noted that "Alberta Environment has not had the opportunity or the resources to undertake a review to determine whether there is sufficient water available" in key rivers to permit new developments (113).

Reclamation is a third obvious regulatory gap primarily because the province lacks specific reclamation guidelines and monitoring processes. As Vlavianos explains, project permits are issued "without a clear sense that reclamation is currently feasible but in the hopes that new technology will be developed that will someday allow for proper reclamation." Reclamation of tailing ponds is a particularly pressing issue given the lack of proven technology and methods (Vlavianos 2007b, 52). The results to date are telling: after over four decades of tar sands developments, AENV issued its first reclamation certificate on March 19, 2008, for 104 hectares of land.[27] As one participant in the tar sands consultations noted, "Development is going along at hyperspeed but reclamation is going along at geological speed" (quoted in Alberta Energy 2007c, 18). Interviewees including Pembina Institute researchers, a Sierra Club researcher and a Council of Canadians researcher noted this problem as well in 2007.

[27] For an analysis and criticism of reclamation efforts to date, see Grant et al. (2008).

Finally, criticism is now frequently directed toward the ineffectual public consultation (or, where consultation is adequately conducted, the unheeded public consultation) on tar sands projects.[28] During the rights issuance process there is no opportunity for public input and perhaps even little public notice.[29] In Wenig's (2004) appraisal, the CMDRC's work is a "black box": there is no public involvement at this stage and very little public information about what the committee does.[30] With regard to the ERCB, public involvement can happen in its processes, but only if the proposed project is brought to a hearing and a hearing is only triggered if people protest that they have been "directly and adversely affected"[31] by an ERCB decision. But if there are no landowners or occupants, a hearing cannot be triggered—there is no mechanism to commence hearings in "unoccupied" lands, where the great majority of these developments are occurring.

Public involvement in AENV is greater than in Energy and the ERCB, but it is still delayed in both the EIA and licensing processes. During the EIA process, public involvement is permitted in a limited way but only in the later stages. There is some room during AENV's license issuing processes for input from directly affected individuals and these licenses can be appealed through the EAB. But EAB decisions, like EIA reports, are non-binding and the Minister of the Environment has the ultimate decision on appealed issues (Environmental Law Centre 2006b, 1-2, 2006a, 7-9). Note

[28] A parallel problem not raised here, but common in environmental assessment processes is the issue of overwhelming public consultations: the frequency of the processes alongside the complexity and sheer volume of information to be assessed in a short period often alienates local communities.

[29] As AB's Environmental Law Centre Fact Sheet on Oil and Gas Developments and Surface Rights explains, even for "potentially affected surface owners or occupiers," there is "no direct notice" when rights to the land are offered for auction and leased (2006b).

[30] See also Vlavianos' comments on the "complete lack of public participation" at crucial stages of the tar sands decision making process (2007a). This issue is explored in detail in Vlavianos (2007c).

[31] Here "directly and adversely affected" refers narrowly to property owners within a stated radius from the development (ranging from 100 meters to 5.5 kilometers) who would suffer economic losses or negative public safety impacts from the proposed development. Other types of impacts, such as health and environmental effects, are difficult to prove.

that Stelmach's multiple public consultations appear to be improving on this closed system, but these consultations produce only recommendations that the government may or may not choose to implement.[32]

Recent consultations such as the 2006-07 Oil Sands Consultation led by the Multi-Stakeholder Committee and the 2007 Royalty Review Panel Consultation have been more inclusive than former premiers have allowed. But the consultations have produced only recommendations with no legal standing, and, therefore, no requirement that they be enacted by government (Vlavianos 2007b, 64). Therefore, as Acuña, now the Executive Director of the Parkland Institute, notes,

> although the actual consultation process is an improvement over the window-dressing consultations of the Klein years, it would appear that the outcome will be no different—a government with no interest at all in actually acting on what Albertans are recommending (2007).

These concerns seem founded to date: of the tens of recommendations resulting from the multi-stakeholder process in the government's "Responsible Actions" twenty-year strategy for socially and environmentally sound oil sands development (Treasury Board 2009), only two have been implemented over the last year (Cryderman 2010). For these reasons, NGOs frequently worry that government-initiated consultations provide a mere illusion of participation, while diverting the energies of activists.

Note that the longstanding problem of accountability and public information access from AB Energy has been repeatedly emphasized in both internal governmental and more independent panel reports in recent years (Valentine 2008; Dunn 2007; Hunter et al. 2007).

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[32] As an example of recent work on this question, Fluet and Krogman (2007) study one public consultation process, the Northern East Slopes Sustainable Resource and Environmental Management Strategy. They find it to be marked by industry-capture, ENGO exclusion, and overly narrow terms of debate (for example, one that excludes non-use or intrinsic values). They observe that these consultations can "serve to symbolically employ democratic processes, but simultaneously maintain the power relations that underlie the current model of economic development." McInnis and Urquhart make a similar point and describe this phenomenon as "Public Participation as Symbolic, Manipulative Politics" (McInnis and Urquhart 1995, 247).

Analytical Gap: Cumulative Impacts

Comments made during these public consultations frequently point to a final problematic regulatory trend in the regulation of AB's tar sands development: environmental analyses are predominantly limited to the impact of specific projects whereas engaged citizens are concerned with long-term, long-range effects. As industrialization expands, citizens and observers note the inadequacy of a regulatory process examining *individual* permits or projects without an analysis of regional, cumulative impacts. This is a primary concerned raised during interviews with Pembina Institute researchers, a Sierra Club researcher, and lawyers with the Canadian Institute of Resource Law and Environmental Law Centre in 2007.

Since the late 1990s there have been multiple institutional integration attempts to address cumulative environmental impacts and to overcome the policy absences and the fragmented nature of decision-making on tar sands development. These include the more general Sustainable Resource and Environmental Management (SREM), and, specific to the tar sands, the Regional Sustainable Development Strategy (RSDS) for Athabasca Oil Sands Area, the Mineable Oil Sands Strategy (MOSS), the CEMA, and AENV's Oil Sands Environmental Management division. Across all of these bodies, there have been continual delays primarily due to difficulties (genuine or contrived) in reaching a consensus. So far, there have been no tangible recommendations on development trade-offs and no clear framework for departments to address cumulative effects. Overall, these policy integration attempts on the tar sands have become, as representatives from ENGOs often note, "parking lots" for complex issues while tar sands developments continue on through inadequate processes. Even if these integration efforts were functioning, there is concern that they would be mere illusions of integration with AB Energy's interests continuing to dominant the regulatory process.

Taken together, these trends—consideration of environmental impacts that is poorly timed and weakly integrated into the decision-making process on tar sands projects, alongside significant regulatory and analytical gaps—indicate a fragile system of environmental regulation. Given this, the environmental outcomes described in the previous section are unsurprising. But what accounts for these regulatory patterns?

III. Explaining Environmental Regulation in the Tar Sands

A political ecology approach provides a way to reach an explanation for the above trends by focusing attention on the broader political-economic system framing tar sands development. In this vein, below I outline the interests and strategies of the primary interests dominating the debate and note how they result in continued, expanded tar sands developments with weakened regulation.

The dominant petro-political regime in AB is marked by two trends that I develop in the following two sections. First, the Albertan (and Canadian) government is strongly dependent on revenue from tar sands projects; hence there is widespread governmental consent for and support of these developments. Second, this support is reinforced by lobbying by oil industry associations and major tar sands companies which work to influence provincial and federal levels of government and, more recently, American and international organizations.

Government Dependence and Support

The province of AB (and, to a lesser but still significant degree, the federal government), depends on revenue from tar sands developments even more so than on taxes from

citizens.[33] In this political-economic regime emblematic of Karl's "oil-based social contract" (1997, 57), government institutions are readjusted to respond to these private developers rather than to citizens.

Albertan government revenues—and the provincial economy in general—are dominated by the energy sector. Non-renewable energy resource revenues have accounted for an average of 31.3% of total provincial revenue over the last ten years, ranging from 13% to 51% (see figures 10 and 11 in chapter 4). Surveying a longer period of time, the 1971 to 2004 period, a recent ISEEE report summarizes the cumulative provincial economic impacts of oil and gas (in constant 2005 dollars) as amounting to over $1.5 trillion in GDP or value added, $600 billion in employment income (almost 12 million person-years of employment), and approximately $280 billion in government revenues. All told, over this period the oil and gas industry is estimated, in terms of direct and indirect impacts, as contributing to 42% of the provincial GDP (Mansell and Schlenker 2006, ii-iii). These enormous investments have made Albertan a national powerhouse. In addition, employment gains, while more modest than GDP impacts, are still significant with estimates for direct and indirect jobs from the energy industry at approximately 14% of total employment.[34]

Non-renewable revenues and other economic benefits are increasingly based on tar sands projects, a trend expected to amplify over time. In 2006, tar sands production was 62% of AB's total crude oil and equivalent production (Alberta Energy 2008), and as noted above, by as early as 2014, mined and in-situ produced bitumen is projected to surpass the combined production of all energy forms in the province (Energy Resources

[33] Note that the AB government currently earns more from natural gas developments than from tar sands. But natural gas production is steadily declining therefore the province encourages tar sands developments as a substitute for dropping revenues from natural gas. Due to the low royalty rate for tar sands discussed in this chapter, provincial revenues from tar sands represent a very thin slice of total energy royalties, approximately 10% in 2005 (Taylor and Raynolds 2006). I thank Diana Gibson for raising this point.

[34] This estimate is based on data from the AB Government (2008c) and Statistics Canada's May 8, 2008, Labour Force Survey.

Conservation Board 2008).

This unconventional oil is contributing significantly to provincial revenues: from 1967 to 2009 the tar sands industry resulted in $17.4 billion in provincial royalties, with $2.1 billion in 2009. Peak annual royalties were in 2008 at $3.5 billion (Canadian Association of Petroleum Producers 2011, Table 4.16b). These developments have also attracted significant investment with indirect 'spinoffs' effects felt across the province and country.

Nationally, AB's tar sands represent a major source of Canadian oil production and revenue. As demonstrated in figure 10 and 11 discussed in chapter 4, AB has been the largest oil producer by far in Canada over the 1997-2006 period, with Albertan tar sands production alone accounting for nearly 50% of Canadian crude oil and equivalent in 2006 (Alberta Energy 2009b). Over 70% of this bitumen flows south to the American market and the American-led Security and Prosperity Partnership of North America calls for a five-fold expansion of production (and export) of tar sands. These resources play no small role in Canada's aspiration to become a world (or at least North American) "energy superpower." (I return to this point in more detail in the fourth chapter.)

Federally, in terms of direct economic impact, the federal government receives 15% of tar sands rent (Alberta Energy 2009b). In addition, the projects provide employment to out-of-province residents who return money earned in AB to their often economically struggling home provinces, particularly in regions with high unemployment in eastern Canada (Hunter et al. 2007, 7; see also Pembina Institute 2007c).

Financial Subsidies

But alongside this discussion of economic benefits, it is important to note that while revenues from the tar sands, and economic impacts generally, outlined above seem

impressive, rent from these projects is actually quite low. What we have, therefore, is a situation where the environmental costs to the resource owner (the public) are high (or unaccounted) and economic benefit to the owner is quite low. The public is not receiving what it could from the industry and this is due to the efforts of both levels of government to provide a welcoming fiscal environment for tar sands developers (often alongside or in response to industry pressure for this kind of favorable treatment).

From the start of the tar sands industry in AB in the 1960s until the mid-1990s, there was no set royalty standard; rather, rates were negotiated on an individual basis between the Government of AB and companies. By the 1990s, this system was deemed ineffective, as there were no clear rates that new developers could anticipate.

To provide more certainty, this "*ad hoc*" process was replaced, in response to the 1995 National Oil Sands Task Force study, by a new "generic" royalty system. This system was based on the principle of the government requiring very low royalty payments until the projects reached "payout"—until all capital and operating costs had been recovered. The result was that the Government of AB collected a mere 1% of gross revenues until payout, then 25% of net revenues. As for taxes, corporate taxes provincially (and federally) were lowered throughout 1997 to 2007, dropping from 15.5% to 10% provincially (and from 29% to 15% federally), with royalty payments deductible from both.

Then in 2006, after public outcry regarding the lack of public benefit from the tar sands at a time of high oil prices, there was another shift in the royalty regime (research by the Pembina Institute was very important in this debate; see, for example, Taylor and Raynolds 2006). The government appointed an expert AB Royalty Review Panel that then recommended significant changes to the system to garner a greater share of the resource to the province (Plourde 2010b, 4653).

The panel emphasized that the AB government's take for tar sands was strikingly low—or "overly generous" to industry—particularly compared to similar

jurisdictions. By their data, in 2007 the oil industry got 53% of tar sands rent while Albertans received 32% and the federal government received 15% (therefore the total government take was less than half at 47%) (Hunter et al. 2007, 7; see also Pembina Institute 2007c). This is low compared to other "frontier oil" developments internationally (tar sands, heavy oil and offshore oil), with Norway getting approximately 76%, Venezuela 71%, and Californian, Angolan and Alaskan taking 64-67% (Hunter et al. 2007, 23-34).

But the provincial government did not follow the panel recommendation and instead accommodated industry interests. As Acuña at the Parkland Institute well notes, the royalty changes implemented by the provincial government represented a "Compromise on a compromise on a compromise" (2009)—a repeatedly weakened version of the royalties Albertans demanded and even the government-appointed panel strongly recommended. One very welcome change, however, was the termination of the provincial Accelerated Capital Cost Allowance (ACCA).

Today, royalty rates for tar sands projects remain at 25% until the price of WTI oil reaches $55 in Canadian dollars, at which point the rate gradual increases to a maximum of 40% (although these royalties remain deductible from taxable income) by linear interpolation[35] (Plourde 2010b, 4653-54). What this means in terms of the total revenue capture from the tar sands is highly complex. In Plourde's recent analysis, he shows that (depending on factors such as the price of oil, the strength of the Canadian dollar and capital expenditures), companies take as much as 65% of total revenue, with the provincial government receiving a maximum of 55% and the federal government a maximum 10.6% (2010b, figure a and b, 4660).

[35] When oil is at or below $55 a barrel, royalties are 1% on gross revenue and 25% on net revenue. From here, rates climb very gradually, with 0.12% added per dollar increase on gross revenue and 0.23% per dollar increase on net revenue, until the price of oil reaches the $120 royalty mark, at which point royalty rates reach a maximum of 9% on gross revenue and 40% on net revenue (Alberta Energy 2007b).

But data from the Parkland Institute shows a much less generous portion of tar sands value going to the provincial government. In these calculations, once corporate capital expenditures and operating expenditures as well as royalty payments are written off, the effective percentage of the rent going to the government averages out at a mere *8.9%* over the 1992 to 2009 period. Since 1997, the value of the bitumen produced from AB's tar sands was $205 billion—but companies paid the Government of AB only $20 billion in royalties and land sales. The provincial government received less than 10% of the total value of their resource (Boychuk 2010, 31, 43).

In addition to low provincial royalty and taxes are the federal financial subsidies to the tar sands. As noted above, federal corporate tax rates for the tar sands have fallen and an additional preferential tax incentive for these projects was added through the ACCA. This allowance was created in 1997 to permit tar sands mining and in situ companies to claim more costs against income from tar sands (Taylor 2006). Based on this, tar sands project operators did not pay federal corporate income taxes on income from new projects until "all eligible capital costs associated with those projects are first written off for income tax purposes" (Hunter et al. 2007, 76-77, 90). The federal government ended this tax break to new projects in 2007 but it still applies to earlier projects.

Low royalties and taxes created incentives to keep reinvesting continually in the development of new tar sands projects. For this reason, between 1997 and 2008, government royalties were slow or stagnating even as tar sands production increased (Taylor 2006). Low royalties and taxes were meant to stimulate investment in the struggling tar sands industry. Yet by the turn of the millennium tar sands production had taken off, exceeding all expectations. In 1995, the Alberta Chamber of Resources estimated tar sands production would reach 1.2 million barrels per day in 2020 (National Task Force on Oil Sands 1995). But this production point was hit in 2004, well ahead of production projections. The Pembina Institute argues this extreme pace of

development was due to the permissive royalty and tax regimes, as well as the oil price growth (Bramley et al. 2005).

Given the rapid expansion of the tar sands over the last decade, AB's continuous provision of tax breaks, subsidies and low royalties to industry is outmoded. In fact, it is counterproductive given the environmental and social impacts—a development slowdown is needed rather than growth. An argument could be made that such financial support was needed at the outset of the industry in the 1960s to stimulate investment. But the pace and high profits margins of the industry today indicate that this is clearly no longer the case.

R&D and E&T Subsidies

In addition to the tax and royalty benefits, extracting oil from the tar sands would not have been possible without early and significant direct investments by the provincial and federal government through research and development or education and training initiatives. These subsidies began very early, dating from the 1930s (as stressed early in the debate by Pratt 1976; see also the recent analysis by Boychuk 2010). By current estimates, over one billion dollars of public money has been invested in research that led to the technology to mine for bitumen (Boychuk 2010).

One important example is AB's Oil Sands Technology and Research Authority (AOSTRA), formed in 1974 and replaced in 2000 by the Alberta Energy Research Institute (AERI) (Boychuk 2010, 29). This was the provincial government's "proactive response" to "Develop oil sands technologies that would allow AB's vast resources to be exploited at relatively low costs." Provincial "patient funding" to AOSTRA spiking in the mid-1980s to approximately $75 million annually (*Alberta Oil Sands Technology and Research Authority (AOSTRA): History of AOSTRA and Accomplishments* 2009). This publicly funded research to forward the development of the tar sands amounted to over $800 million (Boychuk 2010).

This support has been supplemented by special injections of research funding to resolve new industrial challenges. For example, in July 2008, the AB government announced a $2 billion commitment to reduce GHG emissions via CCS projects. CCS technology is planned for use at tar sands sites (to date, only upgraders can use this technology) (Alberta Government 2008a). AB's government-funded CCS initiatives are focused through the CCS Development Council formed in April 2008 led by former Syncrude president Jim Carter with eight members from industry and six others from provincial and federal government departments and the University of Alberta. Another example is the $1.5 million announced in June 2009 for research on reclamation of tar sands at the University of Alberta's School of Energy and the Environment. This extensive, long-standing government funding of research to respond to challenges in the tar sands represent a major public subsidy to the industry.

Defending the Tar Sands

Further, both levels of government actively lobby for tar sands developments on both sides of the border. In Canada, political leaders are adamant tar sands development will continue, a point encapsulated in Premier Stelmach's well-known statement upon taking leadership of the Conservative Party in December 2006 that the province will not be "touching the break" on tar sands development (see, for example, Government of Alberta 2007; McLean 2006). The provincial government also reacts quickly to contentious issues in the press threatening the tar sands, a point made obvious by the province government's defense industry after hundreds of migratory birds were oiled in tar sands tailings ponds.

In the U.S., AB has a consistent foothold in Washington to promote tar sands investment and imports through its "lavish" provincial office and permanent representative (Henton 2007). From here, AB defends the tar sands from U.S. policies

such as the California's January 2007 Low Carbon Fuel Standard[36] and the Bush administration's December 2007 *Energy Independence and Security Act*'s (EISA).[37] The office also actively promotes the tar sands, an obvious example being its June 2006 participation in the Smithsonian Folklife Festival where the province spent $3.8 million over the ten day event to host U.S. legislators and dignitaries (such as VP Dick Cheney) to bolster trade and, specifically, to draw attention to the tar sands' value to the U.S. This aim was symbolized by parking of a 200-ton heavy hauler truck used in tar sands extraction on the Washington Mall—a bold statement to American legislators that AB has the oil reserves to meet American energy security needs. (Although this strategy partially backfired as it made some legislators and environmentalists realize the enormity of environmental destruction in the tar sands.)

In addition to a consistent presence in Washington, high-ranking politicians in AB frequently make special visits or trade missions to promote the tar sands. Stelmach's first visit outside Canada as premier of AB in January 2008 was to Washington to meet U.S. Vice-President Cheney to defend tar sands developments and stress Americans' need for energy security to be addressed by the tar sands (*Stelmach defends oilsands in Washington* January 16, 2008).

While promoting a positive perception of the tar sands at home and abroad, the government of AB seems reluctant to unearth or release information critical of the projects, such as health impact studies in downstream communities. Ecologist and statistician Kevin Timoney suggests there are governmental attempts to cover up health and environmental impacts of the tar sands and observes that information control in AB

[36] This standard requires that all fuel sold in California have lower and declining lifecycle GHG emissions than industry averages.

[37] The EISA's section 526 prohibits American federal agencies (such as the military, a major buyer of Albertan bitumen) from procuring non-conventional petroleum whose GHG emissions exceed emissions from conventional petroleum sources. This section was originally intended to curtail the development of fuel from liquefied coal, a very GHG intensive process, but it could also apply to the tar sands.

is "world class" (CBC 2007). One example of downplaying environmental impacts relates to the AB government's reluctance to release new estimations of the number of migratory birds oiled in April 2008 in Syncrude's tailings pond—1606 as opposed to the originally reported 500. Syncrude reported increased numbers in the summer of 2008 but this more alarming count was not released by the government until April 2009. Similarly, the government downplays the seriousness of toxic waste leakages from tailings ponds even as scientific evidence mounts (Price 2008; Kelly et al. 2009). AENV scientist Preston McEachern explains that "You would not be able to distinguish this seepage from natural contamination" (Mittelstaedt 2008). Similarly, AB Energy Minister Mel Knight has argued that

> You can see bitumen running out of the banks of the Athabasca River on a hot summer's day […]. It's been going on for millennia and it's not as if we're dumping oil in the river and no one else is doing anything. Mother nature has done that for decades and eons (Knight is interviewed in Iwerks 2008).

Federally, high-ranking officials also rapidly defend the industry from media criticism, sometimes even *preemptively* as Canadian Environment Minister Jim Prentice did in February 2009. Prior to the official publication of *National Geographic*'s March 1st, 2009, article comparing the tar sands developments to "dark satanic mills" (Kunzig 2009), Prentice took issue with the publication and stated that the tar sands are and will remain a critical resource for North American energy and the Canadian government will continue supporting them. Given Prentice's history—as Minister of Indian Affairs and Northern Development from February 2006 to August 2007, Prentice was a key supporter of the Mackenzie Valley natural gas pipeline project—perhaps his position is expected. But Conservative members are not alone in this vocal support for the tar sands. Michael Ignatieff, leader of the Liberal Party, also publicly voiced support for the industry by elaborating on the employment it provides and the size of the resource (*Prentice defends oilsands following National Geographic article* February 25, 2009).

Federal actors have also been very active in supporting tar sands developments in the U.S. particularly in response to shifts in American policy that threatened the tar sands. The importance of the tar sands in Canada's relationship with the U.S. was at the forefront during Michael Wilson's time as Canada's ambassador to U.S. (2006-2009).[38] In response to the American EISA section 526, an act to reduce the use and imports of high GHG emitting fuels by federal buyers, Wilson wrote to the U.S. Secretary of Defense, the Secretary of State, and the Energy Secretary in February 2008 to advocate that tar sands be exempt from that section and considered conventional oil.[39] He then actively intervened in the debates surrounding the development of California's Low Carbon Fuel Standard in 2008 to 2009, reminding Americans that Canada "offers the U.S. enhanced energy security" increasing through tar sands production (2008).

Such efforts were increased during Obama's presidential campaign when a close aide of the candidate expressed reluctance in late June 2008 to import tar sands bitumen given its "unacceptably high carbon emissions" which contradicted Obama's commitment to use fuels that reduce climate change (Alberts 2008). Soon thereafter, at the August 27, 2008, meeting in Denver of the Democratic National Convention, senior Canadian government officials, including Tony Clement, chair of the environment and energy security cabinet committee, as well as oil industry representatives such as Nexen Inc., met with Obama's representatives. Clement was quoted as stating that the Canadian government was lobbying in the U.S. at all levels of government with senior leaders of both Conservative and Democratic parties, Congressional members, state legislators and governors as well as the mayors of major cities, to build a "sophisticated

[38] Upon taking office, Wilson (a former Mulroney cabinet minister and RBC asset manager and Vice Chairman of RBC Dominion Securities) stressed Canada's position as the top exporter of oil to the U.S. compared to "less-secure" suppliers such as Mexico, Venezuela and Saudi Arabia. He noted "we must remind people of this reality so when the Americans come to us with another problem they have a more positive mindset. Our energy situation, particularly the oilsands, becomes a beneficial backdrop to any discussions with Americans" (Francis 2006).

[39] A coalition of American government agencies is simultaneously trying to have the tar sands considered conventional fuel (Agencies may clear oil sands under energy law 2008).

full-court press on Canada's issues with the United States of America" (MacCharles 2008). Then, upon Obama's election in November 2009, Prime Minister Harper moved quickly to promote the tar sands to the new president. During Obama's first visit to Canada in mid-February 2009, Harper specifically emphasized the importance of the tar sands to American energy security arguing Albertan tar sands are a conveniently close and stable replacement to Middle Eastern oil.

While the federal government is quick—even preemptive—in responding to these threats to the tar sands, it hesitates to intervene where it has environmental regulatory authority. This point was well noted in the Standing Committee on Natural Resources report on the tar sands (Richardson 2007, 35-37).

Alongside these public defenses and promotion of the tar sands at both levels of government, there is also longstanding behind-closed-doors collaboration between Albertan, Canadian and American government representatives to increase tar sands exports to U.S. and streamline environmental regulation. The American-led North American Energy Working Group of the Security and Prosperity Partnership meets yearly to advance this agenda. Meeting discussions occasionally appear in the press, most notably references to a target developed at the January 2006 meeting in Houston for a five-fold expansion in tar sands production to meet U.S. national oil security needs (see, for example, U.S. urges 'fivefold expansion' in Alberta oilsands production 2007).

Government dependence, on and therefore broad-ranging support for, tar sands development—via research subsidies, low taxes and royalties, media and public relations efforts, political lobbying in the U.S., and reluctance to dig deeper on contentious environmental and health issues or intervene where possible—is reinforced by the industry lobby. This is the second major element of AB's petro-political regime.

Oil Industry Lobby

The tar sands industry attempts to influence provincial government's support for tar

sands developments to protect extensive investments in and profits from the projects. The most recent data on corporate spending in the tar sands shows that over the 1997 and 2007 period, tar sands capital expenditures for in-situ production, mining and upgrading totaled $90.5 billion dollars, peaking in 2005, 2006 and 2007 at $10.4, $14.3 and $18.1 billion dollars respectively. In addition, operating costs over 1997-2007 totaled nearly $68 billion, also peaking in the 2005-2007 period (Canadian Association of Petroleum Producers 2009b, table 4.16b). Significant investments continue even in periods of recession.[40]

As for profits from these investments, over the last decade of available data (1998-2007), producers of tar sands in AB earned a total of $234 billion in sales from initial production in 1967 until 2009. The value of producer sales started to surge starting in 2000 rising to as high as $37.8 billion in 2008 (Canadian Association of Petroleum Producers 2011, table 4.19a and 4.19b). But discerning precise net profits after costs, taxes and royalties is complicated. A 2006 CAPP publication offers a general picture: twenty-five years into a tar sands project (the case of Suncor and Syncrude, two of the three largest producers), the projects' return for companies after capital costs, taxes and royalties is 51% (Alberta's Oil and Natural Gas Industry: Contributing to a Strong Provincial Economy 2006). Given this, based on sales revenues it could be estimated that in 2007, tar sands producers made net profits in the tens of billions of dollars.[41] Then in addition to protecting investments and profits are the lucrative

[40] Prior to the 2008 recession, tar sands companies were forecast to invest nearly $30 billion in capital investments in 2008 but some commentators note this has decreased to as little as $3 billion (Howard et al. 2009, 55). Yet other industry groups, such as the Oil Sands Developers Group, maintain high forecasts of over $20 billion in construction capital projects and $30 billion in operating costs in 2009 and 2010 (Producing and investing in energy 2009). The general trend has been that as oil prices declined due to a slowing global economy, tar sands companies without investments already made withdrew project proposals but those with the projects commenced or in operation continue production to repay investment costs. Note that Price at which tar sands operations are "economically viable": $25 to $30 per barrel (in terms of U.S. dollars on a barrel of West Texas Intermediate oil) (Taylor cites Mawdsley et al. 2005) (Taylor 2006).

[41] Profits continue flowing at lower oil prices: estimates of costs to produce a barrel of oil

salaries for tar sands company executives as noted in (Gibson 2007).

Tar sands investments, profits and salaries represent high stakes and companies and industry associations have the resources to protect their access to the resources. And they have done so at critical points in the environmental debate[42] using multiple methods.

Political Lobbying and "Community Engagement"

Lobbying the provincial and federal legislatures has been a primary method coordinated and led by the CAPP. CAPP is the upstream petroleum industry's lobby force focused on the "economic sustainability" of its 130 companies that are exploring for, extracting and producing petroleum products in Canada. Together these companies produce over 90% of oil and natural gas in Canada. In addition, CAPP represents plus 150 associated members who service the producing companies (Canadian Association of Petroleum Producers 2008a, 22). CAPP intervenes directly in the regulatory process to ensure fiscal and environmental regulatory regimes favorable to increasing access to oil and gas and profits for member companies.

For example, via CAPP industry repeatedly stresses to federal and provincial government bodies the undue costs and delays associated with new climate change policies. For instance in May 2009, CAPP, the Canadian Association of Oilwell Drilling Contractors and the Small Explorers and Producers Association of Canada presented arguments to the House of Commons Standing Committee on Industry, Science and Technology for loosening environmental regulations generally and clarifying uncertainty around GHG regulations. These regulations have added to operating costs

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from tar sands averaging around under $40 (although the established producers have lower averages still).

[42] Industry has also mounted strong lobbies in response to fiscal debates, exemplified in the response to royalty regime reviews and lobbying for tax breaks during economic downtown, most recently in winter 2008-09.

in Canada to the point that, according to Gary Leach, the executive director of the Small Explorers and Producers Association of Canada, "Canada provides among the lowest rates of return on investment in the world" (quoted in Akin 2009). The industry's long-standing lobbying effort against strong GHG emissions and adherence to the *Kyoto Protocol*, alongside its push for intensity-based targets with a low price on carbon, is another prominent example (Urquhart 2005, 149).

These calls for constraining environmental and GHG regulations are paired with lobbying for provincial and federal funding of technology to help meet new standards alongside demands for tax rebates for implementing the subsidized technology. For example, CAPP is currently lobbying the federal government for funds to research clean energy projects, primarily CCS, as well as to have costs associated with CCS and other actions to reduce carbon emissions be tax deductible and included in the ACCA (Daly 2009).

The broad trend, then, is for tar sands companies to lobby for limited environmental regulations while simultaneously lobbying for public funding to meet these environmental standards as well as for tax deductions to cover costs incurred. The burden of companies meeting environmental standards in AB falls heavily on the public.

While lobbying key offices of the federal and provincial government budget, tar sands companies also fund political campaigns and parties to encourage policy development amenable to oil interests. Unfortunately, this is another under-researched subject in AB, however, initial work on this subject, for example by Harrison, note a close correlation between corporate donations by oil and gas companies (among the major funders of the Conservatives) to political parties and the policies of those parties (Harrison 2005, 100-01; see also Boychuk 2010). Some media commentators have made similar comparisons. For example, one journalist notes a parallel between the heated climate change debate in 2006 and increases in campaign donations to the Conservative

party by oil companies—a 50% increase over 2005 (Phillips 2007). Then two years later, as noted in *Alberta Oil Magazine*, there was a decline in oil industry campaign donations, particularly from Calgary-based corporations, in response to the Conservative Party leader election of "populist" and rural Ed Stelmach due to his early indications of tougher royalty rates. This drop in funding was meant to be a warning to Stelmach who, after his 2008 election, returned to "courting" oil companies (Romanowska 2009).

These political strategies have been the focus of the industry's efforts to secure and protect resources and the right to extract. They are complemented by more grassroots community "engagement" projects where the industry engages with the public directly through community projects.

CAPP has a well-developed approach to public relations (referred to as public "involvement") documented for its member organizations in a 139-page handbook (Canadian Association of Petroleum Producers 2003). CAPP's primary community public relations activity is the "Energy in Action" program that "brings industry and communities together to care for our natural environment." In 2009, CAPP facilitated member companies in environmental (as well as oil and gas) education and gardening projects at eleven schools across Canada (Canadian Association of Petroleum Producers 2009a), at a cost of $2000 per school (Dahlman 2009). CAPP has also co-founded Synergy Alberta, a non-profit organization facilitating information sharing among Albertans and industry as well as participation by Albertan in oil and gas development. The aim of the groups created by Synergy Alberta is "to foster and support mutually satisfactory resource development outcomes in communities" (Synergy Alberta Conference 2008 2008) with current members representing communities, industry and government (aboriginal positions are currently vacant) (Synergy Alberta 2004-2009). Synergy Alberta is ultimately an attempt to secure community consent for access to resources by oil producers who, in Jaremko's view, are "taking no chances on losing future access to resources." These local organizations aim to speed along hearings and

"resolve disputes quietly rather than wage noisy conflict" (Canadian Group Hires Red Cross Exec as Industry/Community Peacemaker 2006). It is, therefore, as one journalist described it, a "civil peacekeeping organization" that measures success by pipelines developed or by wells dug or by profits created (Jaremko 2006).

At the level of individual companies, the major players also make targeted, high-profile donations to the region. For example, in 2008, Syncrude made a $500,000 commitment to develop Fort Chipewyan's Archie Simpson Arena alongside a $50,000 gift to the Fort McMurray Food Bank, then a recent $95,000 donation to build a new indoor playground (featuring tar sands haul trucks and a crane) at the Wood Buffalo YMCA. Suncor recently announced $2.5 million for a performing arts center in Fort McMurray following its $2 million commitment in 2008 to help develop Northern Lights Regional Health Foundation's programs and medical equipment (Canadian Association of Petroleum Producers 2008b).

Even more significant is corporate funding to educational institutions with significant targeted donations made to the Keyano College system. From 2006 to 2008, major tar sands companies dominated, or were the only groups listed on, the top donor list for the college (Keyano College 2007, 2008, 2009). Syncrude recently announced $5 million in funding to Fort McMurray's Keyano College, with $2 million of this amount ear-marked for the Syncrude Aboriginal Trades Preparation Program (Canadian Association of Petroleum Producers 2008b). Since 2005, Shell Albian gave $150,000 in support of the Aboriginal Entrepreneurship Certificate Program. Companies also donate technology in kind so students can be trained on the very equipment tar sands operators use and then enter the workforce at faster rates. (Keyano is explicitly tied to providing skilled workers to the tar sands: one campus, the Suncor Energy Industrial Campus, offers training on company equipment and includes a Suncor Recruitment Centre; another in downtown Fort McMurray houses the Suncor Educational Technology Centre.)

Universities in AB are similarly targeted by tar sands companies' funding. The University of Alberta's major fundraising campaign, Campaign 2008, included a $10 million donation from Imperial Oil Limited for its Imperial Oil Centre for Oil Sands Innovation, a $7.5 million contribution from Encana Corporation for research on energy and the environment and a $3 million contribution from Canadian Natural Resources Limited for the Allan P. Markin/Canadian Natural Resources Limited Natural Resources Engineering Facility (Keyano College 2007, 2008, 2009). The University of Calgary's donor impact reports note similar gifts, such as ConocoPhillips Canada repeated donation of $40,000 to support the Haskayne School of Business Petroleum Land Management program in 2007-08 and Shell Canada's $1.5 million investment in 2006-07.

It is in these ways that the tar sands industry combines government lobbying with strategic, self-serving community involvement. The CAPP secures community-industry relations through local organizations and programs. At the same time, individual companies help build a community to attract and retain workers and enhance their public image through targeted "gifts" to the region. Simultaneously, they invest in educational institutions that develop the labor force and research they require.

But even subtler than governmental lobbying and financing and community public relations is the "revolving door" between industry and government posts. Government representatives are frequently drawn to the more lucrative careers in the oil industry and so oil industry is well versed in government processes and constraints. The industry is also well connected to policymakers still working within government who are planning an eventual transition to industry. Hence the industry's often greater ease in communicating with government and accessing key decision makers. This aspect of Albertan politics is subtle and difficult to track but it is a point frequently made by interviewees and one that has begun to be documented by, for example, Taft (2007, 81, 84) and Laird (2000).

Seen systematically, the case of tar sands extraction in AB shows particularly petro-political dynamics. While AB owns the land from which tar sands is extracted, it does not engage in or own tar sands production. Therefore the AB Government must get revenue from tar sands indirectly, via taxing corporations or collecting royalties and to ensure this, the government encourages and supports tar sands companies. The province depends on corporate interests for its economic stability yet industry has distinct interests in making private profits while working to avoid the costs associated with environmental regulation, taxes and royalties. This relationship—the government promotes private tar sands development to get revenue from the projects while industry lobbies government for the cheapest, easiest access public lands to extract profit—is the dominant political-economic dynamic in AB that amounts to strong consent for tar sands developments.

This system translates into an environmental policy regime biased toward tar sands development: the regulatory system has been developed to support tar sands development and to restrain or impede environmental regulation, hence the problematic environmental regulation trends elaborated above and the multiple environmental impacts on the ground.

Understood in these terms, AB has become a "company" province where what is good for the oil industry is considered good for AB—the province "retooled" itself around supporting this industry and spending its revenues as opposed to environmental protection, as noted in an interview with a New Democratic Party representative in April 2007.

IV. Resistance & Demands for Effective Environmental Regulation

> It's time to stop the tar sands. (Mike Hudema, Greenpeace Climate and Energy Campaigner, quoted in Greenpeace strikes again: activists occupy Shell upgrader expansion site in Fort Saskatchewan 2009)
>
> Alberta is losing the public relations war when it comes to the tar sands. (Yaffe 2008)

What possibility is there for change in the current regulatory system? As monolithic and as undemocratic as Albertan politics can seem, strong resistance to *status quo* environmental regulation in the tar sands has indeed grown, spread and developed coherent policy positions. Three trends are notable in this opposition and are elaborated below: a shift in scale from local to international levels of action, a shift in strategy from "inside" "normal" politics to more disruptive challenges to political institutions, and the development of a consensus on alternatives or policy changes required.

First, there has been a strategic shifting of the scales at which organizing and action occur, from local to international levels. Resistance has been growing for decades across AB through the combined work of environmental organizations like the Sierra Club of Canada Prairie Chapter, labor organizations such as the Alberta Federation of Labour, aboriginal organizations and communities like the Athabasca Chipewyan First Nation, and with the support of research by organizations such as the Parkland Institute and the Pembina Institute. These provincial organizations, frustrated by an unresponsive provincial government (and the continuous re-election of Conservative governments due to electoral boundaries favoring that party and growing voter apathy), branched out to work in coalition with national and international groups. The opposition spread to the national level with the involvement of environmental organizations such as the David Suzuki Foundation, social organizations like the Council of Canadians, and research institutes, for example the Polaris Institute. Met with federal inaction, those opposing tar sands development crossed borders to combine with American organizations such as ForestEthics and the movement

continues to expand to Europe. Highly inclusive coalitions spanning environmental, social, labor, religious and aboriginal organizations now extend from local and provincial organizers to national, American and international scales.

Before elaborating on the interventions at these levels, beginning with provincial-level action, I should note that the aims and messages of those opposing tar sands development in AB are often paired with the strategies employed to get these messages heard or particular places of engagement. The general trend is that while initially working inside the institutional regulatory structures (for example, while participating in government panels), those opposed to *status quo* tar sands development were working toward an improved implementation of the regulatory system. But the stronger messages fundamentally challenging the government and its approach to tar sands development were made using more disruptive methods not within the halls of power, but outside, on streets, at worksites, off bridges and so forth.

There is, of course, a particular path or flow at work. Why the shift from one kind of message and course/site of action to the other? We could pinpoint the transition point from one dominant method of opposition to the other as occurring in 2007 when aboriginal communities left a high-level committee on environmental issues in protest (discussed below). At this point, key groups openly acknowledged what was a longstanding underlying concern: that tar sands developments were continuing—even expanding at a rapid pace—with no perceptible improvement in the environmental regulatory process. Interventions to improve the system had had little impact; government processes to consult with and listen to stakeholders beyond industry were a distracting diversion—the government's listening without action was understood and rejected as co-optation. Once these realizations coalesced and other major groups followed the lead of aboriginal communities and removed themselves from inside government institutions, there was a noticeable shift in the policy messages and tactics.

In AB, aboriginal communities downstream of tar sands developments, or in the

path of pipelines to carry gas to the projects or to transport bitumen from them, have been longstanding sources of opposition. Communities such as Fort Chipewyan are ever more vigorously protesting the projects' environmental health impacts, their degradation of water and air quality, how they have increased the toxicity of subsistence food such as fish and game, as well as how the projects limit aboriginal peoples' access to traditional lands.

The issues that have garnered the most attention are the health impacts of the tar sands. Concerns were first raised publicly in 2006 by physician Dr. John O'Connor who noted high rates of rare cancers in Fort Chipewyan. O'Connor was later chastised by Health Canada and others which threatened to revoke his license to practice for raising undue alarm. Since then, two studies by the Alberta Cancer Board have demonstrated the need for further study but no clear correlation between the tar sands and local cancer rates has been shown. Given the apparent reluctance of both provincial and federal governments to study the issue and noted problems with the reliability and community involvement in the studies that have been completed, there is a growing distrust within the communities. As stated by Steve Courtorelle, Mikisew Cree First Nations councilor and representative with the Nunee Health Board, "We just don't have enough faith in either government, and I just know they're going to try to protect their interests with continuing to develop the tar sands" (Brooymans 2009). Hence the Fort Chipewyn Health Authority commissioned an independent study by Treeline Environmental Research in November 2008 that showed high levels of toxic and carcinogenic material (such as mercury and arsenic) in fish and soil downstream. Other communities are now conducting their own studies, such as the Mikisew Cree First Nation.

Aboriginal communities were similarly disappointed in government and industry inaction on environmental issues in the region, which was made evident in the CEMA. The Athabasca Chipewyan First Nation and the Mikisew Cree First Nation

withdrew from the association in 2007 in protest against the committee's lack of progress. The Pembina Institute, the Toxics Watch Society of Alberta and the Fort McMurray Environmental Association followed this lead and withdrew in August 2008.

Having experienced the failure of these health and environmental institutions, some communities have opened court cases against the provincial or federal governments for failure to consult and for infringements on traditional lands or treaty rights. Examples include the Chipewyan Prairie Dene First Nation's March 2008 case against the AB Government in relation to the Christina Lake SAGD project, the Athabasca Chipewyan First Nation's 2008 court challenge of 2006 and 2007 land tenure permits to Shell and other companies, and the Beaver Lake Cree Nation's 2009 case against the provincial and federal governments. Simultaneously aboriginal communities have vigorously protested pipeline projects running to and from the tar sands. For example, since 2007, Lubicon Lake Indian Nation, now in collaboration with local groups and Amnesty International, have opposed the installation of TransCanada Pipeline Limited's North Central Corridor project through their non-ceded territory.[43]

Opposition from aboriginal communities has been joined with resistance from environmental NGOs in AB such as the Sierra Club of Canada Prairie Chapter, Prairie Acid Rain Coalition, AB's Canadian Parks and Wilderness Society, and the Keepers of the Athabasca, sometimes collaborating through the Oil Sands Environmental Coalition which includes Toxics Watch Society of Alberta, the Fort McMurray Environmental Association and the Pembina Institute. These groups conduct or commission research on the environmental impacts of the tar sands, publicize this research through media to the public, intervene in government hearings and consultations, raise awareness through media and public education events, poll public opinion to understand the

[43] This pipeline would transport gas from northwestern Albertan, and eventually from the Arctic via the Mackenzie Valley pipeline, to the tar sands projects and into Saskatchewan, potentially to fuel that province's new tar sands industry.

interests and concerns of Albertans and Canadians and lobby politicians and policymakers to redress environmental policy. Joint court cases are also becoming a more frequent tool of Albertan ENGOs. For example, in April 2009, Ecojustice, representing the Oil Sands Environmental Coalition including the Toxics Watch Society of Alberta, the Fort McMurray Environmental Association and the Pembina Institute, appealed to the Canadian Minister of the Environment, Alberta's ERCB and the CEAA to reconvene Joint Panel review hearings on approvals for two of Shell tar sands projects (Jackpine and Muskeg River) after Shell broke written agreements with the coalition to reduce GHG pollution. Taking a different approach, Greenpeace, a newer addition to the environmental community in AB, has made headlines by more direct actions like unfurling a banner at one of the premier's fundraising dinners in April 2008 which read, "$telmach: the best premier oil money can buy," creating a mock tourism website of tar sands in June 2008 to satirize the province's new tourism campaign and underscore the environmental horrors of the tar sands, and erecting a sign at the mouth of one of Syncrude's tailings waste pipes in July 2008 declaring the operations to be the "world's dirtiest oil" and demanding action to "stop the tar sands."

These ENGOs are supported by research from policy institutes, most notably from the provincial offices of the Pembina Institute (which includes the "Oil Sands Watch" research program), and the Parkland Institute at the University of Alberta in Edmonton that analyzes issues relating to energy security and fair revenue. The ENGOs and policy institutes are then joined by organizations not primarily focused on environmental issues, such as Public Interest Alberta (focusing on protecting and building public services), and labor organizations like the Alberta Federation of Labour (working on reorienting AB's economy to "green" development), and the Communications, Energy and Paperworkers Union (lobbying to slow pipeline projects exporting raw bitumen). Other institutions like the Regional Municipality of Wood Buffalo and Northern Lights Health Region have been involved in recommending a

slowing of tar sands projects that have overburdened the region's infrastructure.

Canadian opposition to the tar sands grew from this movement in AB. National ENGOs now focus their efforts on the tar sands, such as Toronto's Environmental Defence (publisher of "Canada's Toxic Tar Sands: The Most Destructive Project on Earth"),[44] and other NGOs such as the Polaris Institute (with its "Tar Sands Watch" program) and the Council of Canadians (via its Energy Campaign). Religious organizations are also involved, spearheaded by KAIROS' Ecumenical Justice Initiative which facilitates visits to the tar sands projects and impacted communities like Fort Chipewyan. National (and international) aboriginal organizations join provincial groups, for example, the Indigenous Environmental Network's Canadian Indigenous Tar Sands Campaign out of Ottawa.

Resistance is also growing in specific Canadian sites impacted by the need to fuel the tar sands projects and transport the product, or by the more far-reaching environment impacts. In B.C. there is strong opposition to pipelines and tanker traffic transporting bitumen (seen, for example, in the "Tar Sands Free B.C." campaign). In the Northwest Territories, tension is building locally due to concerns about water pollution and quantity flowing north from AB. The Northwest Territories Association of Communities, representing all thirty-three communities in the territory, unanimously passed a moratorium in May 2009 to stop new tar sands developments (Cryderman 2009). This resolution came after a February 2009 motion by the Dene Nation and Assembly of First Nations emphasizing the "urgent threat to all downstream communities in the Mackenzie Basin" due to tailing ponds leaks, the potential for a major breach, and the "colossal mismanagement" of AB's tar sands (Dene Nation and Assembly of First Nations 2009).

[44] Of course, in some cases ENGOs are influenced by the lobbying power of the tar sands industry, a point raised by those tracking of corporate donations to organizations, such as Ducks Unlimited and the Canadian Boreal Initiative (Stainsby 2008).

These Albertan and Canadian efforts are increasingly paired with action in the U.S. This new scale of resistance was well demonstrated by the joint launch of the obama2canada.org campaign by Canadian, American and international NGOs prior to President Obama's first visit to Canada in February 2009 when Prime Minister Harper was defending the projects and seeking to protect them against continental carbon emissions regulations. The campaign featured high-profile advertisements in major U.S. newspapers, such as the February 25, 2009, message to Obama in *USA Today* by Mikisew Cree, Athabasca Chipewyan First Nations and ForestEthics stating, "You'll never guess who's standing between us and our new energy economy." The text was followed by an oil-splattered map of Canada, oozing south across the U.S. border.

Opposition in the U.S. is heating up with emphasis on key political meetings and corporations. For example, Oil Change International and the Natural Resource Defence Council protested Stelmach's attempts to defend and promote the tar sands during his January 2008 visit to Washington. ForestEthics joined with Toronto's Environmental Defence to protest the Albertan trade mission in the capital in April 2008 to lobby for an exclusion of the tar sands from new American EISA. Then ForestEthics, NRDC and others protested the tar sands at a meeting of Western Governors' Association biannual meeting in Wyoming in July 2008 to raise awareness of the environmental impacts of the tar sands. More recently, in the summer of 2009, "Dirty Oil Sands," an international network of social, environmental, aboriginal and research organizations, pressured U.S. Secretary of State Hillary Clinton to refuse Enbridge Energy's permit for the construction of the Alberta Clipper pipeline to transport bitumen from the tar sands to Wisconsin to provide feedstock for American refineries. This action is part of the coalition's broader agenda to raise awareness about how AB's tar sands projects are a threat to the new energy economy in the U.S.

Groups in the U.S. have also moved the protest beyond political leaders with, for example, the NRDC launching a campaign to pressure major airlines to stop using fuel

from tar sands. Banks are a newer target of pressure in addition to the airlines and pipeline companies. In March 2009, Rainforest Action Network (original a Californian organization now with an Edmonton office) joined with members of the Lubicon Lake Indian Nation to lobby the Royal Bank of Canada—the Canadian bank providing the greatest amount of financing to the tar sands—to withdraw support from the projects (*Financing Global Warming: Canadian Banks and Fossil Fuels* 2009).[45]

Europeans are also increasingly active in opposing tar sands projects. Europe is not an export markets for the tar sands but the region is a major source of investment for them, hence the building activism particularly in Norway and the U.K. to end investments in the projects. In August 2008, for example, the WWF complained to Britain's Advertising Standards Authority that Shell's advertising of the tar sands as "sustainable" was false and Shell was then prohibited from republishing the advertisement. Shortly thereafter in fall 2008, the U.K. Social Investment Forum emphasized the environmental and long term financial risks of Royal Dutch Shell and BP's operations in the tar sands (Crooks 2008). UK's Co-Operative Asset Management ethical investment fund lobbied the companies to withdraw from tar sands projects. In spring 2009, Norwegian and Swedish banks, insurance companies and investment funds followed this lead to pressure Statoil, the Norwegian predominantly nationally-owned oil company, to withdraw investments in tar sands projects. Then in May 2009, the Lubicon Cree lobbied the Norwegian Government Pension Fund, Global (Oljefondet), to divest itself of investments in TransCanada. In addition to these investment protests, one financial institution in Europe is directly supporting the fight of one aboriginal community against tar sands projects: the U.K.'s Co-Operative Financial Services established a trust fund in July 2009 to support the Beaver Lake Cree

[45] Opposition to the tar sands in the U.S. is not just emanating from NGOs. Challenges have also come from within political institutions such as the U.S. Mayors with their June 2008 resolution to reduce the use of fuel from tar sands due to its high GHG intensity (U.S. Conference of Mayors 2008).

Nation's lawsuit to protective their lands against tar sands projects.

Throughout the shift in scale from local to these international sites is the second trend in tar sands opposition, a strategic transition from working "inside" standard, institutionalized political processes directing tar sands developments to moving "outside" to challenge specific companies, investors and end users directly. Many of the organizers resisting the tar sands began by working with government and industry at the provincial and national level to manage tar sands projects via government/industry/community advisory organizations such as CEMA or through efforts such as the 2005 declaration on environmental standards and conditions for tar sands development (written by organizations such as the Canadian Parks and Wilderness Society, the Dogwood Initiative, the Prairie Acid Rain Coalition, the West Coast Environmental Law, and the World Wildlife Fund Canada) (Canadian Parks and Wilderness Society et al. 2005). But many of these collaborations with government and industry have failed and recommendations to manage the industry have gone unheeded just as environmental impacts became more apparent and more severe. Therefore civil society groups have begun to pull out of failed initiatives and use more direct action strategies to lobby the government, corporations, banks and public opinion from outside political institutions.

The third notable trend in the opposition to the tar sands is the shift from organizations concerned about environmental impacts offering advice on tar sands developments to tweak the processes to opposing new developments outright—NGOs have transitioned from providing specific management recommendations to readjust the development process to developing a broad consensus and numerous campaigns on the need to end new approvals of tar sands projects until there has been a satisfactory analysis of the health and environmental impacts of tar sands projects on the environment and health. A more radical faction works for a complete cessation of the developments. But note that throughout all of these campaigns, there is emphasis on

using tar sands revenue to move Albertan to a post-oil economy more reliant on renewable energy than fossil fuels.[46]

Formal calls for a moratorium have been made since at least the summer of 2007 and now represent a broad consensus across environmental, social, labor, religious and aboriginal organizations. Related campaigns include the Tar Sands Time Out initiative, including a petition for a "Tar Sands Moratorium," led by Sierra Club of Canada Prairie Chapter, and the No New Approvals (NNA) for Tar Sands Development campaign which has compiled signatories of over forty Albertan environmental NGOs, social or religious NGOs, labor organizations and research institutes, nearly forty national and international groups of the same broad range of groups, plus individual signatures by well-known academics, politicians, religious leaders and ENGO leaders (*No New Approvals for Tar Sands Development*). Then in February 2008, aboriginal leaders representing nations from Treaties 6, 7 and 8 in AB unanimously passed a similar resolution to stop new approvals until there is a development plan, particularly a watershed plan, for the region. The consensus took public form in Edmonton on the November 1, 2008, when Fort Chipewyan residents and representatives from ENGOs, policy institutes, social NGOs and other groups, provincial and national, convened to protest impacts of tar sands and demand no new approvals until the completion of a satisfactory environmental and health assessment (Ho 2008). These demands are on target with Albertan public opinion: a May 2007 poll conducted for the Pembina Institute indicated that 71% of Albertans wanted a hold on new tar sands projects until environmental regulations were improved.

The more radical faction calls for a complete end to tar sands operations. Organizations such as Oil Sands Truth argue that "nothing short of a full shut down of

[46] A recent example that gained national attention was the April 2009 "green jobs" report commissioned by Greenpeace, Sierra Club Prairie Chapter and the Alberta Federation of Labour (Thompson 2009).

all related projects in all corners of North America can realistically tackle climate change and environmental devastation." Groups such as the Edmonton and Calgary chapters of STOP ("Stop the Tar sands Operations Permanently") forward this position through traditional letters to the editors of media and messages to election candidates but also through creative local organizing (hosting Oil Addicts Anonymous parties) and direct actions to publicly shame Albertan politicians.

Albertan civil society organizations have long documented the environmental impacts of tar sands projects and more recently presented a coherent position on the development. And, at least since 2007, these messages have been picked up and forwarded through major international media outlets. One of the first among these was the December 15, 2007, *Financial Times* cover feature entitled "Crude Awakening." Critical media attention was then particularly galvanized around the drowning of hundreds of mallards in Syncrude's tailings ponds in April 2008. Images of the oiled birds made global headlines, reminiscent of iconic images from Alaska's *Exxon Valdez* oil spill. Negative media attention peaked again with the *National Geographic*'s March 2009 cover, "Scraping Bottom," which was, according to reporter Don Martin, "a public relations hell equal to a seal pup's skull-clubbing death that no amount of damage control can overcome, no matter how reasoned the argument." This article, and many others like it, helped make the tar sands into "Canada's most vilified global export" (Martin 2009).

V. Conclusion

AB's tar sands developments demonstrate that the transition to unconventional and frontier oil result in environmental impacts even worse than conventional oil. Environmental policy could constrain these impacts, but the current regulatory system surrounding tar sands developments in the province permits, or does not prevent, the

multiple, long-term significant environmental impacts of these projects. Rather the regulatory system is marked by weakly incorporated and poorly timed environmental consideration, important gaps in regulation on GHGs, water withdrawals, reclamation and public consultation, and institutional difficulties in grappling with cumulative impacts.

A political ecology approach suggests one explanation for this: the "petro-political" relationship between the state and the industry. The provincial (and also federal) government are increasingly dependent on revenue from the tar sands and therefore encourage the continuation of these projects through research funding and subsidies, low tax and royalty regimes, public promotion and defense of the industry at home and abroad, and non-intervention were clear regulatory authority exists. At the same time, tar sands industry players augment this position by lobbying at multiple levels of government and society, from local communities to international sites, using media, political financing and community funding. Both government and industry are financially dependent on continued tar sands development and they are actively supporting these projects. In turn, this pressure has translated into particular policy patterns of ineffective environmental regulation of oil developments. Environmental policy is weakened to the point of not being effective in controlling the severe environmental impacts of tar sands development.

Resistance to this regime has grown strong and united. Locally grown and gradually building to larger scales, gaining traction through media attention and sympathetic leaders, opposition to tar sands development and a movement for improved environmental regulation is becoming a threat to the industry's market share, and, therefore, government revenue. Real gains in environmental policy could be made in response to this pressure. But, as discussed in the cross-case analysis provided in the coming chapters, the industry and governments are working hard to recast the *perception* of tar sands development to counteract the impact of those opposed to the

projects. The question, therefore, is how the oppositional movement can match the scale and strength of those ultimately gaining from the developments, particularly the industry and government response, and how much concern for environmental impacts will count against the continued demand for past-the-peak oil.

CHAPTER 3: THE PETRO-POLITICS OF ENVIRONMENTAL POLICY IN NEWFOUNDLAND AND LABRADOR'S OFFSHORE

NL has long been the poor cousin of its developed, capitalist neighbors, serving primarily as a site of resource extraction at the margins of more advanced states. It was considered, historically, "a classical case of an underdeveloped country peripheral to the centres of power in a capitalist world order dependent upon the export of raw materials to the metropolitan centres" (House 1985). Indeed, the province's European history since the fifteenth century was one of a settler population focused on the export of raw materials trying to be meet subsistence needs while continually dependent on external forces. Since the late 1800s and most obviously since the mid-1900s, governments in NL have attempted to diversify and improve on this political economic circumstance. But the province has remained trapped in a position of high dependence on external capital and expertise (House 1985, 21-24; see also Cadigan 2009; Summers 1994; Summers 2000). In recent decades, NL continued to rank at the bottom of most provincial economic indicators in Canada, a situation that reconfirmed its "long heritage of dependency and economic underdevelopment" (House 1985, 2). Then came oil.

Oil production in NL occurs approximately three hundred kilometers off the south east coast of the island of Newfoundland in the North Grand Banks region. Three fields are currently producing conventional oil, Hibernia (the oldest field, producing since 1997), Terra Nova and White Rose. A fourth major field, Hebron, was announced in August 2008 with first oil expected in 2017.[47] Since oil production began in 1997 until

[47] In addition, a significant discovery license has been granted for natural gas on the Labrador Shelf and exploration for oil continues in Western Newfoundland (both offshore and onshore), north and south of the North Grand Bank region on the South Grand Banks and Northeast Newfoundland Shelf, and in the Sydney Basin off the southwest tip of the island. Given that neither of these new sites is under production to date, this chapter focuses solely on offshore oil developments.

November 2009, 1.08 billion barrels of oil have been produced in the North Grand Banks.[48] From 2002 until 2008, annual production has been fairly steady, ranging between 104 million to 134 million barrels per year (Canada-Newfoundland and Labrador Offshore Petroleum Board 2010), but production in all three fields is now declining.[49]

Oil is imagined to be the key to breaking NL from its history of poverty and underdevelopment and transforming the province from "have-not" to "have" status (House 1985, 96). Reminiscent of Coronil's (1997) work, oil is imagined in this province as the economic and social "saviour" (Fusco 2007, 81). What, however, of the ecological consequences of this industry? How has the province fared in developing policy to sustain its ecological base?

This chapter examines the environmental regulatory system surrounding offshore oil development in NL. First I note the most pressing environmental impacts of offshore oil developments and briefly note who bears these impacts. From this context, I turn to the focus of the chapter by elaborating the multiple trends in environmental regulation that permit, or do not prevent, these poor outcomes. These include a problematic environmental assessment process, limited transparency and public consultation, multiple inadequate regulations or gaps therein, weak monitoring,

[48] Hibernia uses a gravity-based structure (GBS) to extract oil, a concrete fixed structure while the newer project, while Terra Nova and White Rose, use floating production, storage and off-loading (FPSOs) vessels (mobile extraction tankers).

[49] Yet, as in other oil-dependent jurisdictions, high prices of oil in the mid- to late 2000s have masked declines in actual oil production. How much oil remains? Reserve *and* resource estimates—which may over-estimate remaining oil—indicate that 42% of NL's offshore oil has already been produced (Canadian Association of Petroleum Producers 2010b) after just over ten years of production. As oil reserves decline, attention now shifts to available gas and natural gas liquids (respective reserves and resources for these hydrocarbons are estimated at 10850 billion cubic feet and 478 million barrels). Resources have not been tapped to date (Canada-Newfoundland and Labrador Offshore Petroleum Board 2009, 32)—land rights were issued in 2008-2009 for exploration licenses for gas resources offshore Labrador.

Note the key distinction between oil reserves and oil resources: reserves refer to oil that can be extracted with current technology and with in current and estimated prices; resource refer to oil that have a "50% probability of occurrence" with "unknown economic viability" (Canada-Newfoundland and Labrador Offshore Petroleum Board 2009, 31).

permissive or non-existent compliance and enforcement measures, and important gaps in research.

What accounts for this weak environmental policy regime? I answer this question by analyzing the "petro-politics" at work in NL with reference to how both the provincial and federal governments have supported—indeed *initiated*—NL's offshore oil economy. There is also pressure from the oil industry on which governments are dependent for keeping the oil revenue flowing, given the privatized nature of developments in this region.

I argue that the "petro-political" system in NL is marked by a symbiotic relationship between governments and oil companies, with governments highly dependent on revenues from private oil developments and oil companies earning impressive profits from extraction on public lands. The provincial (and also federal) government ensures the continuation of the industry primarily via a range of financial incentives and subsidies. The oil industry reinforces these governmental approaches via "community engagement," lobbying efforts and other measures to remind government of shared interests in oil development without significant constraint from environmental regulation. Driven by its prioritization of hydrocarbon extraction as an economic "strategy" for the province, and pressured and influenced by a powerful, globally-integrated industry, NL has developed environmental regulation processes and institutions that forward rapid, extensive oil development and do not meaningfully restrain the resulting environmental impacts. The shared interests of government and industry translate into an environmental policy regime that is biased toward offshore oil development. The regulatory system has been "molded," to use Karl's (1997, 16) term, to support these developments and to restrain or impede effective environmental regulation.

In response to the weak environmental regulation system resulting from the mutual interests in oil development by government and industry there is some

opposition coming from non-government organizations, independent scientists and communities. However this resistance to unbridled oil development in NL's offshore is weak and seemingly at a very early stage.

I. Environmental Impacts of Offshore Oil Development

Offshore exploration and extraction as well as the transportation of oil to market represent environmental threats to a biologically rich and ecologically unique area recognized by the scientific community as "one [of] the most productive marine areas in the world" (Wiese and Ryan 2003, 1091). The region of offshore oil production off NL supports an estimated forty million marine birds, local as well as migratory species from the Southern Hemisphere, the Arctic and from Northern Europe (Montevecchi and Burke 2005, 19). Some NL colonies of species such as Leach's Storm-Petrels and Common Murres are "significant proportions of their global populations" (Montevecchi and Burke 2005, 29). In addition, the area supports "globally significant populations of marine mammals" (Burke et al. 2005, 588).

This environment is degraded and threatened in multiple ways by oil developments offshore that add to a legacy of pollution from shipping in this area. As noted by Wiese et al., "Chronic oil pollution off the Newfoundland coast is among the highest recorded in the world. The best estimate of annual seabird mortality due to this pollution is equivalent to an *Exxon Valdez*–sized spill every year" (Wiese et al. 2004, 211).

The new oil industry is now exacerbating this condition in several ways. For example, scientists note that seismic exploration might be harming species as the chronic background noises interrupt mating and feeding (interview with Natural History Society scientist and researcher 2008). Another problem relates to species' attraction to platforms by waste disposal and lighting, where there is a greater chance of

seabirds being burned in flares (which have been documented at thirty meters in height (Montevecchi and Burke 2005, 23)), colliding with the structures (Burke et al. 2005, 590-91, 606; see also Montevecchi and Burke 2005), or coming into contact with toxic material. And the potential for this kind of contact is great given that sediment contamination, especially contamination with hydrocarbons, can extend as far as seven kilometers from the operations (Husky Energy 2006, 2). Furthermore, the regular and standardized "routine" discharges of small amounts of hydrocarbons from the platforms, such as those found in produced water, could have "significant cumulative effects on a variety of globally important seabird populations" (Fraser et al. 2006, 147). Hence the environmental impacts of offshore oil extraction have globally relevant impacts.

Of course, the more publicly salient concern given recent events in the GOM is the risk of larger spills and blowouts associated with oil offloading and transportation. Spills have already occurred in the region, as elaborated in the section below on enforcement and compliance measures, with limited remediation success. And the risk of more and larger spills continues to grow in particular areas. The Brander-Smith report, Canada's policy response to the *Exxon Valdez* oil spill, identified Placentia Bay as the area most at risk for an oil spill in Canada given the tanker traffic to and from the transshipment terminal servicing the offshore oil industry: "The risk of spills is highest in eastern Canada, particularly in Newfoundland," the report notes. Specifically, "Placentia Bay is considered by many to be the most likely place in Canada for a major spill" (Brander-Smith et al. 1990, i). Traffic has increased dramatically since the publication of this report in 1990.[50]

[50] Transport Canada has recently released a new risk assessment to update this work (2007) but it was delayed extensively—as long as seven years—and is judged as underestimating spill probability. Public access to this research has also been very limited. These concerns were elaborated in interviews in 2008 with two long time employees with key federal departments involved in oil spills, including Transport Canada.

Air pollution is also one of the primary concerns regarding waste discharges in the offshore, with emphasis on GHGs given the current debates on climate change. According to EC's "National Inventory Report, 1990-2006," fugitive sources from oil and natural gas and fossil fuel production have accounted for the highest emissions over this period (Environment Canada 2008, 5, 514-16, 43). Comparatively, GHG emissions in NL are just below national averages—NL's average is at 18.4 tons per person as opposed to Canada's 22.1 in 2006—and well below AB's extraordinary 69.5 tons per capita. All told, NL accounts for just 1.3% of Canada's total GHGs (compared to AB's 32.9%) (Environment Canada 2008, 5, 514-16, 43).

Does this mean the emissions are insignificant and not worthy of concern? Given the enormity of the problem of climate change, I would argue this is not the case. Furthermore, not addressing this problem undermines the province's credibility in the region. The Government of NL made a commitment in 2001 through a regional body, the Conference of New England Governors and Eastern Canadian Premiers (NEG/ECP), to reduce GHGs to 1990 levels by 2010, with further cuts to come. Yet the province was unable to meet even this goal, a goal much less ambitious than the original international Kyoto Protocol. And, of course, as noted by a Sierra Club researcher (1) interviewed in 2008, NL is not meeting its climate change targets primarily because of its offshore oil and gas industry. This problem has recently been confirmed by the provincial government's new climate change office (Janes 2010). The province is blatantly not making even a small contribution to the global problem of climate change. It is missing an opportunity to show solidarity with the international community by reducing its share of global emissions.

Who ultimately bears the burden of these environmental risks and actual impacts? In NL's offshore, as the saying goes, the solution to pollution is dilution—routine and accidental discharges directly pollute the ocean that is assumed to dilute the pollutants to non-toxic levels. Given the dominant ocean and wind currents the oil

pollution is driven northeast, away from NL's coasts. Therefore citizens in that province do not directly observe the environmental impacts of oil development (except, perhaps, when bird corpses occasionally land on the NL coastline).

That said, even spill scenarios that tend to underestimate spill impacts show the potential for widespread coastal oiling in the case of a large spill from the platforms, transshipment terminal or tankers (Transport Canada 2007). Further, the consequences of carbon emissions from the fossil fuel industry and the ensuing climate change impacts extend to the global community and to future generations.

Direct negative impacts to humans from NL's offshore oil industry have not been obvious to date but there is a clear scientific case for the negative impacts on species' habitat. In addition, the risk of major spills, as made clear in the BP Deepwater drilling disaster in 2010, is ever present, as is the problem of climate change causing pollution. Yet these risks and impacts of NL's offshore oil industry are not adequately mitigated by the environmental regulation system surrounding these developments. This system is flawed in multiple significant ways elaborated below.

II. Environmental Regulation Trends

Problems in the regulation of environmental impacts are numerous and widespread, as demonstrated in this section. But note from the outset that given the seat of regulatory jurisdiction in this case, the focus of the regulatory critique is on the primary regulator, the C-NLOPB (hereafter referred to as the Board).

Regulatory jurisdiction in the NL offshore—the question of whether these resources are owned by the federal or provincial government—has been fiercely debated since the 1960s and has involved protracted legal proceedings (House 1985, 57-60; see also Arvey 1979; Black 1986).

In 1984 the Supreme Court of Canada finally confirmed federal ownership and

jurisdiction of the offshore. Premier Peckford continued to lobby for provincial ownership with the federal opposition leader, Brian Mulroney who agreed to a "political compromise" should he be elected. After Mulroney's election in 1984, the promised compromise was created through the 1985 *Atlantic Accord* (AA) and the 1990 *Canada-NL Atlantic Accord Implementation Act* which established NL as the principal beneficiary of offshore oil and gas and secured joint federal-provincial management through the C-NOPB (Black 1986, 456), now the C-NLOPB.

While forwarding offshore oil and gas development, the Board's Environmental Affairs Department (EAD) also has final authority for and full responsibility of environmental protection and environmental "compliance functions" ("prosecution, notices, and orders of offenses") as well as any investigations that may follow. There are also responsibilities for spill response monitoring and emergency response. The environmental regulation responsibility of the Board in NL's offshore also emanates from EC: under the *CEA Act*[51] the Board is the designated "federal authority" or "lead agency" and Federal Environmental Assessment Coordinator for environmental assessments required for exploration and drilling projects.

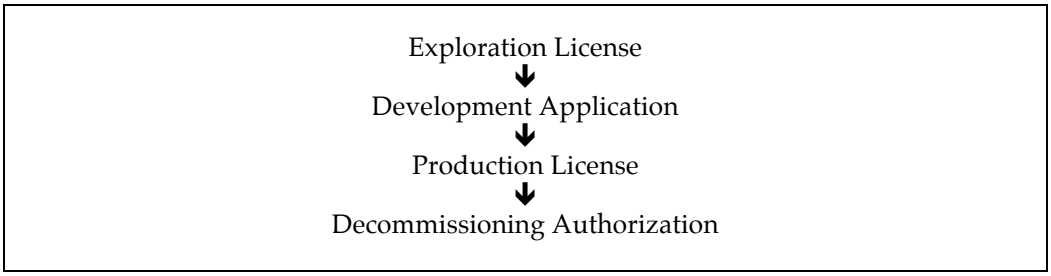
Environmental regulation, primarily emanating from the Board, is marked by several outstanding weaknesses relating to environmental assessment, transparency and public consultation, specific policies or regulations (on land leasing and access rights, carbon emissions, waste disposal, spill response and decommissioning), monitoring and compliance, enforcement and research, particularly on cumulative impacts.

First, however, a word is needed to frame out the environmental assessment processes at work in this sector. The major regulatory stages from exploration to

[51] Section 59(*i*)(v) of the *CEA Act* permits variance or exclusions of "any procedure or requirement of the environmental assessment process" established in the *CEA Act* with regard to projects related to the Canada-Newfoundland Offshore Petroleum Board, as established by the *Atlantic Accord Implementation Acts*.

decommissioning, outlined in the flowchart below, each include work authorizations that require operators to submit an environmental assessment. This is often in the form of an EIA and environmental protection plan (EPP).

Figure 12: Major Regulatory Stages of NL's Offshore Oil Development



From the outset of this process, in seeking an Exploration License, the operator (the project proponent) submits a project description to the Board. At the point of developing (producing) oil reserves is a second instance where environmental assessment is required. At this time, the operator submits a Development Application to the Board that includes a project description as well as an EIA and EPP that may be integrated into the CEAA review if one is required. The submission of an Oil Spill Response Plan is also a requirement for project approval.

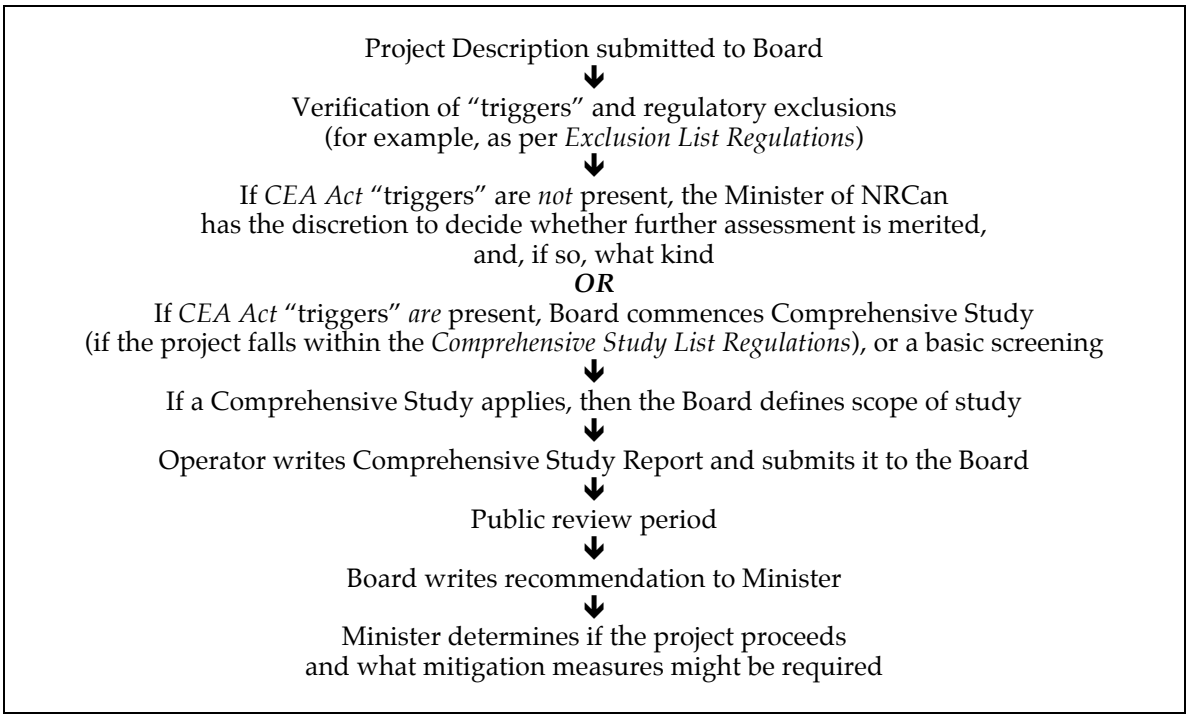
Based on the submitted project description, the Board determines if the *CEA Act* applies. Again, the CEAA typically administers this act but the Board has been designated as the lead responsible authority in NL's offshore, as discussed above. Of course, while the Board leads the environmental assessments, it seeks input from expert federal authorities such as DFO, EC, Natural Resources Canada (NRCan), and, where relevant, the provincial counterparts of these departments.

The applicability of the *CEA Act* depends on if the project involves one of four specific "triggers": (1) the federal government is involved in the project (either as the proponent or is otherwise committed to its completion), (2) a federal authority provides

financial assistance for the project, (3) it involves federal lands, and/or (4) other federal laws apply. Comprehensive studies are required if a project falls into *Comprehensive Study List Regulations*—and, if this is the case, public review will be a part of this. Oil well drilling for exploration and production is listed under the *CEA Act* as an activity requiring a comprehensive study (or a panel review).

If "triggers" are not present, the Board decides if there will be further environmental assessment, and if so, what kind. A simplified flowchart of the process is below.

Figure 13: NL Offshore Oil Development Environmental Assessment Process



In addition to the *CEA Act*, operators must follow other environmentally relevant federal legislation, listed below.

- *Fisheries Act* (administered by DFO)
- *CEPA* Disposal at Sea authorizations (administered by EC)
- *Marine Conservation Areas Act* (administered by the Minister of Canadian Heritage)
- *Migratory Birds Convention Act* (administered by EC)
- *Species at Risk Act* (administered by the Minister of Canadian Heritage, Minister of DFO and Minister of Environment)
- *Canada Wildlife Act* (administered by EC's CWS)
- *Canada Shipping Act* (relating to marine pollution discharges, administered by TC)

The Board consults with the departments and agencies involved in the legislation above and may also require that all relevant federal approvals from these bodies be in place prior to authorizing work (and work cannot proceed without these approvals). Note that provincial authorizations, specifically the *Environmental Protection Act* administered by the NL Environment Department, would be required only when activities occur onshore. The table below summarizes the key regulatory actors in this process.

Figure 14: Environmental Regulatory Key Actors in NL's Offshore

Lead Environmental Authority: the Board
Consulted Federal Authorities – DFO – CEAA – EC – Minister of Canadian Heritage – TC
Consulted Provincial Authorities *(only in the case of onshore activities)* – Department of Environment and Conservation

Problematic Environmental Assessment

There are broad problems with the environmental assessment process framing offshore oil discussed above.

First, the Board consistently favors the least stringent form of environmental review, screenings, which include a very weak or non-existent opportunity for public comment and do not provide for follow up programs to verify or mitigate impacts (unlike in comprehensive studies or review panels) (Erlandson Consulting Inc. and Petroleum Research Atlantic Canada 2004, 15-17).[52] Second, when more stringent forms of assessment are required, for example, a review panel, the final recommendations of the panel are non-binding and can be ignored or overridden by the Board.

This practice was evident in the case of the most recent joint panel review relating to offshore NL oil development: multiple panel recommendations[53] to improve environmental outcomes offshore were not addressed by the Board and they continue to reappear in subsequent debates on offshore oil, as this chapter will make clear.

Third, regardless of the type of assessment, the threshold for identifying a major or significant environmental impact is too high: it requires impacts on entire populations therefore most effects are classified in the environmental assessment documents as "negligible." This point has been raised in reference to each oil development project.[54] Finally, there is a misleading slippage in the environmental

[52] The CEAA does not *require* environmental assessment for exploration activities offshore but according to the AA Implementation Act, the Board has the authority to require environmental impact statements and may conduct public consultations (AA Implementation Act 1990, 44.2.(c)).

[53] Recommendations included increased Board transparency with the public, a "zero tolerance" for oil spills, enforced waste standards, long-term independent, peer-reviewed research and monitoring, a detailed review of offshore to shore oil transportation, and a reformulation of significant effects that could take into account more than large-scale population impacts (Report of the Terra Nova Development Project Environmental Assessment Panel 1997).

[54] For example, the issue was raised by DFO during the Hibernia panel (quoted in (Natural History Society of Newfoundland and Labrador 1997, 171-72) and by the Wilderness Society on the Terra Nova development project which noted that "the scale is warped in favor of making anything less than massive disasters fall into an innocuously labeled category of "minor" or "negligible" (Natural History Society of Newfoundland and Labrador 1997, 178). More recently, Fraser et al. argued that "the definition of a significant environmental effect used in the White Rose EA ('having a high magnitude or medium magnitude for a duration of greater than one year *and* over a geographic extent greater than 100km^{2}') makes it virtually impossible that any rating of significance will occur" (Fraser et al. 2006, 152-53).

assessment process where *unknown* effects are assumed to indicate *no effects*. As scientists Montevecchi and Burke explain, the lack of data is "often assumed to be indicative of absence of wildlife disturbance, pollution and mortality" (2005, 29), yet actual impacts are not known (see also Fraser et al. 2006, 150).

Limited Transparency

Information disclosure is essential to public involvement of and evaluation of offshore oil developments' environmental impacts (Fraser et al. 2008). Yet the Board has long been criticized for its lack of transparency—one interviewee described interactions with the Board as meeting "a wall of silence" (interview with a university environmental sciences professor (2) in 2007). Fraser et al. experienced this problem acutely as she worked for years to obtain basic data on offshore spill incidents that would allow for comparisons, by platform, of spill predictions and actual outcomes (Fraser et al. 2008).[55]

Another important example of the lack of transparency relates to environmental effects monitoring (EEM). The Board has committed itself to transparency in EEM.[56] Yet, in reality, public access to environmental effects monitoring is very limited. Each operator has a program in place (C-NLOPB 2004, section 8.0), but for all but the White Rose projects, the reports are not available to the public. This lack of data accessibility impedes independent reviews of the monitoring programs.

[55] Other examples of information protected by the Board include environmental monitoring reports from Hibernia and TN (two years are available from White Rose, the operation credited as being more responsive and transparent) and data on oil sheens. Regarding the latter, the Board has been collecting this data from since 2003 but the information is not public (see Fraser et al.'s description of denied requests for this information from the Board and Environment Canada (Fraser et al. 2006, 151). Public information available on the Board's response to oil spills is also very limited.

[56] For example, in its 1997 decision to approve the TN development plan the Board noted that the EEM program "should include provision for input and review by outside experts and by interested groups or individuals in the general public" and that "the results of EEM are made publicly available in a prompt manner following the completion of individual survey programs" (Canada-Newfoundland and Labrador Offshore Petroleum Board 1997, 56).

Limited Public Consultation

The public does not have great access to information about offshore oil impacts and nor does it have direct access to the process via effective public consultation processes. The initial step in offshore oil developments is not very open to public involvement: lands are selected primarily by confidential industry nomination and, as Shrimpton explains, "only internal assessment and limited consultation with other government departments is undertaken before the Boards decide whether to issue a call for bids."[57] Research on public participation at the rights issuance stage indicates that the Board's current consultation standards are "inadequate and ineffective in engaging community groups." If public comment is received, the process for incorporating it into the Board's decision on issuing calls for bids is unclear—it is not apparent "what factors the Boards take into account in arriving at these decisions and, in particular, how any public input is taken into account" (Shrimpton et al. 2003, iv, vii, 68).[58]

At the point of development, public consultation is again missing in most projects due to the Board's proclivity for screenings (where public reviews are discretionary) as opposed to more thorough comprehensive studies or panel reviews.[59] If the Board is "of the opinion that the public hearing is not required on grounds the board considers to be in the public interest," one may not be conducted (AA Implementation Act 1990, section 44.(1)). Then in processes that do engage more with the public, in comprehensive studies and review panels, there is often the problem of

[57] Public consultation at this stage is not required by statute but is merely "administrative practice" and applies to a narrow range of stakeholders, primarily those in the fishing industry (Shrimpton et al. 2003, vi).

[58] The problem of a dearth of consultation with the public also holds to some degree with other governmental agencies. For example, in the case of license issuance after the call for bids, the decision "is a Board decision and is not made in consultation with governments" (Shrimpton et al. 2003, 18). Similarly, the Board consults with its Newfoundland Environmental Advisory Committee (NEAC) only *after* issuing a call for bids.

[59] Public consultation is required for a comprehensive study—the public participates in developing the scoping document, during the study and once the report has been written (Erlandson Consulting Inc. and Petroleum Research Atlantic Canada 2004, 15-11)—and in the case of a panel review, public hearings are also conducted.

short commenting timelines. For example, the Natural History Society (NHS), primary commentators on the Terra Nova project, were given only fourteen days to submit comments (Natural History Society of Newfoundland and Labrador 2001, 3). Citizens and NGOs do not having the time, resources and expertise to participate in consultation, unlike industry and government bodies (Shrimpton et al. 2003, viii, 70).

Furthermore, where public consultation occurs, it may have a limited impact on the final project decision. This point was raised most clearly by the NHS in comments on the Terra Nova environmental assessment panel. Group members noted that their comments on this project were repetitions of the points they had made over a decade prior on the Hibernia project. "We cannot help but question the value of the review process when the criticisms and suggestions are not acted upon," they stated (Natural History Society of Newfoundland and Labrador 1997, 6). Furthermore, "One possibility that worries us," the group noted, "is that the Public Review process is simply a Public Relations exercise" (Natural History Society of Newfoundland and Labrador 1997, 6, 185).[60] This is a concern widely shared by NGOs involved in these processes, as noted in interviews with Sierra Club researchers (1-3) in 2008, university environmental sciences professors (1-2) in 2006 and 2007, long time employee with key federal departments (1-2) in 2007, and a Newfoundland and Labrador Environmental Association representative in 2008.

Few "No-Go" Areas

An additional issue of concern, beyond the problems of environmental assessment, transparency and public consultation, is that, in approving projects, The Board protects few areas and there is no regional plan to guide land leasing. Lands are chosen for

[60] In their subsequent comments on the White Rose project, the NHS again noted the problem of comments that had not been incorporated from the Terra Nova panel, such as underestimated zones of influence (Natural History Society of Newfoundland and Labrador 2001, 7).

exploration not with environmental protection in mind but based on corporate parcel nominations. The Board can nominate lands on its own but it "typically waits for nominations to be made by the industry" (Erlandson Consulting Inc. and Petroleum Research Atlantic Canada 2004, 6-2) where the "sole criterion" for allocating parcels is bid size (Canada-Newfoundland and Labrador Offshore Petroleum Board) (Erlandson Consulting Inc. and Petroleum Research Atlantic Canada 2004, 6-5).

Although there are key ecological areas offshore NL meriting protection against oil and gas development, such as the Southeast Shoal on the Grand Banks, on the border of Canadian and international waters, few offshore areas have been designated as marine protected areas prohibiting oil exploration and development (in contrast to, for example, neighboring Nova Scotia (Shrimpton et al. 2003, 19)).[61]

Unrestricted Carbon Emissions

As noted in section 2.1 above, NL's oil industry is driving up the province's carbon emissions and making it exceed targets emissions. This problem is now acknowledged as a major environmental impact of this industry (Janes 2010). Yet environmental regulatory authority in the offshore, the Board, has no regulations for emissions offshore in place—operators must only report estimated annual emissions (National Energy Board et al. 2002, section 2.2), for example to the federal National Pollutant Release Inventory (NPRI).

As noted early on in the Terra Nova panel review, the Board merely recommends operators "evaluate and report" on the "feasibility" of designing its facilities to reduce GHG emissions (Canada-Newfoundland and Labrador Offshore Petroleum Board 1997, 49). Ultimately, it is defers responsibility for the problem to the

[61] To date, in NL only two small areas have been set aside for protection, Gilbert Bay, an area less than fifty square kilometers off the southeast coast of Labrador, and Eastport Peninsula in Bonavista Bay (Department of Fisheries and Oceans 2008).

federal climate change plan regulating large final emitters. Meanwhile, the local oil industry is slowly awakening to this issue. A former senior provincial energy policy maker interviewed in 2008 noted that the industrial community "discovered" climate change in 2005 and is finally engaging with the issue, notable in a panel discussion of the issue at the 2008 NL Oil and Gas Industries Association (NOIA) meeting. But this engagement is in some ways self-congratulatory because the local industry deems itself much "cleaner" compared to AB's tar sands, which is cast as the real culprit in this debate.

Permissive Waste Disposal

Similar problems are evident with other forms of waste due to unclear or inadequate regulations. To start, there are multiple regulatory exemptions for waste disposal offshore.[62] Where discharges are not exempt from regulation, the Board has numerous environmental *standards* for waste disposal— non-enforceable "guidelines" or "targets"—but not clear limits. Worse, there is limited publicly available data on if companies are meeting these limits. The data available data show that one company, Husky Energy, operator of the White Rose FPSO, fails to meet these goals.[63]

The Board shows a high tolerance for the extent of waste effects: sediment contamination, especially with hydrocarbons, has been noted up to seven kilometers

[62] A university environmental science professor interviewed in 2007 noted the numerous environmental regulatory exemptions for the oil and gas sector under federal laws. NGO groups have noted this as well, with particular concern about the applicability of the *Migratory Bird Act Convention* (Natural History Society of Newfoundland and Labrador 2001, 12). And under *CEPA, 1999*, paragraph 122(l)(j), it is noted that discharges associated with "the exploration and development phases" are exempt (Erlandson Consulting Inc. and Petroleum Research Atlantic Canada 2004, 17-1).

[63] For example, as of 2008 White Rose has not reached the Board's Offshore Waste Treatment Guidelines target of 6.9% or less of synthetic based drill fluid on drill cuttings. Husky noted it was "trying to reach the CNLOPB's 9.9 percent target" but the actual range (no average is provided) of the percentage of synthetic fluid on cuttings discharged from well drilling was from 3.8 to *13.3%*, with the latter percentage, the higher end of the range, representing nearly double the suggested target (Husky Energy Inc. 2002-2008).

from the operations (Husky Energy 2006, 2). Also, the limits on oil concentration on drill cuttings are much higher in offshore NL than in other jurisdictions (Natural History Society of Newfoundland and Labrador 1997, 2).

Another key waste issue of increasing debate in NL is the lack of effective regulation on produced water (the regular discharges of water containing trace amounts of oil and other toxic material). The NHS, in reference to the White Rose development project, noted that "intentional (operational) discharges represent the bulk of oil that will be introduced into the environment" and that the amount of oil lost in blowouts in other jurisdictions is far exceeded by the quantities of produced and other discharges and disposal activities (Natural History Society of Newfoundland and Labrador 2001, 8). This produced water has been acknowledged as a key problem by the scientific community—researchers show that chronic oil pollution may be "more detrimental to long-term population stability than occasional large spills" (Wiese et al. 2004, 205; see also Fraser et al. 2006). This point was also stressed in an interview with a NHS scientist and researcher in 2008.

Yet contrary to these widespread concerns—and although the Board has the authority to regulate (and prohibit) discharges (AA Implementation Act 1990, section 145(1)(g-h))—the reinjection of produced water (a practice acknowledged as a key method in reducing this discharge), is not currently required.[64] Instead, according to *Offshore Waste Treatment Guidelines*, produced water discharges are limited only by average monthly and daily oil concentrations produced water in terms of milligrams per litre,[65] as opposed to immediate concentrations and absolute, cumulative oil

[64] There have been repeated calls for produced water reinjection throughout the environmental assessment processes (Natural History Society of Newfoundland and Labrador 2001, 8).

[65] These non-absolute limits questionable in their own right: the NHS scientist and researcher I interviewed in 2008 suggested there was no scientific basis for these limits the permissible average monthly limit oil concentrations of produced water offshore, at 30mg/L, are double the 15mg/L regulation for instantaneous discharges of ship's bilge waters (Fraser et al. 2006, 150). This point was also raised formally by NHS (2001, 12)). These bilge water

discharges (Fraser et al. 2006, 150).[66] As explained by the NHS in 2001, there continues to be "no limit to the total amount of oil that can be discharged with produced water and oil on cuttings (there are only concentration restrictions)" (Natural History Society of Newfoundland and Labrador 2001, 12).

Hence in this regulatory environment, the Atlantic Ocean effectively serves as the offshore oil and gas industry's "tailings ponds" for toxic waste. But unlike in the AB case, they are not contained and they are well hidden from view given the distance of the facilities offshore.

Questionable Spill Response

The routine disposal of waste is a regular issue that needs attention in NL's offshore oil sector. But another impact of the sector, one that captures more public attention, is the problem of larger, unexpected spills. And spill response in NL is also marked with difficulties due overarching questions relating to privatization and the specific issues of underspecified standards.

Spill response was privatized in 1993 as a result of the Brander-Smith report (Brander-Smith et al. 1990) which advocated the polluter pays principle (that industry ought to pay for the costs of spill response). The East Coast Response Corporation Ltd. (ECRC), the only private response organization for NL, is a for-profit company owned by oil industry shareholders with a mandate to provide "effective response at affordable cost" (interview with an East Coast Response Corporation - Atlantic Region representative in 2008). But does an industry-owned company focused on affordability

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limitations are understood as in great part arbitrary, based on a consensus during International Maritime Organization negotiations.

[66] Permissible concentrations are outlined in "Offshore Waste Treatment Guidelines" (National Energy Board et al. 2002). For example, thirty-day averages of produced water must not exceed 30mg/L, and not exceed an average of 60mg/L in a 24 hour period; synthetic-based drilling muds must have a "total polycyclic aromatic hydrocarbon concentration of less than 10mg/kg"; and storage displacement, bilge and ballast water or deck drainage must be treated to bring oil concentrations down to below 15mg/L (7-8).

and profitability provide the best protection for the public environment? This is a basic but important criticism seldom addressed in public debate (numerous interviewees raised this point including the long time employees with key federal departments involved with oil spills (1-2) in 2007 and 2008 and Sierra Club researchers (2-3) in 2008).

Another problem with spill response is NL's offshore are the under-specified response organization (RO) standards. For example, there are no set regulations on the type of equipment or type and number of responders that ROs must have, beyond the vague requirement for equipment that is "necessary for the operational requirements in that geographical area" (TC's "Response Organizations Standards," section 6). Specific standards are established between the ROs and TC (the ROs submit a plan and TC approves it, using a national review board), but the agreed upon standards are not public information.

Whether the equipment available is sufficient and properly located is a second frequent point of debate. The ECRC representative interviewed in 2008 argued that no extra equipment is required because the ECRC has never used all of the equipment it has. Yet RAC members and the long time employee with key federal departments who has been closely involved with oil spills (1) in this province continue to recommend more equipment that can be rapidly deployed in high-risk areas. Most of the equipment is in Donovan's Industrial Park, many hours drive from Placentia Bay which was identified by TC as the most likely site of a spill. Yet perhaps the question of equipment type and amount is ultimately a moot point as the typical oil recovery rate of a spill response is at best 20%. And in bad weather conditions, this rate could very well be zero (interview with ECRC representative in 2008).

There have also been longstanding calls for escort tugs to guide tankers in and out of Placentia Bay, a basic safety measure now required in Alaska (interview with Newfoundland and Labrador Environmental Association (NLEA) representative in 2008). A finally obvious gap in spill response policy is the limited proper disposal

capacity for recuperated oil (Earle and (Wiese 2002, 29) or for the rehabilitation of oil birds (interview with NLEA representative, 2008). Finally, TC has not established a plan for a place of refuge for compromised tankers (interview with long time employee with key federal departments involved with oil spills (2) in 2007).

Weak Monitoring

Monitoring to prevent or respond to oil spills and to the other environment incidents elaborated above is also weak in NL.

Regarding *on-site* monitoring, this process is questionable because it is not independent (operators self-monitor and self-report), the monitors are not dedicated to the task full time (this is a duty attached to an employee's primary position), and these monitors are not trained biologists. While scientists have long documented the need for on-site, independent, trained, full-time monitors (Burke et al. 2005, 607-08; see also Montevecchi and Burke 2005, 3; Natural History Society of Newfoundland and Labrador 1997, 182), according to Burke et al., "it has been impossible to station independent, dedicated, trained observers on offshore hydrocarbon platforms in eastern Canada."[67] Instead, operators self-monitor and self-report to the Board via compliance reports (for example, reports on waste discharges). Compliance reports are submitted by the Board's EAD by the operator's Chief Conservation Officer (Canada-Newfoundland and Labrador Offshore Petroleum Board 2007b, 25). Yet as argued by the NHS, this process "places the operator in a conflict of interest position where they must provide records of their compliance with regulations" (Natural History Society of Newfoundland and Labrador 2001, 11).

The Board justifies the lack of on-site independent monitors in terms of safety. In

[67] At the same time, site access is permitted to others: "it is difficult to comprehend how it can be justified that photographers, journalists and musicians are given access to the Hibernia and Terra Nova platforms while such access is denied to independent contracted biologists" (Montevecchi and Burke 2005, 3).

response to the TN panel's recommendation for independent monitors, it responded: "in the interest of safety, personnel complements on offshore drilling and production facilities should be kept to the minimum necessary for prudent operations" The Board has "concluded that insufficient evidence has been presented to justify requiring the placement of additional, dedicated personnel on drilling or production platforms as observers" (Canada-Newfoundland and Labrador Offshore Petroleum Board 1997, 56). However note that independent monitors are present in NL's other major offshore industry: they were common practice in the offshore fishing industry to monitor catch (as noted in interviews with the former senior provincial energy policy maker in 2008 and with a university environmental science professor in 2007).

Given the "interested" nature of monitoring, the risk of under-reporting concerns observers. Gaps in reporting have been noted by Montevecchi and Burke who note information on oiled seabirds at the Hibernia and Terra Nova sites that was reported to them "informally by crew members of support vessels" while no formal reports on these incidents were reported by the operators (Montevecchi and Burke 2005, 3).[68] Another clue to underreporting offshore comes from an interview with an Environment Canada policy maker, Newfoundland Provincial Office (2) in 2007. This person noted that after the TN spill in 2004, spill reporting offshore increased. This, of course, raises the question of what was not being reported previously. This problem has been noted by prominent people within the federal government. For example, Terry Harvey, director of the Canadian Coast Guard's (CCG) Prevention of Oiled Wildlife Project was paraphrased in a *New York Times* article on NL's new industry as stating that the "Coast Guard believes that there were many other unreported spills [off Hibernia]" (DePalma

[68] An issue infrequently addressed but important regarding the risk of underreporting relates to employees being afraid to report environmental incidents they witness offshore (this point was raised by environmentalists interviewed by Fusco (2007, 87-97)). There seems to be a need for confidential environmental reporting processes to parallel confidential safety reporting used in other jurisdictions.

1999).

In addition to this questionable on-site monitoring, *aerial* surveillance is problematic as well. This surveillance of offshore facilities is frequent and wide ranging but it does not provide complete coverage of the area. Offshore surveillance is conducted by TC, DFO, and the Department of National Defense (DND)—but there is "absolutely" a chance that spills or other environmental incidents associated with offshore oil production can go undetected due to weather that impedes surveillance and the sheer size of the offshore (interview with Fisheries and Oceans Canada policy maker, Environmental Response, in 2008). Also, this level of surveillance is noted to be low compared to other jurisdictions (see, for example, Wiese's point that coverage off NL's coast is much lower than off the UK and in the Baltic Sea (2002, 18)).

Ineffective Enforcement and Compliance Measures

When environmental offences offshore are remarked, the Board uses a range of methods to secure compliance from "soft" methods of communicating with the operators to encourage them to meet guidelines and regulations (the most frequently used compliance method), to "hard" methods of persecuting and fining. Even more serious to the operators, but even less frequently used, is the Board's authority to suspend operations.

Fines—ranging from low voluntary settlements to fines in the millions of dollars and imprisonment—could act as compliance mechanisms. However there are many instances of environmental infractions for which the Board never seeks compensation. Small spills from the offshore facilities are very frequent, for instance, but there is never any "hard" response to them from the Board. Yet the environmental impact of small spills may be serious: depending on the movement of seabirds and the timing of a small spill, it "may kill substantially more birds than large spills" (Fraser et al. 2006, 147). Also, in the case of larger spills from emergency situations, for example the January

2007 spill of drilling fluid from the Erick Raude rig after an emergency disconnect in the Orphan Basin, there were no fines as the operator was found to have done its due diligence. According to the *AA Implementation Act* (AA Implementation Act 1990, section 156(3)) spills are prohibited and the Board has the power to make companies comply and to fine companies, yet spills happen frequently with little regulatory impact.

When environmental offences offshore are remarked and legal action is taken, the compliance mechanism is mild. As of February 2008, the Board had conducted twelve investigations and two resulted in persecutions. For the 2004 spill of 160,000 liters of crude oil at the Terra Nova platform, total claims against Petro-Canada amounted to $290,000. Only $70,000 of this was required by the courts and the rest was voluntary and took the form of contributions to the Environmental Canada (EC) Enviro Damages Fund and IBES. Yet the spill had effected approximately 793 square kilometers and results in seabird mortality estimated at 10,000 to 16,000 alcids (mostly murres and dovekies) (Wilhelm et al. 2006, 13). Similarly, Husky Oil paid a low fine of $50,000, including a $30,000 contribution to an Environmental Protection Fund, for the 2004 spill of 96,600 liters of synthetic drilling mud from the GSF Grand Banks drill rig at the White Rose field.[69] Compared to the enormous profits made by operators, these fines lack impact.

A concurrent problem frequently raised is the lack of compliance mechanisms in place for operators who exceed their environmental impact predictions made in the

[69] Agreed Statement of Facts and Joint Submission, *R. v. Husky Oil Operations Limited*, October 2007. The investigation revealed that there was a lack of reporting and monitoring, as well as a lack of an appropriate process, for a routine diverter system test. A valve was left open and drilling muds were therefore discharged directly into the ocean without treatment to meet the Offshore Waste Treatment Guidelines.

Note that this problem of low fines is a generalized one in Canada's offshore, in oil and gas production as well as in the shipping industry. For example, data for marine pollution in NL indicates that since 1994, there have been 674 investigations, 49 prosecutions and the total fines have amounted to $937,500, an average of $19,133 per prosecution (Government of Canada 2007).

environmental assessment process. Terry Harvey, director of the CCG's Prevention of Oiled Wildlife Project was quoted in the *New York Times* as stating, "In its environmental impact statement, Hibernia said the possibility of spills occurring was nearly nil. Yet we have oil in the water almost every week" (DePalma 1999). Predictions of spills are notably exceeded by actual spills yet there is no regulatory process to ensure operators address this discrepancy. As Rutherford and Campbell note, whether the development is unfolding as approved by the authority cannot be verified (Rutherford and Campbell 2004, 22).

Even worse, these same predictions are then repeated in future environmental impact statements without a regulatory process to improve the predictions. Fraser has recently drawn attention to this problem. She notes that

> The White Rose EA predictions did not incorporate Terra Nova's spill experience: in the project's first year of development drilling, Terra Nova had almost exceeded their life-time prediction for small batch spills (<50 barrels) at the time, yet White Rose continued to provide similar predictions (Fraser and Ellis 2008, 16).

Note that when I raised this issue with a C-NLOPB Environmental Affairs researcher during a 2008 interview, I was told that this was not an issue that was frequently verified or noted by the Board.

Significant Research Gaps

A more general problem touching each of these aspects of environmental regulation and impact at issue here is that of research. Research is essential in managing and evaluating offshore oil developments as it is the basis of determinations (or predictions) of oil development's various impacts. If this research is incomplete then so is our understanding of current and possible impacts, and so are mitigation efforts. In NL's offshore, however, there are significant gaps in knowledge regarding cumulative environmental impacts of offshore oil extraction and problems with currently available research.

Assessing impacts is made difficult from the outset by the lack of baseline data and adequate research programs. At a most basic level, there is a lack of baseline data on species offshore which impedes that crucial comparison of the ecosystem prior to, during and after oil extraction. Frequently noted gaps include "species-specific at-sea distribution and abundance of marine birds" (Fraser et al. 2006, 151; see also Montevecchi and Burke 2005, 5), as well as data on other marine species such as the endangered leatherback turtle (James et al. 2006). Without baseline data, it is difficult or, in the NHS's determination, even "impossible," to ascertain the impacts of oil development (Natural History Society of Newfoundland and Labrador 1997, 3).

Then the research programs that do exist are marked by the problems of being overly "piecemeal," lacking independence and lacking appropriate support. Hence the repeated calls in the literature for support for long-term, comprehensive, independent, peer-reviewed and publicly accessible research.

For example, research on seabirds—which are key research species because they are the "most conspicuous marine organisms" and are therefore used as "monitors of the marine environment" (Wiese and Ryan 2003, 1090))—is "insufficient" and "inadequate" to ascertain impacts on the species (Burke et al. 2005, 588, 608). Scientists such as Burke et al., therefore, call for

> independent, scientifically rigorous surveys of seabirds in relation to ongoing hydrocarbon activities. Assessments could be greatly enhanced with independent, year-round on platforms. Without such surveys, it is impossible to document seabird mortality associated with marine hydrocarbon activity in eastern Canada, and hence not possible to effectively mitigate environmental effects (2005, 588).

Independent analyses are also required to evaluate the environmental assessments conducted by consultants on behalf of the oil companies. For example, when Fraser et al. reanalyzed of the predictions made on the impact of produced water discharges on auks in the White Rose environmental assessment estimates, they found far different impacts, ranging from low to high, than Husky Oil's "negligible" effects prediction

(2006, 152). Other key examples of research gaps include a dearth of information on the effect of produced water discharges and the relationship between produced water, oil sheens and seabird mortality (Fraser et al. 2006, 149-52), the impact of rig lighting and flaring on seabirds, and the effects of extended seismic explorations offshore. Independent scientists are constantly seeking the resources to conduct regional, cumulative research[70] but support is not forthcoming (Burke et al. 2005, 608; Montevecchi and Burke 2005, 29).

Instead of cumulative, regional research conducted by independent scientists, research on environmental impacts in NL's offshore is primarily conducted through the Environmental Studies Research Fund (ESRF). There are, however, several shortcomings with depending on the ESRF for offshore research. First, the ESRF budget is limited and only a portion of it can be devoted to NL issues as the funds are shared by several provinces with different research needs.[71] Second, the origin of this budget and the control this exerts is questionable. The ESRF is funded by levies required to be paid by companies in section 81 of the Canada Petroleum Resources Act and the ESRF twelve-member board includes four industry representatives (Imperial Oil Resources, Petro-Canada, ExxonMobil Canada and CAPP).[72] In the mid-1980s, House observed that research conducted through the ESRF is "firmly controlled by the oil industry" and that

[70] Contrary to scientific opinion, note that there is doubt within the Board about the relevance of cumulative analysis. According to the researcher with the C-NLOPB Environmental Affairs unit interviewed in 2008, the need for cumulative research was raised in both review panels but the Board feels such a study is not needed in NL because the operations are much less intense and there is more distance between operations compared to, for example, in AB's sector.

[71] The budget for ESRF's environmental research on the east coast was $750,000 in 2006 and $500,000 in 2007 (Canada-Newfoundland and Labrador Offshore Petroleum Board 2007b, 26). Compare this to the estimated one million dollars required annually to run an appropriate monitoring program to determine the effect of oil development offshore (interview with university environmental science professor (2) in 2007).

[72] Other members include four federal government representatives (EC, DFO, DIAND and NEB), one public member, one representative from each offshore petroleum board (NL and Nova Scotia), and a representative from the Joint Secretariat Inuvialuit Renewable Resource Committee (representing Northwest Territories and Yukon interests).

"the Newfoundland and Canadian governments seem prepared to accept the principle that he who pays the piper calls the tune when it comes to oil-related research" (House 1985, 99). So rather than independent scientific research, some interviewees wonder if the ESRF is merely providing research to help industry get through environmental approval processes (interview with Environment Canada policy maker, Newfoundland Provincial Office, (2) in 2007). A third problem is the timeliness of this work and how it is being incorporated into decision making processes on oil and gas development. Much of the research, for example on developing seabird monitoring programs and taking the effects of produced water seriously, is coming far too late, after decades of concern expressed about these issues and three facilities are already in production.

Ambiguous Decommissioning Requirements

Once production ends and the risks associated with oil production subside, different issues then come to light relating to decommissioning. Decommissioning practices in offshore NL are, to date, largely undefined and awaiting technology and standards to be established at the time of future site abandonment. Financial responsibility for decommissioning lies with the operator (at least for a short period), yet it is unclear how operators will be required to pay for the extraordinary cost of these under-defined procedures. It is unknown whether decommissioning practices will be established on a project-by-project basis or if the same processes will apply to all projects.

In the major legislation guiding offshore oil development, there is little mention of decommissioning. The 1987 *Canada-Newfoundland Atlantic Accord Implementation Act* and the 1990 *Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act* make no mention of decommissioning or abandonment except that to note the Board's authority over abandonment activities and time limitations to damage claims due to abandoned materials. The Newfoundland Offshore Area Petroleum Production and Conservation Regulations, pursuant to the AA, offers

only short comments on the basic plugging of wells (Newfoundland Offshore Area Petroleum Production and Conservation Regulations, SOR/95-103 1995, part III section 21). So perhaps the clearest statement on decommissioning requirements—although still vague—is contained in the Newfoundland Offshore Petroleum Installations Regulations in section 42 which notes that

> Where the removal of a fixed production installation is a condition of a development plan approval, the operator shall incorporate in the design of the installation such measures as are necessary to facilitate its removal from the site without causing a significant effect on navigation or the marine environment (Newfoundland Offshore Petroleum Installations Regulations, SOR/95-104 1995).

Precise decommissioning procedures are still being defined (Erlandson Consulting Inc. and Petroleum Research Atlantic Canada 2004, 14-1) and are rather rudimentary. For example, the plan for decommissioning of larger fixed-based rigs was to leave them at sea. See the discussion in (Canada-Newfoundland and Labrador Offshore Petroleum Board 2008b, 26-27).

The financial responsibility for decommissioning is clearer but still questionable. Offshore work guidelines note that "residual liability" will be managed by the operator in the case that "any subsequent claims arise after such abandonment/decommissioning occurs" (Canada-Newfoundland and Labrador Offshore Petroleum Board 2000, 13). However, after structure abandonment there is a six-year time limitation on this responsibility (AA Implementation Act 1990, section 162 (5)). And given the enormous costs of decommissioning (an estimated half a billion dollars for a GBS structure, as noted below), it is fair to question if companies will easily agree to pay especially at the end of field production, when profits are dwindling, and whether or how the Board will force them to do so.

III. Explaining Environmental Regulation in the Offshore

Understood systematically, this series of regulatory problems and weaknesses indicate a fragile environmental regulation system in NL's offshore oil industry. Given this, the environmental outcomes described in section 2 are unsurprising.

But what accounts for these regulatory patterns? A political ecology approach provides some insight by focusing attention on the broader political-economic system framing offshore oil development. Guided by this, below I outline the interests and strategies of the primary interests dominating the debate and note how they result in continued, expanded offshore oil development rather than enhanced environmental regulation.

The main thrust of the argument here is that the dominant petro-political regime in NL is marked by two trends. First, the NL government is strongly dependent on revenue from the offshore. The Canadian government also sees clear gains from the industry. Hence there is widespread governmental consent for and support of these developments. Second, the oil industry reinforces this tendency via various forms of lobbying. In the next section I begin by discussing the economic impact of the oil industry in NL, then describe the ways in which the government attempts to continue these economic benefits by supporting the industry.

Government Dependence and Support

Provincially, the impacts of the offshore oil industry are seen primarily in the industry's contribution to revenues via royalties (particularly in most recent years), its significant impacts on GDP and the impact the industry has had in encouraging major infrastructure developments and improvements in the province.

Direct revenues from oil accruing to the provincial government from 1997-98 to 2008-09 amounted to $6.22 billion. As shown in figures 12 and 13 presented in chapter 4, significant revenue dependence on oil and gas has been particularly marked since 2007.

Direct oil revenues contributed less than 5% of total provincial revenue until increases starting to be seen in 2004, and then a notable shift occurred in 2007 that saw oil revenues surging to 33% of total revenues and continuing to rise to 41% in 2008. This trend is expected to continue. Then in addition to these revenues, there have been funds from the AA: nearly half a million in 2007 and close to a million in 2008. Therefore, in terms of direct revenues to government alone, the industry accounts for nearly half of all government revenues.

But there are much broader economic impacts of this industry beyond these direct revenues from royalties and funds from the AA. The cumulative economic impact of offshore oil in NL has been analyzed over the last decade by Mark Shrimpton who draws on data from the provincial government's Economic Research and Analysis Division of the Department of Finance (Jacques Whitford 2003; Stantec 2009; Jacques Whitford 2005). This research indicates that one of the most obvious impacts of the oil industry on the province has been on GDP. Using the widest possible notion of impact—including direct, indirect and induced impacts[73]—from 1999 to 2007 the offshore oil industry in NL accounted for an average of 25.8% of real GDP, ranging from 14.3% in 1999 and peaking at 32% in 2004 (Stantec 2009, 10). GDP growth is notably significant in comparison to other provinces: over the last ten years, the province has had the fastest GDP growth in the country (Locke 2010).[74]

Provincial economic benefits also include personal income and employment impacts. The offshore industry accounted for an average of only 5.3% of total personal

[73] Direct impacts refer to those from the exploration, development or production of oil offshore by the directly involved companies; indirect impacts are those from work associated with supporting, supplying or servicing the offshore oil industry, but not directly engaged with it; induced impacts refer to the impacts of spending by people directly or indirectly employed in the offshore industry.

[74] However, note that GDP data include income accruing within the province to non-local companies and not necessarily to citizens of the province (as noted in the Stantec report, "much of the business income earned in the oil industry accrues to nonresident companies" (Stantec 2009, page 6 of Appendix A)).

income from 1999 to 2007, fluctuating from 3.7% to 7.5%. The trend is similar for employment income: over the same period, the industry contributed an average of 5.1% of total employment, ranging from 3.5% in 2002 to 7.3% in 2004. In terms of actual jobs, the direct, indirect and induced impacts of the industry have meant an average of 10,600 jobs per year, ranging from 3,500 jobs to 15,600 at the respective lowest and highest job years. CAPP estimates that the industry has resulted in an annual average of $663 million for NL residents from 1997-2007 (Canadian Association of Petroleum Producers 2010b). Yet note that these jobs have not had a great impact on relieving the province's high unemployment rates—the offshore oil industry has meant an average reduction in the unemployment rate of a mere 1.7% over the 1999 to 2007 period (Stantec 2009, 10). The lack of returns to labor were noted in early work by Stanford (2003) and are being extending by Cadigan (forthcoming).

Similarly, the industry has had some impact in terms of indirect effects such as retail sales (between 1999 and 2007, the industry contributed an estimated annual average of 5.3%) and housing starts (an average of 4.9% in the same period) (Stantec 2009, 10). An additional impact, the development oil-related infrastructure in the province, is another significant impact of the oil industry in the province. Oil development has incited the development of other new projects in the province to support the offshore developments such as the Bull Arm construction site, the Marystown Shipyard, the NEWDOCK sub-sea systems fabrication center, the Newfoundland Transshipment Terminal, and other expansions to local supply and service businesses.

In summary, the impact of oil on provincial revenues is recently very significant and growing; oil's contribution to GDP is very high; infrastructure impacts are notable. These major impacts are combined with milder indirect impacts such as increases in personal income and employment, decreases in unemployment, and more retail sales and housing starts.

Based primarily the increased revenue to the province since 2005, and even more dramatically in 2007, the provincial government has been able to balance spending, pay down debt, increase spending, and lower taxes. And most culturally significant, oil revenues have allowed the province to transition from a "have not" to a "have" province—one that is no longer receiving equalization payments.

The province eliminated its deficit for the first time in 2005-06 thanks to oil revenues and AA revenues. And since this year, coinciding precisely with the province starting to receive significant oil revenues, the province has had budget surpluses every year, surpluses which reached nearly $2.5 billion in 2008-09. These provincial deficits or surpluses are entirely contingent on the price of oil: for example in 2009-10, the province will have a surplus only if oil prices were above a yearly average of $70 (CBC News 2009).

The provincial government has chosen to use these new budget surpluses and one-time funding injections from the AA to dramatically reduce the great debt of the province.[75] As explained in the 2003 *Royal Commission on Renewing and Strengthening Our Place in Canada*, the province entered confederation in 1949 with a surplus and no debt. But since that time, the province has regularly run deficits and steadily accumulated a debt to the point that it had the highest, or second highest, debt and deficit load of all provinces. Total public sector liabilities, including public sector debt and unfunded pension liabilities was estimated at $11.3 billion in 2002 (Norris 2003).

Paying down the debt has long been acknowledged as a key use of oil revenues in NL. As Norris explains, "the dedication of oil revenues to debt reduction would be one way that the exploitation of these non-renewable resources could be invested for the lasting benefit of future generations" (2003, 416). Prior to receiving significant oil revenues in 2005-06 and only months after the election of Premier Williams and the first

[75] I thank Wade Locke for his insight on these points.

Progressive Conservative Government in the province since the late 1980s, the provincial government commissioned an independent review of its finances using PricewaterhouseCoopers which demonstrating a worsening financial situation. The report stressed the growing deficit and debt projected to reach $15.8 billion by 2007-08, debt which amounted to 25% of all provincial revenues going to interest payments alone (*Speaking Notes: Honourable Loyola Sullivan, Minister of Finance, President of the Treasury Board: Release of Independent External Review* 2004). Williams emphasized the severity of the economic crisis in his State of the Province Address on January 5, 2004: reviewing the province's finances, he noted the $11.6 billion debt in 2003-04 which costs 23.87% of total revenue, unfunded pension liabilities, a $827.2 million deficit and outstanding infrastructure needs (*Province's Financial Situation: Premier Danny Williams State of the Province Address* 2004). This moment set the framework for Williams' government's prioritization of debt reduction and this continues to be a long-standing theme—note, for example, the "debt clock" presented to the public during budget consultations in 2008. Participants watched as provincial debt payments increased at $1400 a minute (McLean 2008).

Therefore, after the passage of federal budget via Bill C-43 when the province received $2 billion as an upfront AA payment (after a long federal-provincial conflict over equalization claw back policy), in February 2006, Premier Williams allocated $1.953 billion of this to Newfoundland and Labrador Teachers' Association pension plan fund (which had been raided by previous governments to be used as general revenues and was forecasted to be bankrupt by 2014). This reduced the provincial debt at the time from approximately $12 billion to $10 billion. Since then, as of January 2010, NL's debt has been further reduced by about one third, down to $8 billion. This debt repayment has of course resulted in a reduction debt servicing as portion of spending.

Alongside budget balancing and debt reduction, oil revenues have also allowed the province to strategically increase spending. The shift since the late 1990s is dramatic:

as tracked in the auditor general's reports on the provincial fiscal situation, over the decade from 1999 until 2009, there was 51% increase in spending—a 77% increase for health and a 71% increase for education (Noseworthy 2009, 86). Health and education have seen significant spending increases and in recent years. Emphasis has also been placed on infrastructure spending, primarily roads (with, for example, 38% of the 2009 infrastructure stimulus package, $270 million, going to roads). Spending increases have grown steadily since 2005, with fiscal year 2009 representing the largest increase in spending: an 8.8% increase in spending over the previous year (Noseworthy 2009, 85; Office of the Auditor General 2006, 17).

Spending has been paired with tax reductions. In 2002, NL had among the highest levels of personal income taxation in Canada, the highest rate of fuel taxes, and corporate income tax rates within the middle of Canadian provinces (Norris 2003, 348-53). Since 2007, the province has boasted that it has "delivered the biggest personal income tax reductions ever in Newfoundland and Labrador" (Department of Finance 2011).

Oil has made many economic changes possible in NL: debt reduction, spending increases and tax cuts. But perhaps more importantly in terms of the political culture of the province, after six decades in the Canadian federation as perhaps the most economically depressed province, oil revenues have transformed NL from a "have not" province receiving federal equalization payments, to a "have" (non-receiving) province (although the AA of 1985 and 2005 protect the province from dollar-for-dollar "clawbacks" until 2011-12). This transition happened recently in 2008-09 and was interpreted as a mark of self-reliance, a very culturally significant shift.

The federal government also sees a significant impact from NL's oil development. First, in terms of the basic issue of oil supply, NL offshore oil production accounts for over 12% of total oil production in Canada (Canadian Association of Petroleum Producers 2010b) and it is the only significant oil production site in eastern

Canadian. This is a key point given the near-total exportation of oil from western Canada to the U.S. and eastern Canada's reliance on foreign oil.[76] It is for this reason that NL's oil is featured in Laxer's recommendations for Canadian energy security: Laxer argues that redirecting NL oil exports into eastern Canada could reduce Canadian oil imports and enhance national oil security (2008, 6, 24).

Second, and more tangibly in terms of revenues, the federal government's gains from the NL's offshore industry is significant. Locke notes that the Government of Canada captures 21% of total revenue over the life of the Hibernia, Terra Nova and White Rose projects, compared to the province's 32% share (Locke 2006, 17). Given this split, and based on calculations noted above indicating that the provincial government received $6.22 billion in direct revenues from oil over the 1997-98 to 2008-09 period, the direct value of the industry for the Government of Canada can be estimated at approximately $5.5 billion. Data from the provincial government's Department of Natural Resources indicate a similar revenue (but lower comparative provincial revenue): Minister Dunderdale noted that as of 2007, the federal government saw $5 billion dollars generated by the three projects (with the provincial government receiving only $2 billion and the companies receiving $11 billion) (Carter 2007).

The real economic powerhouse for the federal government is Hibernia (aggregate data on the three projects mask the particularly large share of revenue received by the federal government from this project). Given the federal government's 8.5% ownership stake in this project and corporate taxes, up to December 2006 the federal government received $4.8 billion from Hibernia (compared to $8.8 billion made by oil companies and $1.2 by the provincial government) (Department of Natural Resources 2007, 20). In addition taxes and equity, as of 2009 the federal government began receiving a 10% net profit interest on Hibernia (compensation federal

[76] According to Laxer, 90% of Atlantic Canadian and Quebec oil comes from foreign oil supplies with Ontario's reliance on foreign oil at 36% (2008, 6).

government loan guarantees and grants to build the GBS), which is now worth billions of dollars. Note that the federal government's "payout"—when cumulative revenues on the project equaled cumulative expenses—was reached on Hibernia in 2007 (Locke, personal telephone communication, February 22, 2010).

Oil development in NL is a central driver in the provincial economy, now representing over 40% of total revenues in direct impacts, as well as a large revenue source for the federal government. Both levels of government are careful to protect and support the industry. And this support has been long-standing: NL's oil industry was initiated and developed based on significant government financial, research, and other support, such as retooling the college and university system around the oil industry. I describe these below.

Financial Subsidies

In her political economy analysis of NL history, Summers writes that both the provincial and federal governments made "costly commitments" to start an oil economy in NL (2000, 38). What are these, precisely?

Government support for offshore oil development in NL began in the 1963 to 1965 period with the federal government allocating east coast offshore exploration permits for over four hundred thousand square kilometers that were "exceedingly liberal in their terms." Thanks to this, House notes that "hundreds of thousands of prime exploratory acres [were] taken up by major oil companies and numerous smaller companies at minimal cost." Major players included the Canadian subsidiaries of key international oil companies such as Exxon and BP (1985, 55, 104).

The oil price shocks of 1973 and 1979 following the OPEC embargo and the Iranian revolution resulted in enhanced governmental support for east coast offshore oil development. Not only were oil prices rising sharply, but oil companies operating in Canada were simultaneously issuing warnings to the federal government regarding

national oil supplies: although companies had stated only a few years earlier that Canada had virtually unlimited energy supplies, in the early 1970s, companies indicated that Canada's Western reserves would not meet demand and new supplies must be found (Voyer 1983, 17-18). So, with the aim both to protect the country against high oil prices and out of fear of oil scarcity (Doern 2005, 12-13), the federal government actively sought in increase oil development in Canada's oil frontier regions, the "Canada Lands," the Arctic and offshore. NL's offshore was of particular interest. Prime Minister Trudeau's Liberal government considered NL's resources as "an important component in their national energy strategy" (House 1985, 56). High oil prices resulting from these crises had also made offshore oil development economically feasible.

The federal government invested heavily in frontier oil development. In 1977, it created a "super depletion" allowance to all oil companies which saw most offshore exploration "underwritten" by the government (House 1985, 130; see also Plourde 1989). Then Trudeau's 1980 National Energy Program (NEP) and its subsequent regulations in the *Canada Oil and Gas Act* established further exploration incentives as well as a crown corporation oil company, Petro-Canada, "designed to stimulate activity" in Canada's frontier oil areas (Voyer 1983, 8).

The NEP's exploration incentives replacing the super depletion allowance were Petroleum Incentive Payments (PIP), grant-based incentives as opposed to tax incentives. Funded by federal revenues from frontier lands development, on which the government had a 25% interests (Doern and Toner 1985, 118-19), the grants favoured Canadian firms and paid the majority of exploration costs: for every dollar a company invested in exploration, after-tax costs were reduced to 8 or 9 cents in frontier areas (with exploration on provincial lands reduced to 31 cents) (Doern and Toner 1985, 380; see also House 1985, 130; Voyer 1983, 21).[77] The grants did result in marked increases in

[77] Doern and Toner critique the PIP grants as a "scatter-gun 'come and explore and we'll give you grants' approach" to increasing Canadian oil supplies. They note the PIP also resulted

exploration but at a high cost to the federal government—$1.9 billion in the 1981-1983 period alone (hence the PIP became economically unwieldy when oil prices fell in the 1980s recession (House 1985, 97)). Note that this exploratory work led to the discovery of the Hibernia oil field in 1979 as well as Terra Nova.

A second major federal subsidy to oil development in the offshore from this period was through the NEP's creation of the national oil company Petro-Canada which was intended, among other aims, to "act as a catalyst to encourage frontier oil development" (House 1985, 116). Petro-Canada was formed in 1975 with generous funding provided by the federal government which transferred its earnings from frontier oil development to the company (such as the Crown's 25% interest in frontier land development and its 25% equity stake in Hibernia (Voyer 1983, 30), as well as federal shares in other projects (Pan-Arctic Oils Ltd. and Syncrude). Federal earnings from oil developments that had been passed on to Petro-Canada were reinvested by the company in frontier oil exploration. Voyer notes that Petro-Canada spent "a disproportionate amount of its budget on exploration (60 to 65 per cent, compared to an industry average of 20 per cent)." The company spent over half a billion dollars in exploration from 1976 to 1982, a sum that represented half of total funds spent on offshore exploration in that period. By 1983, Petro-Canada was involved in "practically every venture" of frontier oil exploration offshore (1983, 28-29)—it had quickly became a major player in Arctic and offshore exploration (Doern and Toner 1985, 99). The provincial government made a similar investment creating the Newfoundland and Labrador Petroleum Corporation in 1977 by the Newfoundland and Labrador Petroleum Regulations under *The Petroleum and Natural Gas Act*. The company was given exploration leases outright by the provincial government near Hibernia (House 1985, 50-51).

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in inefficiencies such as overinflated drilling costs and "frivolous or wasteful" drilling (1985, 60, 117, 380-82, 417; *Petroleum Production in Canada* 2010, 91-92).

The next major government subsidy to offshore oil development in NL was for the funding of the Hibernia project. The development of this project was negotiated at a time of 1980s low oil prices and so to ensure the field's development, the federal government agreed to 25% of costs up to $1.04 billion and a loan guarantee of 40% of construction costs up to $1.66 billion. Concessions on provincial taxes were also given (*Petroleum Production in Canada* 2010, 89; Shrimpton 2003). Therefore this massive project, with total project costs of $5.2-$5.8 billion, became known as "one of the most costly regional development projects in Canadian history and one of the biggest gambles in Newfoundland history" (Summers 1994, 195). As noted above, this investment is now paying off substantially.

The next major subsidy by government to this industry was the $300 million dollar Canada-Newfoundland Offshore Development Fund (ODF), created in 1986 via section 202 of the *Canada-Newfoundland Atlantic Accord Implementation Act* to "help prepare the province to take advantage of offshore petroleum development opportunities." It funded forty projects (Department of Natural Resources), for example the Offshore Skills Training Fund, including initiatives likes the Equity Fund to encourage and permit women to find employment in the oil sector. Funding for the ODF was 75% federal and 25% provincial, a $225 and $75 million dollar investment respectively (House 1985, 308).

As for the provincial government, its direct support of the oil industry now occurs primarily through Nalcor Energy, a provincial energy company created and funded in 2007 via the province's *Energy Corporation Act*. Nalcor (with gross revenues in 2008 and 2009 of $0.57 billion held separate from general government revenues) is a partner in three offshore projects, Hebron (a 4.9% interest purchased for $110 million in 2007), White Rose new fields and extensions (a 5% interest purchased for $30 million in 2009) and Hibernia Southern Extension (a 10% interest purchased in 2010 for $30 million), and it also holds an average of a 67% interest in onshore exploration permits in

north-western Newfoundland, where it is also an operator of onshore oil exploration projects (acquired for $0.6 million in 2009) (Nalcor Energy 2010, 2009; Baird 2010). Nalcor also operates the Bull Arm Fabrication Site, a major industrial facility developed in the 1990s to service the offshore oil industry (it was here that the Hibernia platform was built and the Terra Nova Floating Production Storage and Offloading vessel was completed). In addition, the provincial government allocated $2.75 million for upgrades at the Bull Arm site (Government of Newfoundland and Labrador 2008).

Complementing these notable investments are ongoing subsidies provided by the provincial government to bolster the oil industry through the expansions of infrastructure and services. For example, the Government of NL's 2008 budget included $1 million for new geological mapping and $2 million for Oil and Gas Manufacturing and Services Export Development Fund (Government of Newfoundland and Labrador 2008). Similarly, the 2009 budget included $7.76 million for the implementation of the Energy Plan through initiatives such as the marketing of oil and the acquisition of geoscience data as well as $1.5 million in additional funding to the Oil and Gas Manufacturing and Services Export Development Fund (Government of Newfoundland and Labrador 2009).

Contrary to analyses of Canadian energy policy which note a shift to a "pro-market" model with limited government intervention since the mid-1980s, in NL's offshore oil economy, the trend has been significant and continued federal and provincial government direct support for this industry (Doern and Gattinger 2003, 33; Doern 2005, 8-10) via low or no permitting costs, subsidized exploration costs, and funding infrastructure important to the industry. Both levels of government have also made investments in research and development (R&D) and education and training (E&T).

R&D and E&T Subsidies

Since the 1970s, all major public educational institutions in the province (Memorial University of Newfoundland (MUN), the Marine Institute and the College of the North Atlantic (CNA)), have reoriented research and teaching programs around oil development with assistance from the relevant provincial and federal bureaucracies (House 1985, 291-92). The need for retooling education and research in the province around oil has been long noted by the provincial government, an early example being NL's 1977 *Act Respecting Petroleum and Natural Gas*. By the late 1970s, the provincial Minister of Education noted how policymakers and training institute administrators had "already visited Alberta and Europe to further investigate oil-related education programs" (*Oil and Gas: Are We Ready?* 1979, 32) and major investments were already being made, for example, in focusing MUN programs on cold ocean engineering (Voyer 1983, 59), a research orientation initiated with $1 million in funding for the C-CORE building by the Minister of Mines and Energy and the Minister of Industrial (*Oil and Gas: Are We Ready?* 1979, 104).

Since this early period, MUN has further honed its research and educational support of the oil and gas industry, a point made unequivocally by the former MUN President Axel Miesen. In a keynote address to participants of a 2007 policy conference on the benefits of oil and gas development in NL, Miesen noted that MUN is facilitating the transformation of the provincial into a global center of expertise for oil and gas development in harsh environments through research, teaching and infrastructure, with more than $88 million dollars raised for oil and gas related initiatives between 2003 and 2010. He noted nineteen new faculty members hired to conduct geological, engineering and marine research on oil and gas (including a $2.5 million Husky Energy Chair in Oil and Gas Research) through new programs such as the executive Master's of Oil & Gas Studies, programs in engineering, geology and marine studies and developing programs such as an Executive MBA Petroleum program (Carter 2007, 25). Hundreds of

MUN graduates specialize in oil-related programs, 345 in total from 2005-2007 (Stantec 2009, 15). Oil industry employs literally hundreds of MUN and CNA work-term students from these programs (Stantec 2009, 16) and is also a key employer of MUN graduates. New facilities to support faculty research and student learning include a harsh environment bridge simulator, the Landmark Graphics Visualization Lab and the Inco Innovation Centre (Carter 2007, 25). More recently, Shrimpton's report noted new provincially funded infrastructure such as process engineering and geomechanics laboratories valued at $5.2 million over the 2005-2007 (Stantec 2009, 13-14).

There are now close ties between the oil industry and MUN with oil and gas research often conducted through university-industry-government joint ventures, such as via the Oil and Gas Development Partnership and Atlantic Petroleum Systems Consortium (Carter 2007, 25). These ties are also confirmed in events like the June 2010 Calgary Affinity Newfoundland and Labrador Dinner at the Calgary Petroleum Club. Here Premier Williams and MUN President *pro tempore* Loomis thanked the audience members, who he acknowledged as national and international leaders of the energy sector, for their financial support of MUN as well as for providing employment and mentorship opportunities to MUN students. Retiring president and CEO of Husky Energy, a former honorary degree recipient from MUN, was given a gift of thanks for his support of MUN (Furst 2010) the centerpiece of which is the Husky Energy Chair in Oil and Gas Research funded by a $2 million endowment, MUN's the first endowed research chair.

At MUN's Marine Institute there is a similar emphasis on oil and gas through the institute's Centre for Marine Simulation and the Southside Marine Base, a facility to enable training in the offshore petroleum industry, particularly safety—in 2001, $3.1 million was provided for this facility from the ODF, $1 million from MUN, and $761,500 from the CAPP (Memorial University of Newfoundland 2001). Similarly, at the CNA the provincial government funds new programs through the Oil and Gas Technology

Fund (Stantec 2009, 16). The CNA now includes a Petroleum Training Centre and Engineering Technology Centre emphasizing the oil sector and it receives provincial funding for related infrastructure, for example, $1 million annually since 2006 for facility upgrades for its Industrial Trades and Engineering Technology programs.

In addition, the federal government contributes research funding via National Research Council (such as its $2.8 million investment in facility upgrades to the Institute for Ocean Technology (Stantec 2009, 13-14)) and through research funding through programs such as the Natural Sciences and Engineering Research Council of Canada, the Atlantic Canada Opportunities Agency and its Atlantic Innovation Fund, the Canada Foundation for Innovation, and the Canada-Newfoundland Offshore Development Fund (Carter 2007, 26).

Institutional Development Bias

The above governmental support for the oil industry in terms of direct financial support for exploration, infrastructure, research and development, training and education, and low taxes is accompanied by a more subtle form of support: an institutional development bias in the form of a permissive regulatory authority body, the Board. The Board, the designated as the federal authority on environmental assessment, has the lead responsibility for environmental issues offshore and great discretion on environmental policy matters. Most significantly, the Board makes the final decision on whether projects will proceed after environmental assessment processes—it can determine that significant negative environmental impacts are "can be justified in the circumstances" (Erlandson Consulting Inc. and Petroleum Research Atlantic Canada 2004, 15-17) (although the process for deciding on what is "justified" is not clear). Yet this powerful body is arguably compromised by its relationship with industry and its pro-development leaning.

The Board is no longer considered a neutral regulatory actor; rather, it is

frequently charged with being in a conflict of interest or experiencing "regulatory capture"[78] (as noted by a former senior provincial energy policy maker interviewed in 2008) given its close relationship with the oil industry. Members of the ENGO community are under the impression that the Board is "in the pockets of the oil companies" (or, as described by one interview, a NHS scientist and researcher in 2008, the Board is "in bed" with the oil companies). Therefore regulations are made for the convenience of industry (Fusco 2007, 87-97). Likewise, representatives from the fishing industry and local communities are concerned that the Board has been "partly co-opted by the petroleum industry" (hence the limited public awareness and debates surrounding rights issuance) (Shrimpton et al. 2003, 20). Federal government representatives also raise this point. In a 2007 interview, a long time employee with key federal departments involved with oil spills (2) observed that the Board seems to represent industry rather than the public interest. A policy maker with Environment Canada, Newfoundland Provincial Office (2), agrees. Based on this person's years of experience with the Board, there is extensive evidence that it is clearly promoting the industry. Perhaps a problem related to this is the evident lack of environmental expertise on the Board—Board members have industry and government experience exclusively (Bailey 2010).

The Board seems reluctant to use powers available to it and this makes sense given the potential conflict of interest. Hence the Terra Nova assessment panel's recommendation that the Board "take a more active role in the exercise of its full mandate" (Report of the Terra Nova Development Project Environmental Assessment Panel 1997). Two infrequently used powers are most obvious. First, the Board has the authority to hold an inquiry after an environmental incident (AA Implementation Act

[78] West Coast Environmental Law warns that the Boards (in NL and NS) are "vulnerable to becoming captive to the industry they regulate and, in focusing on regulation, may overlook the more fundamental questions, such as "should we even be doing this at all?" (Rutherford and Campbell 2004, 22).

1990, section 161.(1)), yet this power is seldom used. Second, the CNLOPB has the power to prohibit the commencement or continuation of work offshore in the case of "an environmental or social problem of a serious nature" (AA Implementation Act 1990, section 55(1)(a)). This has happened only once and briefly, after the Terra Nova oil spill.

Rather than bolster environmental regulations, the Board and the provincial government actively attempt to "streamline" the regulatory process—to cut regulatory redundancy and speed up approval times—to support the industry. One obvious example is the Atlantic Energy Roundtable (AER), formed in 2002 and includes government, industry and labor in NL, NS, NB and PEI, which aims to forward oil development by cutting costs and development times, thereby making investments in Canada's east coast offshore more attractive. The AER has expressed concerns about the time lag prior to development due to required comprehensive studies and public reviews (32-4) and it now works to "improve regulatory efficiency" (Erlandson & Associates 2003, 2). As of 2005, the AER had developed Memoranda of Understanding (MOUs) for Nova Scotia and NL between key provincial and federal departments, the Boards and the NEB "to ensure regulatory approval processes and environmental assessments for future offshore development projects are handled in a coordinated and concurrent manner" (Atlantic Energy Roundtable 2005, 2). AER is also recommending environment assessments of classes of activities, as now discussed in AB: "The proposition is to eliminate or limit the need for further assessment unless circumstances vary" (Erlandson & Associates 2003, 35).

As a second example, the Board is experimenting with basin-wide assessments in the form of "Strategic Environmental Assessments" (SEAs).[79] SEAs, praised within government as a way to provide cumulative research, can also be interpreted as a strategy to assist companies in avoiding individual project analyses (on the aim of

[79] Current proposed SEAs include the Labrador Shelf, Northeast Newfoundland Shelf and Orphan Basin, Laurentian Sub-basin, Western Newfoundland Offshore and Sydney Basin.

SEAs, see, for example (Canada-Newfoundland and Labrador Offshore Petroleum Board 2008b, 3), and, ultimately, to accelerate the environmental assessment process. Indeed, SEAs were recommended by the AER as a way to speed up the approval process—and also to "shift the onus for regional studies to governments of the Boards" (Erlandson & Associates 2003, 34).

In addition to the main regulator's compromised position, there is evidence of a pro-development bias at the federal level. Federal departments and agencies seem more inclined to support, or at least to not impede, oil development offshore and they are cautious about engaging with environmental issues in offshore NL. First, as noted above, the federal government has a significant revenue stake in that industry. Second, given the long and acrimonious debates and federal-NL tensions surrounding oil development offshore, the federal government is not inclined to be seen as obstructing NL's chance to be a "have" province (interview with a Newfoundland and Labrador Environmental Association representative in 2008).

EC has delegated its environmental assessment and regulatory authority to the Board. It could, in theory, take over if the Board was deemed to be doing an inadequate job, but it never has and it does not have the capacity (for example, EC has just one fulltime staff person in its NL Environmental Enforcement section), or the industry knowledge to do so (interviews with Environment Canada policy makers, Newfoundland Provincial Office, (1-2), in, 2007).[80] Should EC disagree with the Board's or companies' actions, EC staff prefer to use "soft" methods of influence: "conversations" or subtle threats behind the scenes, hidden from *The Telegram* (NL's major daily newspaper) (interview with an Environment Canada policy maker, Newfoundland Provincial Office, (2), in 2007).

[80] DFO is in a similar situation. According to NHS scientist and researcher interviewed in 2008, DFO research staff have not been renewed so there are few people left who have even understand the environmental assessments to provide comment.

But EC leadership on environmental issues offshore probably would not change the tenor of the approach offshore on environmental issues. As one interviewee stated, there is "no room to be an environmentalist" at EC (interview with an Environment Canada policy maker, Newfoundland Provincial Office, (2), in 2007). Environmentalists within EC are considered to be "zealots" that this particular person works to "moderate"; environmentalists and scientific researchers in the local ENGO community are referred to as having "extreme" and "sensationalist" perspectives.

One stark example of EC's support of oil development as opposed to environmental protection is the department's rapid defense of Petro-Canada after the TN spill: within one day after the spill, EC denied that 487 birds washed up on Avalon were related to the spill even though there had not been time to test samples (interview with university environmental science professor (2) in 2007. One long time employee of these departments interviewed (2) in 2007 suggested federal departments tried to hide or cover up data on the TN spill. Rather than hold companies accountable for environmental damage, EC *thanked* Petro-Canada for taking the time to appear at discussions on the spill.

TC, for its part, while it is not involved with offshore oil and gas production, has a major role in regulating oil tankers, FPSOs in movement and ships servicing the platforms and it exhibits problems echoing those in EC. Its limited commitment to analyzing environmental risks posed by oil transport in the most at risk area in the province, the south coast, was evident in the recent south coast risk assessment. The document, delayed over seven years, was disjointed, overly technical and hundreds of pages long, and therefore, it was inaccessible to the general public. It was also deemed overly optimistic in terms of the risks (interview with Newfoundland and Labrador Environmental Association representative in 2008). According to a long time employee with key federal departments involved with oil spills (2), it was also full of "inaccuracies" and "assumptions" with regard to predictions of spill frequency. Worse,

federal employees with some role in writing the report note that the consultants were told by TC to "tone down" the worst-case scenarios, such as the risk associated with two full tankers colliding at sea. TC just released the risk assessment in April 2009 and it demonstrated that the risk of an oil spill in the Placentia Bay area, an expanding industrial zone seeing increasing tanker traffic to the oil transshipment terminal is zero. The public was, however, incredulous.

The financial, rhetorical and institutional means discussed above constitute the provincial government's longstanding legitimation and encouragement of the offshore oil industry. This is the first major part of the structural explanation for anemic environmental policy in this case. The second part is the industry lobby that simultaneously forwards the industry. I explore this aspect in the next section.

Oil Industry Lobby

NL's offshore oil resources are publicly owned, albeit via a complex federal-provincial shared arrangement. But NL's basic approach to oil development is a purely privatized one. Although NL motioned toward public oil development in the 1970s and 1980s, in House's words, the province "decided to rely upon multinational and national corporations to develop the oilfields off the province"; thus the "motor power" for oil development would come from large, often foreign corporations (1985, 102-03).

Four companies now dominate oil exploration and development in NL: ExxonMobil (the world's largest publicly traded company with headquarters in Irving, Texas, with an American chairman/CEO and board); Suncor, formerly Petro-Canada (with headquarters in Calgary, with a predominantly Canadian board); Husky Energy (also out of Calgary, also with a mostly Canadian board); Chevron (headquarters in San Ramon, California, with a predominantly American board). Production licenses in the Grand Banks and the Orphan Basin are dominated by ExxonMobil which owns 58.16% of the licenses and Suncor with 34.9%. In terms of significant discovery licenses, Husky

Oil owns 38.85%, ExxonMobil 22.11% and Suncor 13.67%.

These major companies alongside numerous smaller players have made substantial investments in NL's offshore. Oil industry expenditures in exploration, development and operations from 1995 to 2008 amounted to $20.4 billion (Canadian Association of Petroleum Producers 2010c), and $24.7 billion since 1966. Yearly spending data indicates that over the 2005 to 2008, operators spent no less than $1.34 billion (in 2005), increasing to $1.68 billion in 2008 (Canada-Newfoundland and Labrador Offshore Petroleum Board 2009, 38, 2008a, 31, 2007a, 41, 2006, 29). As of January 2010, operators have also made work expenditure commitments of $872 million for future exploration.

What of profits from these investments? Together, the three projects result in high earnings—a total of $11 billion dollars as of 2007 (Carter 2007). But ascertaining profits is more difficult because these data are considered proprietary information of the companies. That the provincial government does not have a precise sense of corporate profits from offshore oil development was made clear in 2006 when ExxonMobil asserted Hibernia was not meeting profit expectations. The provincial government disagreed and requested proof but Exxon refused to provide information to conduct a revenue audit of the project. Using publicly available data, the NL Government conducted a piecemeal audit and found that Exxon was doing very well in NL's offshore: Hibernia was earning higher than projected operating revenues (over $10 billion), alongside lower than expected capital and operating costs with gross revenues estimated at $19.9 billion per year (Executive Council 2006).

"*Community Engagement," Political Lobbying and Legal Challenges*

These offshore oil investments, profits and salaries represent high stakes and companies work to protect their access to resources. The four big oil companies operating in NL's offshore, Exxon, Suncor, Husky and Chevron, each build legitimacy through a range of

"community engagement" (public relations) activities. This seems to be the predominant strategy of choice although there is also evidence of political lobbying and, at key junctures, legal challenges.

Husky Energy leads the companies in community engagement initiatives with, for example, its $2.5 million endowment to The Rooms, NL's largest public museum, art gallery and archives which resulted in a major section of the facility was then renamed *The Husky Energy Gallery*. The gift was hailed by the provincial government as the "largest gift ever made to a cultural institution in Atlantic Canada" (The Rooms Corporation 2010). The company has also made a $2 million endowment to MUN in 2003 for a Husky Energy Chair in Oil and Gas Research, plus other scholarships at MUN. Suncor engages with environmental educational institutions in NL, primarily through its longstanding support of the Fluvarium, a freshwater environment educational center in St. John's. The facility was renamed the Suncor Energy Fluvarium after the company's $500,000 donation in 2007. Suncor's precursor, Petro-Canada (the two companies merged in 2009) had made a $1.2 million donation to MUN to build the Petro-Canada Hall, a rehearsal and performance hall opened in 2005. Suncor also supports various youth and non-governmental programs including, ironically, the Climate Change Action "The Job Begins at Home" project of the Conservation Corps which encourages people in the province to reduce their individual GHG emissions (American Petroleum Institute 2010). (Yet individual emissions are a minor slice of the total emissions in the province which are driven primarily by the oil and gas sector.) Chevron is similarly involved with educational program, for example through the Chevron Open Minds school program and through supporting environmental education such as the province's Conservation Corps. Recently, Chevron created a new partnership with MUN through funding a new Process Engineering Design and Research Laboratory in partnership with MUN and the province's Research and Development Corporation, a Crown corporation developed to increase R&D in NL.

These initiatives serve to demonstrate oil companies' significant interest and investment in the local community, building legitimacy for their activities and greasing the wheels of interactions with government. It is this more subtle form of engagement with NL society that marks this case. As House noted at the commencement of this industry, "seduction" is the strategy of big companies operating in the province. The companies incorporate Newfoundlanders and Labradorians into the oil process by noting their involvement in and "concerns about environmental and social affairs," while also hiring local people to represent them in local negotiations (for example in real estate and human resources discussions) and socializing with the local elite (1985, 124-25).

Of course, companies also engage in political lobbying typical of oil rich cases. House notes early lobbying efforts in response to the province's *Petroleum and Natural Gas Act* in the early 1970s. Companies protested the nationalist policy by reducing exploration to the point that no wells were drilled in 1978 (drilling recommenced in 1979 only after "a generous federal superdepletion allowance"). In these early days, the Canadian Petroleum Association's Offshore Operators' Division was also calling for reducing government "interference" in the offshore to generate more local wealth (1985, 105, 34-35).

When these lobbying measures combined with social capital built from public relations activities has not secured policies of choice for oil companies in NL's offshore, some have resorted to hostile legal challenges. A key example of this was how operators fought CNLOPB research and development spending requirements in the Supreme Court of NL, *Hibernia and Petro-Canada v C-NOPB*, 2007NLTD14, and Exxon and Murphy Oil's filing suit under NAFTA against Canada for the same (Canada-Newfoundland and Labrador Offshore Petroleum Board 2007b, 39).

There is a clear "mutuality of interests," to use House's formulation, between the oil industry and the provincial government: oil companies get access to highly

profitable resources that are managed through a stable political system close to major markets; the province sees employment and business opportunities expand alongside increased revenues and, therefore, public services (1985, 126). In addition to these economic contributions, companies further secure their legitimacy and credibility in the province by high-profile public relations activities and traditional lobbying methods—and threatening or engaging in legal challenges when these strategies to no suffice to provide industry with the investment environment it seeks.

In contrast to state owned oil development, which is the global trend in oil development in 80% of the world, revenue to government from NL's offshore must come indirectly from companies' work via taxing corporations or collecting royalties. To ensure the flow of revenue to the government continues both levels of government actively support the industry. The mutuality of interests between government and industry for oil development and for "streamlined" environmental regulation translates into an environmental policy regime biased toward offshore oil development: the regulatory system has been developed or retooled to support offshore oil development and maintain weak environmental regulation, hence the problematic environmental regulation trends elaborated above and the multiple environmental impacts observed offshore. Based on the assessment of the regulatory systems in this chapter, it seems the regulatory bodies and policies have evolved, or were created, to support this industry rather than protect the environment.

IV. Resistance & Demands for Effective Environmental Regulation

Concern for the environmental impacts of oil developments in NL's offshore have long been peripheral in the debate on this industry. At the start of the industry in the 1970s, the noted environmental concerns were limited to risks posed by icebergs, tanker collisions with the shore and blowouts.

Impediments to the fishing industry—that oil developments might impede dragging on the Grand Banks (coincidentally a practice representing its own environmental crisis)—were also initially taken seriously. But once fisheries groups were successful in lobbying for the smallest possible no-fishing buffer zone around the facilities, "the environmental issue went away." And now, still not recovered from the near-total demise of the industry in the early 1990s due to over fishing, fisheries groups are not in a position to fight a global oil industry. The more "subtle" point of routine discharges, cumulative effects, emissions and so forth have seldom been considered (interview with former senior provincial energy policy maker in 2008).

The earliest legislation on NL oil development, the 1977 *Act Respecting Petroleum and Natural Gas* that made no mention of the environment, reflected this state of the debate. And today, this trend continues with the emphasis in public debate on local benefits but with limited attention to the significant and wide-ranging environmental costs. In government, academic and media circles, discussion is narrowly focused on the socio-economic impacts of oil development (such as capturing employment, royalties, spin-offs and so forth)—environmental (and safety) issues have been "tertiary at best" in the debates (interview with former senior provincial energy policy maker in 2008).

We would expect to find evidence of opposition to or questioning of oil developments in NL to come from the common sources of environmental policy or environmental science expertise: environmental non-government organizations (ENGOs) and other NGOs, university researchers, and scientists and analysts within government departments. But there are significant gaps or constraints that impede the development of coherent criticism at every site. Where we typically find the strongest resistance to oil development in other cases, we find multiple weaknesses in the NL case. Of course, the geographic location of NL's oil development makes the work of opposition more challenging because the extraction sites are hundreds of kilometers

offshore and environmental impacts are seldom directly observed by local people. This is a very different case from AB's tar sands, for example, where citizens can drive on public roads through tailings ponds and witness the environmental impacts first-hand.

ENGOs such as the NHS and Alder Institute have been consistently involved in the consultation processes, attending public meetings and submitting interventions, since the first project in the 1980s. However ENGOs in NL suffer from, first, a lack of funding and staff even worse than in other provinces (Fusco 2007, 101-03). This point was also stressed in an interview with Sierra Club researcher (3) in 2008. This situation translates into low capacity to intervene in complex debates on oil.

Second, and more important, is the caution with which ENGOs proceed in dealing with an industry that is hailed as the economic, social and cultural savior of the province. The classic jobs-versus-environment framing has not been debunked in this province and this stifles ENGOs' ability to challenge developments on environmental grounds (Fusco 2007, 79). In fact, the environmental community it itself acutely aware of the widespread economic benefits of the oil industry (although, as noted by other groups discussed below, there is concern about the future of the province, post-oil (Fusco 2007, 82, 84). ENGOs are very careful to avoid the "anti-development" label—they are well aware of the vitriolic response received by seal hunt protestors. This political memory constrains what ENGOs can do and say in a real way (this point was noted in several interviews, for example with a graduate student researching oil and environmental issues in January 2007 and with a Sierra Club researcher (2) in February 2008). Third, when groups do engage in consultation processes, they note that their participation seems to be merely window dressing on a pre-determined pro-oil development process. Fusco describes this as a "shared perception of powerlessness" (114). Due to this, some withdraw from the process (interview with Natural History Society scientist and researcher in 2008). Hence the ENGO activity around oil in NL is paltry compared to the other cases, even those with similar population bases such as

Alaska and Wyoming. Only the NHS and, more recently, the Sierra Club work on this portfolio.

Researchers at MUN have also been involved in these processes as well as researchers from other institutions and I have referred to their work throughout this chapter. However critical research and commentary to challenge the pro-oil *status quo* is not easy forthcoming from the local university. There is a degree of either constraint on independent researchers within government and academic institutions, or an element of self-censorship at work. Multiple interviewees noted that researchers within MUN are reluctant or afraid to comment on environmental impacts of the oil industry in the province because of funding ties to the oil industry or reprimands that other scientists have received from the university administration.

One interviewee, a university environmental science professor (2) in 2007, explained that s/he was threatened by her/his academic unit for making information about environmental issues offshore publicly accessible. S/he felt pressure to shift the focus of research to another jurisdiction. Another interviewee, Sierra Club researcher (2) interviewed in 2008, knowledge about politics at MUN, referred to "oil's long reach" into the university given the close and growing funding links between the oil industry and the institution.

An additional problem is the lack of funding available for research to track environmental risks in a long-term, scientifically defendable way (Burke et al. 2005, 608; Montevecchi and Burke 2005, 29). Several also noted the "consultation fatigue" felt after participating in governmental processes but never having an impact on them, and that they had stopped commenting on the local oil and environment issue (interviews with Natural History Society scientist and researcher in 2008 and with a university environmental sciences professor (2) in 2007).

Scientists or analysts within the provincial and federal government could also be a source of critical questions on oil development in the province. Unfortunately, there is

an obvious lack of public policy training in the province (hence the development of the new Master of Arts in Environmental Policy program to launch in fall 2011 at Grenfell Campus, MUN). In addition, the policy sections of provincial government departments were gutted in the mid-1990s budget cuts and are only now beginning to recover. Policy capacity is, therefore, more so found at the federal level.

However, interviewees from the federal government (DFO, TC, CCG and EC) noted similar constraints as on MUN researchers: researchers and analysts in these departments are not free to voice concerns about environmental impacts from oil developments, and certainly not to the public (interviews with Natural History Society scientist and researcher in 2008 and long time employee with key federal departments (2) in 2007). Rather than promote strong environmental action, interviewees suggest that, for example, EC attempts to hide or cover up information inconvenient to oil companies (such as after the TN spill). One method in this is to control employees' comments in the media or to encourage "naysayers" to "move on"—a long time employee with key federal departments (2) interviewed in 2007 describes federal offices as having been "gutted" of critical voices. A university professor in environmental science (2) interviewed in 2007 also refers to government science at EC and its CWS as being "cooked up," non-refereed "pseudo-science" to support government development policy. Employee censorship is noted at TC as well. An example is the reprimand received by an employee, interviewed for this study, after he was quoted as questioning the efficacy of the environmental assessment process in the offshore in a prominent national newspaper. For these comments his manager demanded he to sign an apology to the operator for publication in the paper (which he refused to do).

There are, however, two growing opportunities for a more open debate on environmental impacts. Breaking out of the false jobs-versus-environment debate, local labor organizations such as the NL Federation of Labour (NLFL) have expressed concern about the environmental impacts of oil developments and claimed in an early

text to have a new approach to development: not "jobs at any price" but "sustainable prosperity" and better enforcement of government regulations to make sure it happens.

> Newfoundlanders and Labradorians suffer from high unemployment and social problems created by the employment situation make us a prime candidate for environmental distress. People need jobs, and to some, this means at whatever cost. We have become vulnerable to enterprises and investment. […] Job blackmail at the expense of our environment will no longer be tolerated by workers (Newfoundland and Labrador Federation of Labour 1990).

More recently, the NLFL has developed a "green jobs" discussion document that is beginning to put these early statements in to practice.

One very specific opportunity that can be seized by the labor community to raise key questions about the oil industry has recently presented itself. In response to the 2009 crash of a helicopter servicing the offshore that killed seventeen workers, the provincial government commissioned a study of offshore safely regulation. The resultant report called for the establishment of a separate safety authority given the deep-rooted problems of the Board. Discussions are now ongoing to restructure the Board in this way. A similar suggestion was made in relation to environmental regulation, for the creation of an independent, expert, transparent environmental authority (Carter and Fraser 2011). This is particularly relevant in light of the 2010 BP Deepwater Horizon disaster in the GOM.

Another opening for demands for change in the regulation of offshore oil in NL is the growing recognition of the industrialization in Placentia Bay. Formerly a rich fishing area, the region is now becoming a center for multiple major oil support projects such as the transshipment terminal and an oil refinery as well as proposed infrastructure such as a liquefied natural gas facility and a second refinery. Community opposition to this re-designation of the bay is becoming more pronounced, especially due to the oil spill risks.

Note, however, there is also growing criticism of the oil industry in NL on

economic grounds. The current economic prosperity thanks to oil is worrisome to those within government who take a longer view. Even before revenues from oil started accruing to the province in a remarkable way, there were warnings about one-commodity dependence. For example, in the 2003 Royal Commission report on NL's place in Canada, Norris reviewed the province's fiscal situation and warned the "revenue bump" due to oil revenues would have a "relatively short-lived" peak and the decline would be "steep" as early as 2011 if there were no new developments; he also warned about the province's "major sensitivity to oil prices" (2003, 282, 85). The province's auditor general has been even more adamant: he describes the province's "dependence" on offshore oil as dependence on "revenues that are volatile" and finite, hence the province's inaccurate revenue predictions—since 2008, there have been "significant variations […] between budgeted and actual offshore royalty revenues" due to oil price volatility (Noseworthy 2009, 82, 85).

House's early analysis takes on new weight in light of these comments. "Paradoxically," he wrote in 1985, "the more successful its petroleum sector becomes, the more difficult it will be to provide for a balanced economy and society in the long run when the oil runs out" (137). This problem is beginning to be acknowledged within the provincial government at the highest levels.

Other commentators have argued that while the benefits from oil are extensive, they are not fairly shared and the province could be getting a great deal more from its oil, rather than developing yet another economy where the lion's share of the benefits are exported, along with the raw resource—Stanford describes NL as "Canada's 3rd World 'Helicopter' Economy" due to its focus on resources exports which sees "much of the proceeds of growth flow immediately out of the province" (2003). House agrees: while NL has secured more local jobs and business through negotiations on oil development, "ownership and control, profit-taking and most forward and backward linkages still accrue outside the province." The province remains, in many ways, a place

where "economic surplus is appropriated from the region" (House 2005, 475).[81] The destination of the appropriated resource is clear: every barrel NL exports internationally goes to the U.S.—and as much as 70% of NL's oil is directly exported (more on this in chapter 4). At the same time, to fuel its refinery and meet domestic fuel needs, NL imports oil from Iraq, Russia and Venezuela.[82]

V. Conclusion

NL has been desperately attempting to develop a modern economy for decades and this longstanding circumstance, as a former director of the CCG's Prevention of Oiled Wildlife Project, observes, has "probably has driven us to make radical and uninformed decisions" (Harvey is quoted in DePalma 1999). Thirteen years since first oil from Hibernia, and with the province now approximately half way through total oil reserves, we have a clearer understanding of the environmental impacts of the headlong rush into an oil-based economy. A globally significant marine ecosystem is now at risk due to seismic testing, flaring, the oil infrastructure itself, spills, routine discharges and carbon emissions. But the regulatory system managing these impacts is not able to prevent them due to multiple serious inadequacies. This chapter has discussed many these ranging from problems with the broader environmental assessment processes to monitoring and enforcement processes.

How did we get here? I have attempted to provide an answer to this question by considering NL's "petro-politics." This system is marked by great government

[81] Analysis by the provincial government indicates a minimal amount of wealth being captured by the province. For example, on the Hibernia project (which had a total net revenue of $14.8 billion up to 2006), it is suggested NL received only $1.2 billion while oil companies received $8.8 billion and the federal government got $4.8 billion (Department of Natural Resources 2007, 20).

[82] Data on NL's oil imports, based on Industry Canada's Trade Data Online, were provided to me by the Economics and Statistics Branch (Newfoundland and Labrador Statistics Agency), Department of Finance, in December 2010 via e-mail.

dependence on oil revenue and, therefore, significant government support for the industry in the form of financial subsidies, the honing of provincial R&D and E&T around oil, and an institutional structure supportive of this industry. At the same time, oil companies have invested greatly in—and drawn great profits from—offshore resources and so they work with the public and government to ensure they have continued access. This chapter discussed the public relations, lobbying efforts and legal strategies used by companies to maintain access without undue environmental regulatory constraints. The general trend in this case seems to be that regulators have become attuned to the great local fiscal dependence on oil and made acutely aware of industry interests. The regulatory system is, therefore, framed around what is possible or convenient for industry, hence the continuation of or continued risk to significant environmental impacts in NL's offshore.

Cadigan's warning, which closes his new history of NL, is relevant here:

> The offshore oil industry may be the economic saviour of Newfoundland and Labrador, but that depends on whether the province may use the wealth generated by the industry to invest in people and communities in ways that sustain both them and *the ecologies in which their fortunes are inextricably bound* (2009, 297, emphasis added).

Based on my analysis of the environmental regulatory regime surrounding offshore oil development in NL, I argue the province is not yet protecting this ecological base through effective environmental regulation. The policy system managing the environmental impacts of NL's oil industry needs to be significantly rethought and redeveloped. I provide suggestions to do this in the final chapter. But first, in the next chapter I compare this case to the circumstances in AB and then situate the cases together in the broad context of the global oil economy in the following chapter.

CHAPTER 4: CASE SYNTHESIS IN THE GLOBAL CONTEXT

Individual case studies are of value as stand-alone pieces, particularly to people grappling with the impact of oil dependence in those regions. However, my aim in this work has been to draw out trends across cases to offer a broader comparative analysis. This chapter is focused on that task.

Section I elaborates on the broad national situation of economic reliance on natural resources, particularly oil. From here, I focus on AB and NL to explore the comparative applicability of resource curse theory to these cases. I first provide details on the cases' comparative levels of oil dependence. Do these cases meet standard resource curse thresholds? Based on data measuring the impact of oil on total government revenue, GDP and exports, the answer is unequivocally positive (although the situation is more recent for NL given its late oil production start).

Next I assess whether these obviously highly oil dependent cases actually exhibit the expected political and economic negative repercussions of this oil dependence as elaborated in the resource curse literature. I discuss how the evidence is mixed—there are not (yet) unequivocal economic and political resource curse impacts at work in these cases. Yet there are indications of many relevant trends at work.

What is very clear, however, are the shared unfortunate impacts on environmental policy due to the high dependence on the oil sector, the focus of this study. In section II I look across the cases to note the comparative environmental impacts of frontier oil extraction and the similar problematic environmental regulatory trends at work.

Finally, in section III, following the multi-scalar, cases-in-global-context approach and reconstructive commitments of political ecology, the chapter situates the cases within a Canadian and global petro-political context. In so doing, Canada and particularly these cases are understood as obsequious oil providers to a powerful

southern neighbor.

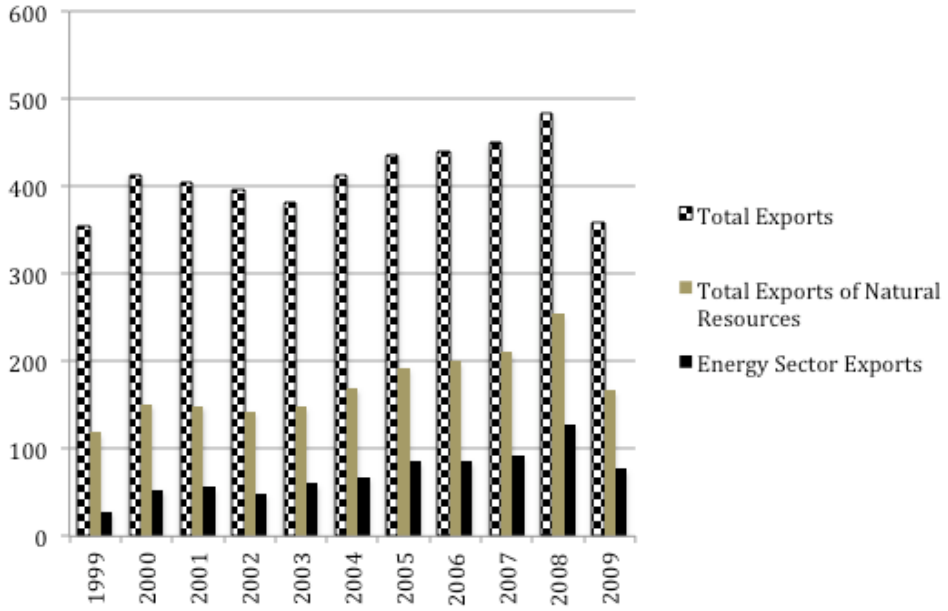
Resource curse and political ecology theory provide guideposts for analyzing trends in environmental political economy in these cases and their environmental policy reverberations. This amounts to Robbins' "hatchet" of political ecology, or the criticism of what *is*—the first half of "doing" political ecology. Then the next and final chapter attempts to provide the second half, the "seed" of political ecology—imagining what *could be* and how to get there.

To begin the cross-case synthesis of this chapter, I demonstrate the applicability of extending the resource curse theory into the "first world" and subnational cases of AB and NL by assessing their comparative resource "cursedness." But I start at the national level where we see high dependence on natural resource extraction and export—and the subsequent worrisome resource curse impacts, notably the decline of manufacturing. This national circumstance is driven in great part by the petro-provinces.

I. Resource Curse Compared

Canada is undoubtedly highly dependent on natural resources, and oil in particular. Data from NRCan show a stark trend (depicted in figure 15 below): in recent years, natural resource exports account for approximately 50% of total exports, with energy exports accounting for nearly half of those.

Figure 15: Canadian Exports: Total Natural Resources and Energy Sector (in billions of current Canadian dollars)



Source: Data are from Natural Resources Canada, "Important Facts on Canada's Natural Resources," available at www.nrcan-rncan.gc.ca/stat/stat-eng.php.

Energy is now Canada's most valuable export. In 2008, oil and natural gas sales were valued at $95 billion and represented about 21% of total merchandise exports, "the highest value recorded in the previous two decades" (Plourde 2010a, 9). Similarly, business investment is dominated by natural resource industries, in particular the energy sector, which is, in turn, primarily "driven by the oilsands." Furthermore, the value of traded energy and metal shares account for approximately 50% of the total shares traded on the Toronto Stock Exchange (Cross 2008, 3.1-3.5).

Canada has become an energy state, more specifically an oil state. This is so much so that over the 2003-2007 period, oil prices and the Canadian dollar (as well as the exchange rate with the U.S. dollar) were closely correlated (Cross 2008, 3.4-3.5)—hence the "petro-loonie" neologism.

However Canada's natural resource extraction and export proclivity is not a shared trait across the country. Provinces and territories have very diverse resources and economies. And given Canada's uniquely highly decentralized federal structure,

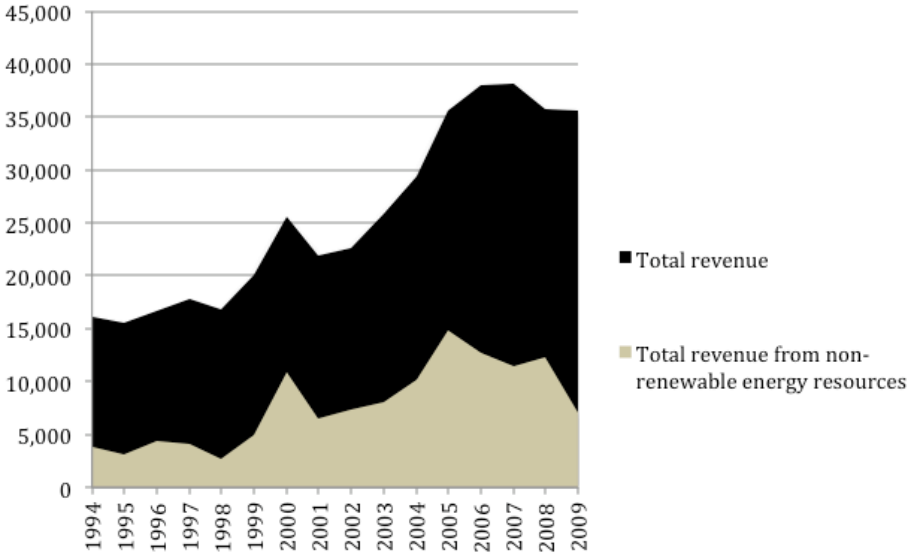
the subnational levels of government, particularly the provinces, have extensive authority over the development of these resources. While amalgamated under the Canadian nation state, these provinces can be understood as distinct political and economic entities. Drilling down from the broad national trends to the provincial level, it is obvious that national trends are in fact being driven by provinces with extensive natural resources, particularly the petro-provinces, and primarily AB. Figures 2 and 3 in Chapter 1 demonstrate this reality well, as they indicate how oil production is concentrated on three provinces, AB, NL, and SK.

To what extent do AB and NL fit the characterization of standard "resource cursed" cases (where oil represents one-third of total revenue, GDP and exports)? And do the predicted negative economic and political outcomes follow?

In AB, non-renewable energy resource revenues—predominantly oil and gas—have accounted for a major portion of total provincial revenue, as much as $14.8 billion in revenue out of a total of $35.5 billion in total revenue in 2005 (see figure 16 below[83]).

[83] Note that lacking comprehensive disaggregated data for each individual fuel—the data available do not allow me to assess the impact of tar sands fuel on its own—in figure 16 and 17 I follow standards used by Alberta Energy and calculate "non-renewable revenues" which include revenues from natural gas and byproducts, conventional crude oil, synthetic crude oil and bitumen, coal, bonuses from sale of Crown leases, rentals and fees, and minus Alberta Royalty Tax Credit (ARTC) and "Special Royalty Features."

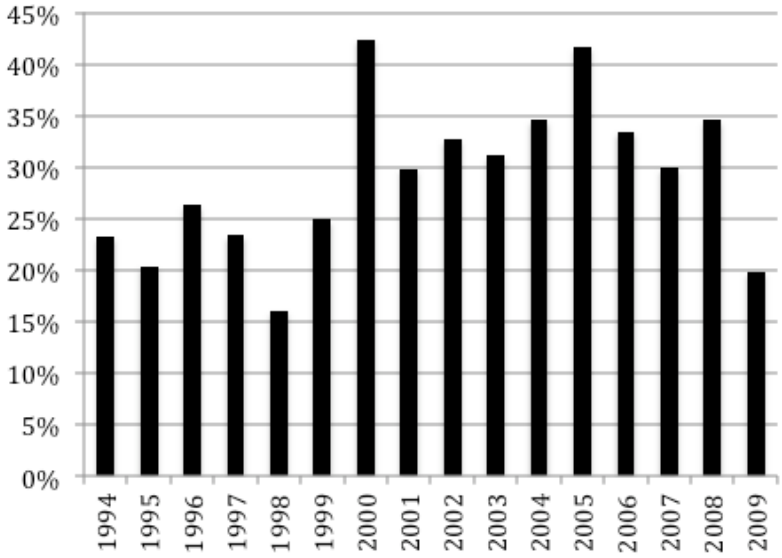
Figure 16: AB Government Total Revenue and Non-Renewable Energy Resource Revenues (in millions of Canadian dollars; in current dollars)



Source: Data on total provincial revenue are from the Department of Finance Canada, Fiscal Reference Tables October 2010, Table 25 AB. Non-renewable energy resource revenues are from Energy Alberta Annual Reports 1998-1999, 2001-2002, 2006-2007 and 2009-2010 available from www.energy.gov.ab.ca/Org/Publications (accessed March 9, 2011).

Between 1994 and 2009, oil revenues have, on average, contributed 29% of total provincial revenue since 1994, rising to over 40% in 2000 and 2005 (figure 17).

Figure 17: AB Government Revenues from Non-Renewable Energy Resources (% of total)

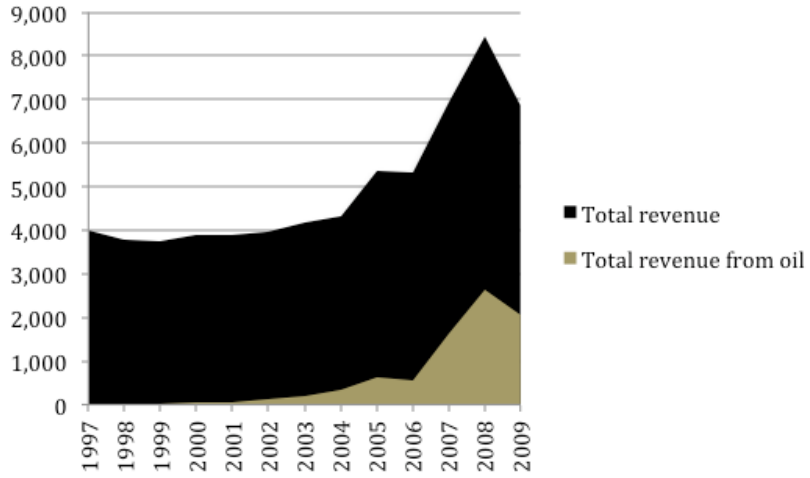


Source: Data on total provincial revenue are from the Department of Finance Canada, Fiscal Reference Tables October 2010, Table 25 AB. Non-renewable energy resource revenues are from

Energy Alberta Annual Reports 1998-1999, 2001-2002, 2006-2007 and 2009-2010 available from www.energy.gov.ab.ca/Org/Publications (accessed March 9, 2011).

In NL, the impact of the oil sector on government revenue has been delayed compared to AB, given the much later start of oil production in this province. But oil revenues have quickly ramped up over the last five years as projects have matured and hit "pay out," shifting the applicable royalty regime to provide for a much greater share to the provincial government (figure 18).

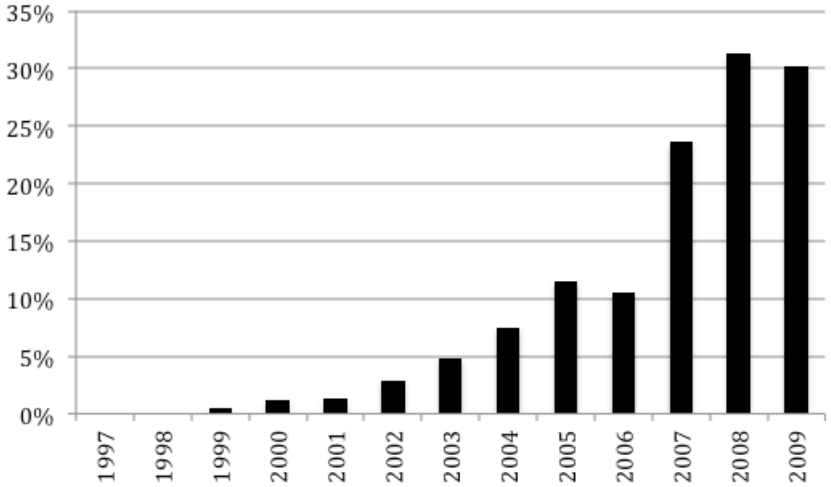
Figure 18: NL Government Total Revenue and Oil Revenue (in millions of Canadian dollars, in current dollars)



Source: Total provincial revenue data are from the Department of Finance Canada, Fiscal Reference Tables October 2010, Table 17 NL. NL oil revenue data for 1997-2005 are from "Public Accounts of Newfoundland and Labrador 1997 to 2005 Volume III" and, for 2006-07 to 2009-10 data, the "Report on the Program Expenditures and Revenues of the Consolidated Revenue Fund." These revenues are primarily from royalties with a small contribution from corporate income taxes (CIT) and, smaller again, from the Offshore Revenue Fund. (The latter fund includes forfeitures, registration and issuance fees, penalties and other amounts payable (excluding royalties) from offshore exploration.) But note that the CIT noted here refers only to taxes on offshore extraction. It does not include taxes on onshore business associated with the offshore, such as office costs; it does not include taxes on indirect or induced business. Therefore, these numbers reflect only the direct offshore revenues from oil development. Royalties data used are those on a cash, rather than accrual, basis.

The trend is made evident by considering the high percentage of total provincial revenue now coming from oil—this sector now accounts for over 30% of total provincial revenue (figure 19) and this is expected only to increase.

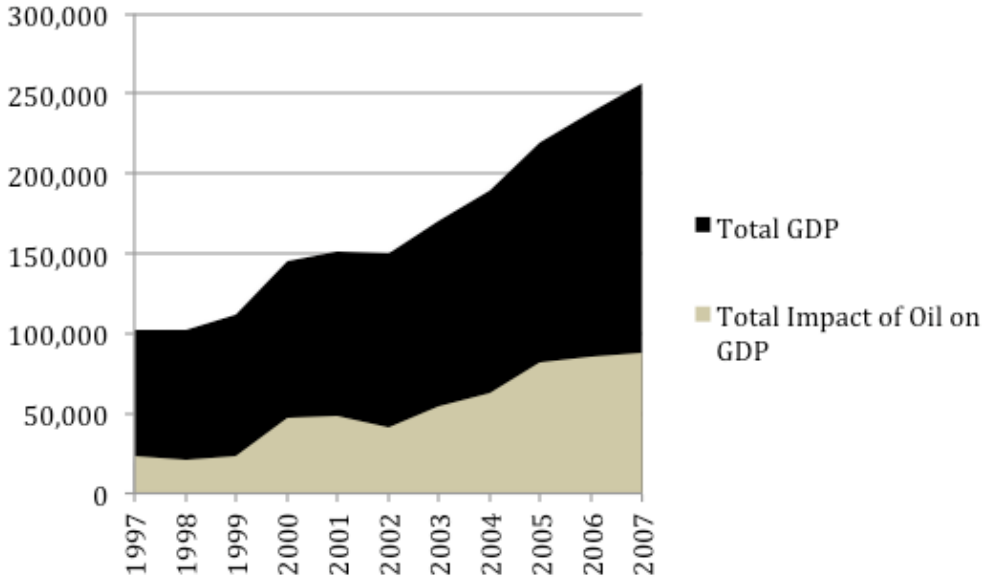
Figure 19: NL Government Revenues from Oil (% of total)



Source: Total provincial revenue data are from the Department of Finance Canada, Fiscal Reference Tables October 2010, Table 17 NL. NL oil revenue data for 1997-2005 are from "Public Accounts of Newfoundland and Labrador 1997 to 2005 Volume III" and, for 2006-07 to 2009-10 data, the "Report on the Program Expenditures and Revenues of the Consolidated Revenue Fund." These revenues are primarily from royalties with a small contribution from corporate income taxes (CIT) and, smaller again, from the Offshore Revenue Fund. (The latter fund includes forfeitures, registration and issuance fees, penalties and other amounts payable (excluding royalties) from offshore exploration.) But note that the CIT noted here refers only to taxes on offshore extraction. It does not include taxes on onshore business associated with the offshore, such as office costs; it does not include taxes on indirect or induced business. Therefore, these numbers reflect only the direct offshore revenues from oil development. Data are in current Canadian dollars. Royalties data used are those on a cash, rather than accrual, basis.

In addition to a high proportion of total revenues coming from non-renewable energy (in great part from oil), AB also sees its GDP correlated with the impact of the oil and gas sector, as shown in figure 20.

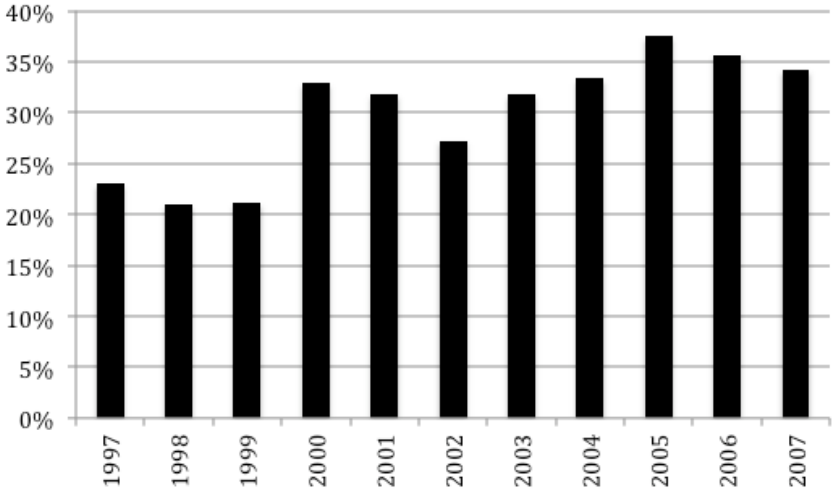
Figure 20: Oil and Gas Sector's Contribution to Total GDP in AB (in millions of Canadian dollars, in current dollars)



Source: Data on total GDP for 2000-2009 are from Statistics Canada, CANSIM Table 384-0002 "Gross domestic product (GDP), expenditure-based, provincial economic accounts." Data for 1997-1999 are from Statistics Canada, CANSIM Table 381-0015 "Gross Domestic Product by Industry - Provincial and Territorial." On the total impact of the oil and gas sector, data are from Statistics Canada, CANSIM Table 379-0025 "Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS) and province." Data selected to calculate the total impact include those on oil and gas extraction, support activities for mining and oil and gas extraction, oil and gas engineering construction, petroleum and coal products manufacturing, basic chemical manufacturing, and pipeline transportation. The selection of data to include in this calculation was based on advice from Bruce Cooke, Industry Accounts Division, Statistics Canada.

In terms of dollar value, the data show that in 2007 (the last year of available data on this province), the oil sector accounted for $87.5 billion of the total $255.8 billion provincial GDP. Data presented in figure 15 below show the oil and gas sector as accounting for as much as 37.5% of the total GDP, averaging 33% since the post-2000 boom. Over the longer 1997 to 2007 period of available data, rates were still high at an average of 30%.

Figure 21: Percentage of Total GDP from Oil and Gas Sector in AB

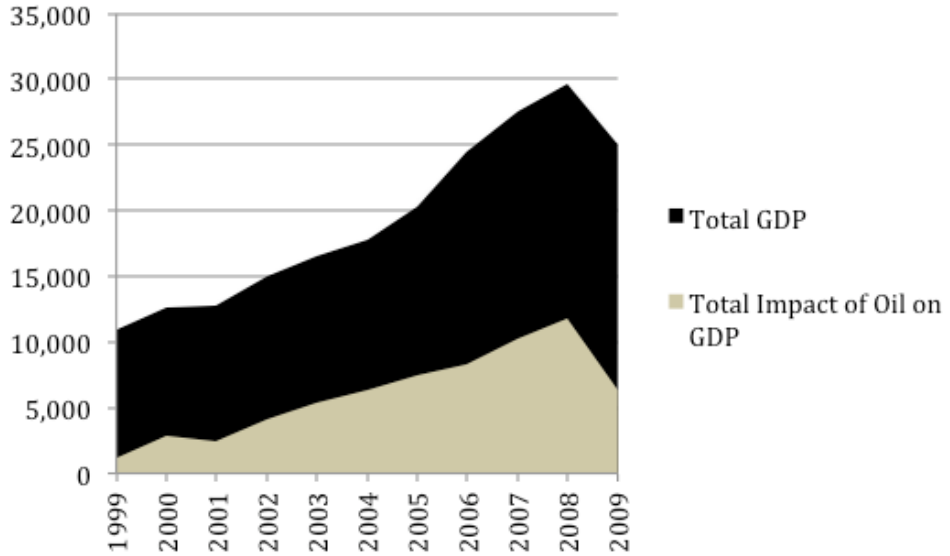


Source: Data on total GDP for 2000-2009 are from Statistics Canada, CANSIM Table 384-0002 "Gross domestic product (GDP), expenditure-based, provincial economic accounts." Data for 1997-1999 are from Statistics Canada, CANSIM Table 381-0015 "Gross Domestic Product by Industry - Provincial and Territorial." On the total impact of the oil and gas sector, data are from Statistics Canada, CANSIM Table 379-0025 "Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS) and province." Data selected to calculate the total impact include those on oil and gas extraction, support activities for mining and oil and gas extraction, oil and gas engineering construction, petroleum and coal products manufacturing, basic chemical manufacturing, and pipeline transportation. The selection of data to include in this calculation was based on advice from Bruce Cooke, Industry Accounts Division, Statistics Canada.

However, even these numbers may under-rate the full GDP impact of oil on the provincial economies as they have difficulty capturing the complete "multiplier effects" of the sectors' spin-offs, such as workers' spending. These data are therefore potential underestimations of oil impacts on the economy.

In recent years, NL finds itself in a remarkably similar situation to AB with regard to GDP. The Government of NL now acknowledges that "over half" of NL's rapid GDP growth is "attributed directly" to the oil sector (Department of Finance 2010, 9), as demonstrated in figure 22.

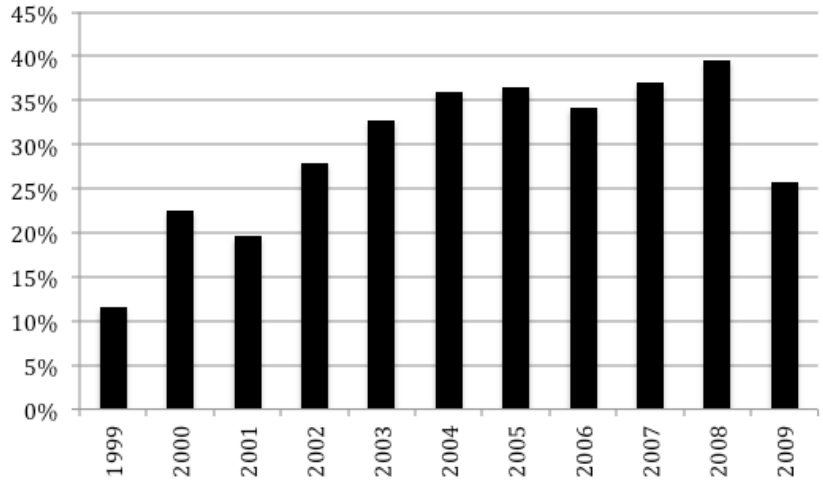
Figure 22: Oil Sector's Contribution to Total GDP in NL (in millions of Canadian dollars, in current dollars)



Source: Data on NL's total GDP shown for 1997-2007 are from Statistics Canada, CANSIM Table 381-0015 "Gross Domestic Product by Industry - Provincial and Territorial (Annual)." Data for 2008 is an estimate provided by the Government of NL (Department of Finance 2009). Data for 2009 and 2010 are estimates from The Government of NL (Department of Finance 2010, 6). To ascertain oil's contribution to total GDP, I could not use data from Statistics Canada as oil and gas extraction data are confidential given the low numbers of operators. Therefore, I am using the calculations of oil's GDP impact from Mark Shrimpton's most recent report (Stantec 2009).

The GDP boom in NL is definitely an *oil* boom. Just prior to the recession, in 2008 the oil sector contributed $11.7 billion of NL's $29.6 billion dollar economy. Graphing the impact of oil on total GDP in terms of a percentage clearly emphasizes how oil dominates GDP growth in this province. Figure 23 demonstrates that the oil sector accounted for 39.6% of total GDP just prior to the recession, averaging 29.4% over 1999-2009, or 33.7% from 2002-2009.

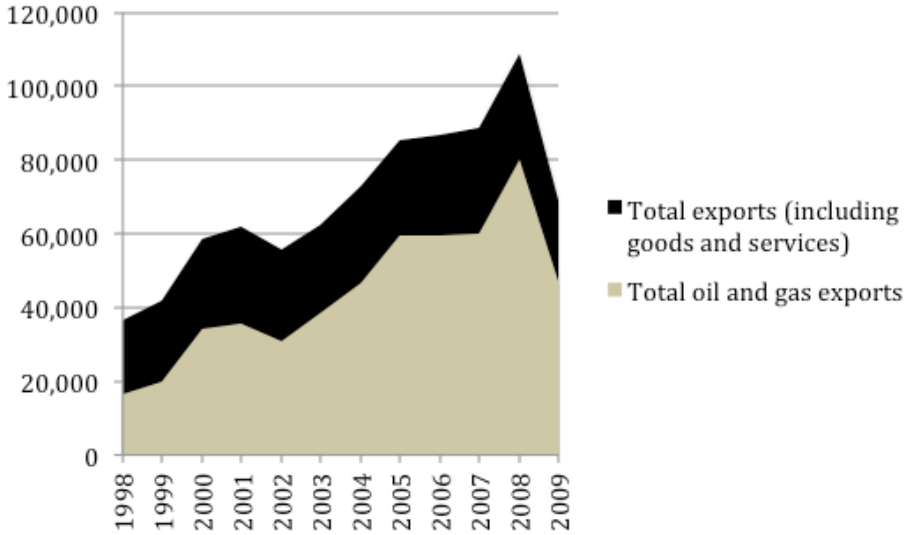
Figure 23: Percentage of Total GDP from Oil and Gas Sector in NL



Source: Data on NL's total GDP for 1997-2007 are from Statistics Canada, CANSIM Table 381-0015 "Gross Domestic Product by Industry - Provincial and Territorial (Annual)." Data for 2008 is an estimate provided by the Government of NL (Department of Finance 2009). Data for 2009 and 2010 are estimates from The Government of NL (Department of Finance 2010, 6). To ascertain oil's contribution to total GDP, I could not use data from Statistics Canada as oil and gas extraction data are confidential given the low numbers of operators. Therefore, I am using the calculations of oil's GDP impact from Mark Shrimpton's most recent report (Stantec 2009).

Even more striking than the oil sector's impact on provincial revenue and GDP for both cases is how the oil sector accounts for the lion's share of total exports. Data on AB is depicted in figure 24 which shows that at peak revenue in 2008, total exports in AB were valued at $109 billion and the oil and gas sector (including tar sands bitumen, of course), accounted for $80.1 billion.

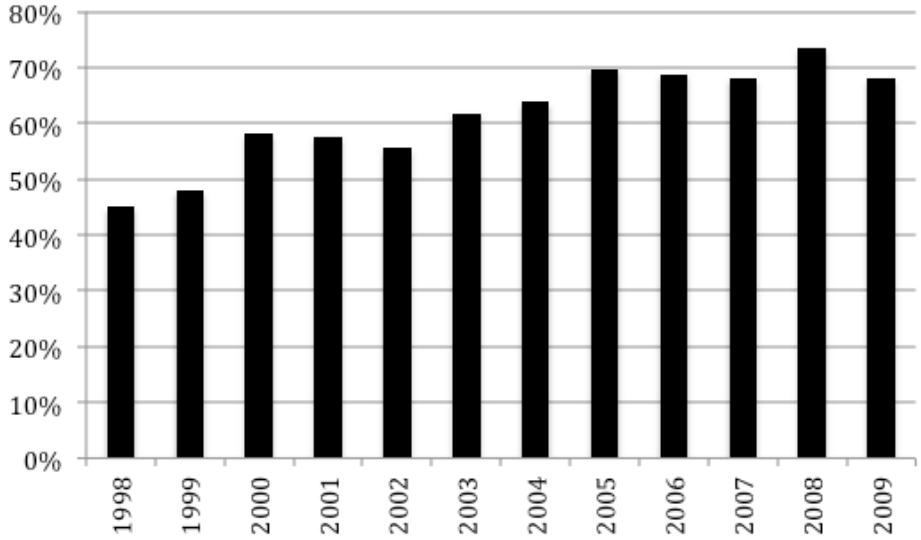
Figure 24: Oil and Gas Exports & Total Exports in AB (in millions of Canadian dollars, in current dollars)



Source: Data on total and oil and gas sector exports for 1998-2007 are from Statistics Canada National Economic Accounts, CANSIM Table 386-0002, "Interprovincial and international trade flows at producer prices, annual," referring to international exports and including lines 9, 28 and 29 as oil sector exports. 2009 and 2008 data are from the Government of AB (International and Intergovernmental Relations 2009). 2008 data on total exports (a missing piece not included in the 2009 report above) are from another Government of AB publication (International and Intergovernmental Relations 2008).

On average across the 1998-2009 period of available data, percentages of total export value coming from this sector are very high at 62% on average. Since 2005, this has intensified to an average of 70% (figure 25).

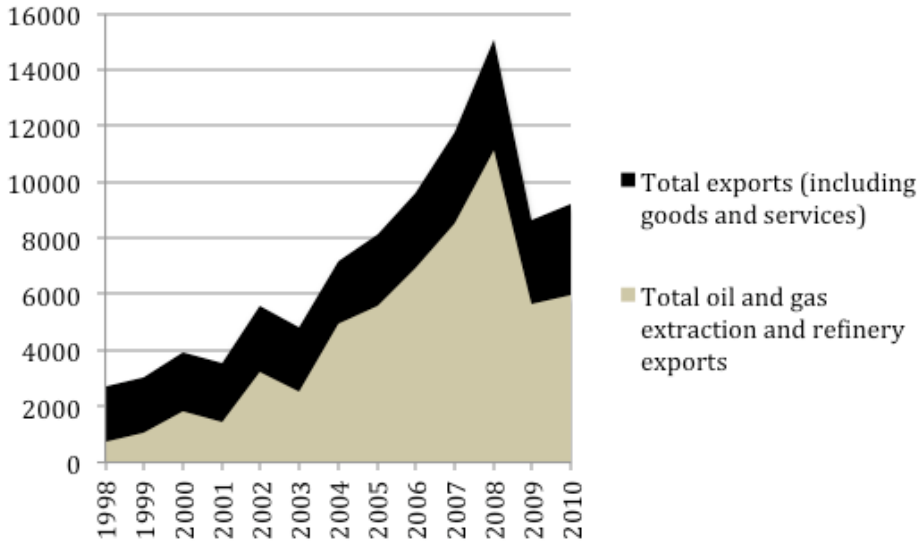
Figure 25: Percentage of Total exports from Oil and Gas Sector in AB



Source: Data on total and oil sector exports for 1998-2007 are from Statistics Canada National Economic Accounts, CANSIM Table 386-0002, "Interprovincial and international trade flows at producer prices, annual," referring to international exports and including lines 9, 28 and 29 as oil sector exports. 2009 and 2008 data are from the Government of AB (International and Intergovernmental Relations 2009). 2008 data on total exports (a missing piece not included in the 2009 report above) are from another Government of AB publication (International and Intergovernmental Relations 2008).

NL's export dependence on oil is equally pronounced. As shown in figure 26, NL's export revenues follow oil export revenue.

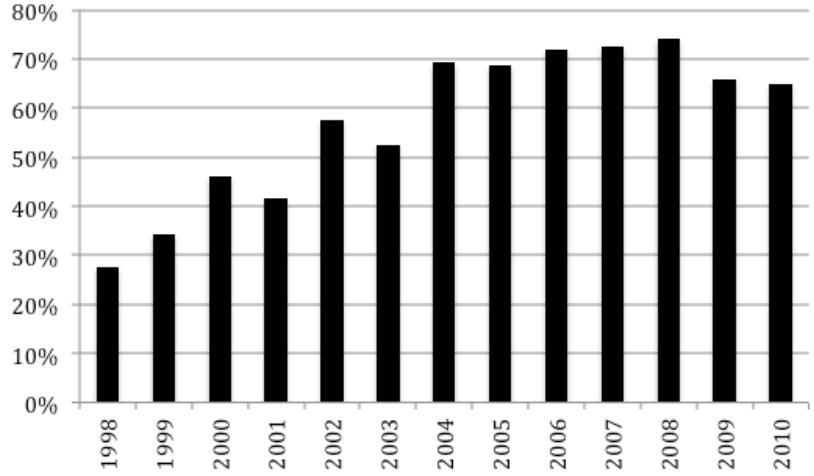
Figure 26: Oil Exports & Total Exports in NL (in millions of Canadian dollars, in current dollars)



Source: Industry Canada Trade Data Online, Canadian Industry Trade By Industry (NAICS codes), available via strategis.ic.gc.ca.

At the peak in 2008, the province had $15.1 billion in exports, with $11.1 billion from oil alone. Oil sector exports in NL averaged 57% of total exports over the 1998-2010 with a marked intensification to an average of 70% since 2004 (figure 27).

Figure 27: Percentage of Total Exports from Oil Sector in NL



Source: Industry Canada Trade Data Online, Canadian Industry Trade By Industry (NAICS codes), available via strategis.ic.gc.ca.

NL and AB meet the threshold of high resource dependence as established by the literature across every major indicator (oil's impact on government revenue, GDP and exports). As shown above, AB's oil exports have met the threshold throughout the decade of this study and the same is true of oil's impact on revenue and GDP impact since 2000. NL, with its oil coming on much later, meets the "oil dependent" threshold for revenue only since 2008, but passed the one-third mark for exports in 1999 and for GDP in 2003. Both provinces are significantly focused on oil as the primary economic driver, almost to the exclusion of other sectors. Economic diversification is not an obvious trait of these cases.

Now the more complicated question is if these cases experience the economic and political impacts associated with this high dependence. While these impacts are not the focus of this project, below I briefly outline the major economic and political

consequences of the boom. Then I discuss in more detail what is the focus of this study, the environmental regulatory impacts of the oil dependence established above.

Economic Impacts

At first glance, both cases contradict the resource curse theory in terms of economic impacts. For rather than experiencing slowed economic growth, both provinces are leading the country in GDP growth. This has long been true for AB but in NL the growth is even more striking: in recent years, oil has permitted a complete economic about-turn, converting it from a "have not" province dependent on equalization payments from the federal government, to a "have" province that now fights to protect its oil revenue from federal "clawbacks" in the federal formula. This is a major transformation for a province that has found itself in last place on most economic indicators since confederation with Canada over the last sixty years.

The resource curse theory has us expecting *slowed* economic growth in cases with severe dependence on oil. But in AB and NL, we see only strong GDP growth. That said, we could argue here at least in the NL case that not enough time has passed to assess the long-term economic impacts.

However, beyond GDP, there is perhaps a less-acknowledged economic element of the resource curse that is at work in these provinces: the tendency for oil-rich regions to become more unequal due the concentration of wealth in these economies. Ross' work provides insight into the relationship between high dependence on natural resources and inequality. The causal relationship he observes is that intense dependence on mineral resource, on oil in particular, can heighten "vertical" and "horizontal" in equality (between, respectively, the classes of the rich and poor, and across geography) as oil dependence tends to favor particular kinds of workers and particular regions over others (Ross 2001b, 2007). Ross has also extended this idea to note the differential impact of oil-based economies on men and women, with men having more access to

high-income oil jobs versus women who experience income losses as their employment opportunities decline in sectors struggling to compete with the oil sector, such as manufacturing (Ross 2006).

The Parkland Institute has been the leading institution tracking these oil-induced inequalities in AB. Research from the Institute shows that the oil boom has not been felt equally; rather, oil benefits have "trickled up" to the top ten percent income earners in AB and to (mostly foreign) companies. Where wage increases have been noted in middle-incomes, this is due to Albertans working more rather than them gaining more from the oil boom. As Gibson notes, "middle income Albertans are no better off due to the boom while low income Albertans are worse off" (Gibson 2007).

As a specific example, contrary to benefiting from the oil boom, steep rises in housing costs that are putting a major financial stress on middle and low-income people. Housing shortages particularly in the extraction region around Fort McMurray are described as "extreme" (Gosselin et al. 2010) due to the influx of workers into the area. But the impacts extend in many other cities in AB. Across AB, vacancy rates declined alongside rapid increases in housing and rent prices. This has led to a "crisis in homelessness" in the province (Gibson 2007, iii).

Another economic resource curse impact of note in AB relates to the way the provincial government uses oil revenue to lower taxes. As noted in the first chapter, the resource curse literature understands personal income taxes as creating a strong tie between governments and citizens: governments dependent on taxes are more apt to be accountable to citizens; taxed citizens are more apt to demand good governance, better services, and so forth. But in a petro-state, governments are freed from depending on public taxes thanks to resource rents. This weakens the line of accountability between governments and citizens and instead builds a stronger bond between governments and the providers of oil money, the oil industry (Shaxson 2007; Stevens and Dietsche 2008). This approach may function in the short term but when oil production or oil

prices decline, governments in this situation have limited resources on which to draw to maintain services (see also Karl 1997).

AB exhibits this kind of situation. The Government of AB frequently boasts that the province has the lowest taxation rates and lowest rates of tax collection in the country. Comparative tax take shows AB as having the lowest tax share, and far below that of the next-lowest taxing province. AB's new taxation regime, a "flat tax" system has further reduced the government's intake of tax revenue by as much as $5.5 billion (Parkland Institute 2009). And as anticipated by the literature, the undermining of the tax base means that during recession periods such as the present one, the province faces deficit budgets and, therefore, must cut social program cuts (Gibson and Acuña 2011). The natural resource revenue of the boom is not being saved or productively invested in ways that would weather an oil bust (Warrack and Keddie 2002; Thompson 2008).

In NL, research on the economic underbelly of the oil boom is even scarcer than in AB. But in the (albeit limited) literature that exists, it seems the understated economic problems of the oil boom are very similar to the AB case. As oil revenue began to impact the province, Stanford (2003) pointed to the inequalities of the boom and questioned the long-term viability of NL's oil economy. He showed strong GDP growth from oil in the province but also that local benefits did not necessarily follow. Income growth predominantly concentrated on corporate profits (which have "quintupled") while labor income saw only 29% growth. Corporate profits in NL have far outpaced even AB. Since 1997, half of GDP growth was "captured in corporate profits"—many of them foreign. A Petroleum Research Atlantic Canada publication recognized this issue as well, noting that "much of the business income earned in the petroleum industry accrues to non-resident companies" (Community Resource Services Ltd. 2003, 13).

Stanford's concerns are now being extended in Cadigan's new work. Cadigan's (forthcoming) analysis of economic trends indicates that the boom benefits have not been felt by the working class in NL. He shows how the oil sector is more capital

intensive than it is labor intensive—jobs are not a major benefit of the oil boom[84] and many new jobs that are created by oil sector spin-offs are not good jobs (they are mostly in the low-wage services sectors). Women and workers outside the Avalon region, where the economic impacts of the boom have been concentrated, have been particularly excluded from oil benefits. Outmigration from the province continues due to this employment problem. Who benefits from the oil boom in NL? Cadigan demonstrates how corporations (again, mostly foreign) take the largest share of the benefits.

Similar to AB, one of the Government of NL's methods of sharing the spoils of the boom is through lowering personal tax rates (as opposed to implementing natural resource savings programs). The government has proudly noted that since 2007, it has "delivered the biggest personal income tax reductions ever in Newfoundland and Labrador" with a recent press release announcing more across-the-board tax reductions to come. But while the title of the recent press release announcing the tax cuts indicated that these new economic initiatives would "Provide Assistance to People Who Need it Most," the highest tax reduction (by 4.7%) went to those in the highest income bracket (Department of Finance 2011).

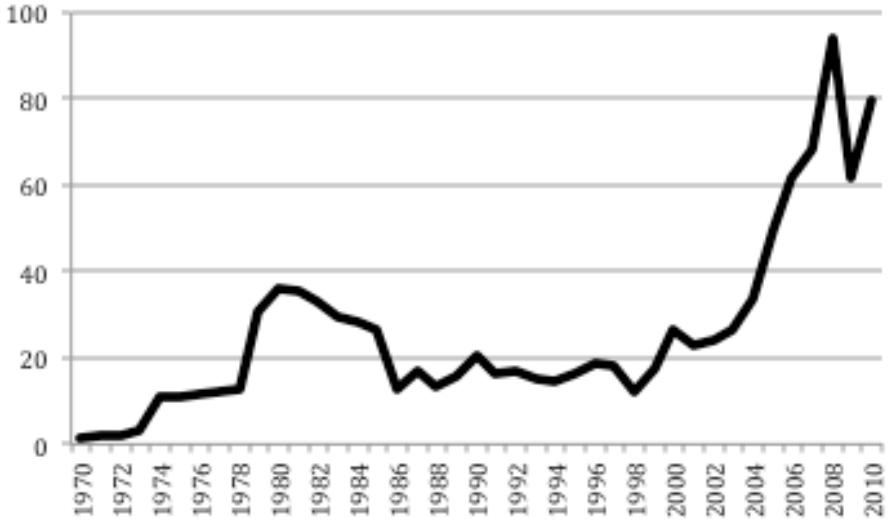
To summarize, on the surface there is evident economic growth in both cases as measured by our blunt instruments of GDP growth, revenue and exports. This growth appears to be contrary to the standard resource curse theory. But what these upward trends miss, however, are the problems of inequality across regions and economic classes, another problem of relevance in the resource curse literature. There is economic growth in these provinces from the oil boom, just not for everyone.

There is also the problem of the ever-deepening concentration of these economies on the oil industry (and a simultaneous weakening of the tax system) rather than a

[84] Shrimpton similarly notes the limited impact the oil economy on resolving the long-standing problem of high unemployment rates in the province (Stantec 2009, 10).

commitment to diversification that will be more sustainable when the oil runs out. And in the meantime, as these cases remain focused on oil, they are vulnerable to the volatility of oil price booms and busts (see figure 28 below for a depiction of oil price volatility since 1970) which have a direct, tangible impact on government budgets and, therefore, the delivery of public services.

Figure 28: Crude Oil Spot Prices (in U.S. dollars per barrel, nominal prices)



Source: Oil price data for 1970 to 2008 are from the 2010 OECD Factbook 2010: Economic, Environmental and Social Statistics. 2009 and 2010 data are from Dow Jones & Company, available at http://research.stlouisfed.org/fred2/series/OILPRICE/downloaddata?cid=98.

Neither case is following the Norwegian example to shelter economies and public coffers from oil's finitude and volatility. NL lacks a natural resource fund; AB gutted its Heritage Fund. Both have engaged in pro-cyclical spending (spending during the boom rather than saving to be able to stimulate an economy in recession). Both governments have tied their own fiscal hands by eroding the tax base in the good times via reducing personal and corporate taxes. In the future, citizens in both cases will come to the conclusion that the real beneficiaries of the oil industry are American companies, buyers and shareholders, but not the owners of the resource.

Above I have focused on the economic resource curse impacts in AB and NL. However the extent and significance of these petro-provinces (primarily in AB) is such

that their impacts are felt nationally as well. One impact in line with the resource curse is particularly evident. Contrary to the assumption that Canada is blessed by natural resources, recent literature on Canadian political-economics is now arguing that the country is indeed experiencing the "Dutch Disease"—notable particularly in the decline of the manufacturing sector—due to the "petro-loonie."

A 2006 Library of Parliament publication noted the applicability of the Dutch Disease to Canada by acknowledging that energy has become the "single largest export sector" in the country since 2005 and that manufacturing jobs have been in decline since 2003. It noted how provinces dependent on manufacturing (Ontario and Quebec) experience lower growth, while oil-rich AB and NL experience excellent economic growth. There is growing recognition that rather than diversifying its economy, Canada remains in many ways a staples-based economy, now centered on oil: the Canadian dollar is now considered a "petro-dollar" (Bergevin 2006). As noted in *The Economist*, "Foreign-exchange dealers now treat the Canadian dollar as a petrocurrency" (*Of Forest and Mine; Canada's Economy* 2005). Similarly, Stanford (2008), shows how Canada is increasingly heading "back to the future," returning to its heritage as a "hewer of wood and drawer of water," an extractor of natural resources for (often) raw export. The impact of high-value natural resource exports concentrated in key provinces has resulted in a rapid descent of manufacturing in other regions.

Political Impacts

What of the negative political outcomes associated with the resource curse in these cases? Obviously there is no evidence of the civil wars exacerbated by oil wealth in many of the countries studied in the resource curse literature. What of authoritarianism? Here again, there is little evidence of this as it is understood in the developing state cases typically emphasized in the literature.

However, one obvious impact of oil development that is present in these cases as

elaborated in the resource curse literature is the political conservatism effect. The democratic implications of this trend are worrisome. As shown by Goldberg et al. (2005) in their study of American states, dependence on natural resource wealth has a "conservative" effect on politics. Concerned with the effect of resource abundance on political regimes, Goldberg et al. studied American states over seventy-three years and found natural resource wealth "serves to preserve underlying political dynamics at the time natural resources began to contribute to state finances." State actors in power at the time that resource wealth floods the state gain the resources to maintain a strong and lengthy hold on their polities. They do so, of course, by using oil rents to maintain public consent. This trend is obvious in AB and NL.

The problem is most evident in AB, the more long-standing oil province of the two, which has seen its political landscape become increasingly uncompetitive. The Progressive Conservative Party has held power for four decades, since 1971. The party took a particularly striking turn to the ideological right as well as to heavy-handed government during Premier Ralph Klein's 1992 to 2006 leadership period. Klein's governance of AB's oil boom was marked by growing "democratic deficits" such as the party's active avoidance of oppositional party and legislative budget reviews (Parkland Institute 2006) as well as tight control on public relations. AB's "post-democratic" government and the reign of "King" Klein are elaborated in detail by, for example, Brownsey (2005), Dabbs (2006), and Soron (2005). Wasteful spending by the PC government to maintain political legitimacy continues under the new premier, Stelmach. For example, the $25 million dollar 2008 public relations campaign to "rebrand" AB and the tar sands (Sampert 2005).

The province does exhibit democratic deterioration noted in resource curse theory. For example, government policy on oil development runs directly counter to public opinion in AB in key respects. Public polling has indicated that over 70% of Albertans surveyed want the provincial government to "suspend new oil sands project

approvals until environmental and infrastructure issues have been resolved." More than 80% want "increased government investment in environmental protection in the oil sands" and over 90% want requirements for GHG reductions from oil sands plants (with 70% of those surveyed wanting *absolute* reductions in GHG emissions as opposed to the per-barrel intensity based target approach of the government). Concern is also widespread about the pace of development and there is great demand for more government control of and involvement in development pacing (Pembina Institute 2007a). Yet rather than responding to these concerns, the AB Government instead launched public relations campaigns to "re-brand" the province and "greenwash" the tar sands. Rather than duly considering citizens concerns about the tar sands, provincial leaders have been adamant tar sands expansion will continue, a point made obvious in Premier Stelmach's often-repeated statement that the province will not be "touching the brake" on tar sands development (see, for example, Government of Alberta 2007; McLean 2006).

Democratic problems are noted at the highest levels of Albertan public debate. As observed by the Royalty Review Panel, "There is an absence of accountability from the government to the owners of the resource. Even with substantial effort, Albertans cannot determine whether their interests are being well served" (Hunter et al. 2007, 5). Citizen engagement has waned in this political context, a point that was particularly apparent in the 2008 provincial election which had a 41% voter turnout, the lowest in the last half-century of Canadian provincial elections (*Low voter turnout in Alberta election being questioned* 2008).

Then in NL, an increasingly more controlling, publicly inaccessible form of governance often discussed in public debates but not well documented in scholarly work. As in AB, NL saw the rise of the Progressive Conservative government just as oil revenues began to have a clear impact on the economy. The PCs and Premier Williams were elected to office in 2003 and Williams had approval ratings over his tenure until

2010 as high as 80%. Elections have been landslides in favor of the PCs given the public misconception that the PCs caused the province's transition to "have" status (as opposed to the simple fact of oil export at a time of high oil prices).

What is problematic in NL is the near-complete erosion of the opposition and the virtual elimination of opposition parties. Oppositional positions on the future of NL's economic development are nearly non-existent. Public debate on the province's economic future is exceedingly narrowly focused on oil. Alongside the lack of alternatives is the defensive and opaque PC government, a trend to be documented in a forthcoming volume on the Williams' administration (Marland and Kerby forthcoming). Williams' aggressive, concentrated leadership role is observed to have inhibited public debate.

Certainly in AB and perhaps to a lesser degree in NL, we see broader risks to participatory democracy with increasingly concentrated, exclusive parties with declining accountability to citizens. This trend is paired with the undermining of the provincial governments' ability to govern for the long term due to the over-emphasis on oil alone as an economic strategy and the erosion of the tax base.

In addition to this political fallout at the provincial level, these impacts are so great that they spill over into the national level as well. I noted at the start of section I above that there is evidence of the "Dutch Disease" at work in Canada due to the pressures of the petro-provinces. This is causing great economic problems but also political tension within the Canadian federation. The oil producing provinces are now clearly pitted against the oil-poor and often manufacture-based provinces. As the former benefit from rising oil prices, the latter face a burden of equal proportion. Regions of the country experience the same economic changes (such as the rise of the Canadian dollar) in diametrically opposed ways that make governing at the federal level contentious (Cross 2008). Further, more work is also needed on how AB in particular is assuming greater political power federally. Stanford, for example, alludes

to the "daunting political influence of Canadian resource elites (especially over Canada's Albertan-led Conservative federal government)" (2008, 7).

The cases clearly qualify as highly oil dependent and they do exhibit many of the economic and political problems associated with this kind of natural resource dependence. I note in particular the economic problems of growing inequality, wealth concentration away from the extraction sites, the erosion of tax systems, and the experience of revenue volatility, alongside the political problems of the "conservative" effect on political power and the rise of democratic deficits relating to government-public accountability and public debate.

But what of the specific focus of this research, the environmental effects of intensive frontier oil extraction and the related environmental policy regimes? As explained in the introduction, resource curse literature is void of environmental impacts, yet this is surprising given that the long-term negative economic and political effects of environmental degradation on oil-dependent societies. While some mention of the adverse environmental impacts of petro-states is made at the margins of the literature, this body of work provides only limited guidance on this kind of analysis. For this reason I joined resource curse theory with political ecology to be able to focus on human-environment interactions and environmental impacts. Thus the next section extends the resource curse literature to include the environmental impacts of the petrocracy. In so doing, I emphasize policy dynamics, an under-studied area of political ecology.

II. Environmental Policy in the Petro-Provinces

Oil extraction in NL and AB results in extremely different but similarly significant and worrisome environmental impacts. There are generalized notable risks in NL to a globally significant and unique marine environment. Worst-case blowout scenarios

estimate impacts spanning hundreds of square kilometers of ocean. In contrast, in AB there are widespread risks to the northern boreal forest system extending from the northern part of the province to as far as the Arctic Ocean.

Scientists observing the NL case note multiple specific disruptions to ecosystems and species due to seismic exploration, the chronic noise of operations, gas flaring, the presence of human structures, and species' contact with toxic materials. Major species mortality is estimated due to routine discharges as well as larger blowouts or spills. In addition, there are air pollutants, including GHG emissions, that far exceed government targets. Yet the direct impact on humans of these environmental problems is less evident given the extraction sites' distance from human settlement and ocean and wind patterns. To date, there has been only infrequent direct human experience of the environmental impacts of NL's oil extraction.

In AB, research has documented disruptions to ecosystems and habitat due to massive consumption and pollution of fresh water, the challenging legacy of toxic tailings ponds (now over hundreds of square kilometers in size and leaching into other water systems), air pollution, and enormous GHG emissions that undermine national efforts to meet emission reduction targets. But here the direct human impact is more obvious: potentially widespread health issues relating to air and water pollution are gradually being documented, particularly in downstream aboriginal communities. The loss of access to traditional lands used for subsistence living is also notable.

Political ecology analysis begins from these local, tangible environmental impacts to ask what accounts for these impacts. I have provided an answer to this question by examining the broader provincial and federal political-economy context that informs the surrounding environmental regulatory systems and shift to even broader continental and global levels of analysis in section III.

As elaborated in the section above, NL and AB have a significant and deepening economic dependence on oil and this is the critical element of the respective political-

economy contexts. Government support for this initially promising and now exceedingly lucrative industry has been multifaceted and long term in both provinces. Current tar sands and offshore oil projects were both very heavily government-sponsored industries that would not have developed without significant, longstanding government financial support. And these subsidies continue today. A primary example is the way both provinces and the federal government have honed their educational systems to address the challenges of frontier oil (such as CCS in AB and ultra-deep water and Arctic drilling in NL).

Both provincial governments have also implemented low royalty regimes to attract investment. These royalty regimes were meant to stimulate investment in oil development but they are now embarrassing losses of public revenue while the public picks up the tab for the associated environmental costs. The royalty systems leave a great deal of revenue from these public resources on the table for corporations who could not find a similar deal internationally. A false tale has been told and retold about how these frontier regions need to be made more attractive for capital investment when in reality there are few places left for private oil companies to go to access comparable reserves.

These financial subsidies to the oil industry are complemented by public relations efforts. Provincial and federal governments promote and defend the industry at home and abroad. Both levels of government stress the critical economic importance of continuing to develop these oil resources, even though the environmental risks are high. Government financial and rhetorical commitment to the frontier oil industry in these cases is then reinforced by the oil industry. This industry has made enormous investments in these developments and, therefore, has high profit expectations from them. The oil industry protects these interests through various forms of government lobbying, often led by the CAPP. Messaging to government includes emphasizing the value of the industry, stressing the costs of environmental regulations, and subtlety

threatening capital flight. Companies have also used public relations campaigns in the media and "community engagement" projects to build legitimacy locally, particularly via educational investments that ultimately help the companies to get the workers they need. More aggressive court challenges have also been used in NL.

In both cases there is a symbiotic government-industry relationship based on what House identified as a "mutuality of interests." Governments are dependent on the expansion of oil extraction that is driven by private corporations. These corporations have their own interests (profit-maximization) in oil development. So industry feeds back into government oil interests to protect its access to resources and profits. The outcome has been the development of two petro-provincial economies focused, almost to exclusion, on the oil industry.

What does this mean for the ecosystems where oil extraction occurs? They are vulnerable to the worst impacts of resource capitalism. This is manifested in the environmental regulatory system in each case, systems that are at best very weak matches to the government and industry pressures for oil development. I have discussed the main regulatory problems in detail in each case and below I provide a synthesis of the major trends across both.

Taken together, the cases highlight the federal government's reluctance to use its regulatory authority. This is obvious in EC's withdrawal in monitoring seabirds in NL and the Department of Fisheries and Ocean's reluctance to become involved in fish habitat issues in both cases. A typical explanation of this is the anti-federal sentiment in both provinces—both places have been battlegrounds for provincial rights against the federal government. But given the broader political trends across Canada over the last decades, federal reluctance to intervene might actually be another sign of devolution to the provinces, a cost-saving mechanism for the Canadian government.

Within this regulatory system devolved to the provinces, industry has a preeminent role, to the point that oil companies even *initiate* oil exploration and

production. Parcels released for auction at the earliest stages of oil development are based on industry requests rather than public land use planning processes (with a severe lack of planning especially evident in NL).

From this stage, there is a notably weak or poorly timed consideration of environmental impacts. This is obvious in the absence of formal, stringent reviews of environmental impacts particularly at the land leasing stages in each case as well as in the way that more substantive environmental reviews are taken as non-binding informational exercises that cannot impede environmentally problematic projects. Both cases show the repeated dominance of economic interests over environmental concerns within the government bureaucracy.

These review processes are intended to include public consultation however this is also problematic in both cases. Public consultation is very limited or non-existent at the rights issuance stage. There is also a concern that the threshold of those who are "directly affected," particularly in the AB case, is too limited and that, therefore, no one has the legitimacy to voice concerns over "unoccupied" land. When the public is engaged at the point of environmental assessments in both cases, participants often protest that their concerns go unheard or that the results of public consultation processes are non-binding and therefore only project "window-dressing." There are also the problems of how the public can be effectively involved given the constraints of time and expertise, especially compared to the massive corporate resources to intervene. Major problems with transparency are also obvious in the NL case where access to basic data is limited by corporate confidentiality.

As projects unfold, other regulatory trends become apparent in AB and NL that are unique to the specific environment in each case. For example, in NL regulations on waste disposal are questionable given the exemptions and the nature of the regulations that do exist (they are guidelines rather than hard limits and often the limits are overly permissive, for example with regard to drill cuttings and produced water). Spill

response is also of concern. In AB, water withdrawals are a pressing matter because the regulations are not in sync with ecosystem limits. Water has been over-allocated to companies and multi-stakeholder or cross-departmental initiatives have failed to resolve this problem. Both cases also share specific regulatory absences. For example, both lack the capacity to independently monitor environmental impacts. Both have compliance mechanisms that are infrequently used or do not provide incentives for industry to change behavior.

There are also many shared specific regulatory gaps in these provinces. Regulations on GHG emissions are at the forefront. There are few restrictions on carbon emission in NL's offshore—the province continues to await regulatory standards from the federal government. In AB, regulations do exist but they have long been criticized as resulting in *increased* emissions because they are intensity-based rather than based on absolute caps. Both cases also struggle with how to remediate ecosystems after projects terminate. Reclamation in both sites is undefined or ambiguous—or potentially technologically impossible. Success rates to date in AB have been shockingly low. As a third example of common regulatory gaps, there are clear institutional difficulties in both cases in coming to grips with cumulative impacts. This is due to the lack of baseline data (particularly in NL) as well as the complexity of multi-stakeholder, cross-department initiatives in reaching consensus (in AB).

These environmental policy trends mirror in many ways the common problematic environmental policy trends in the neoliberal capitalist system as identified by Heynen et al. (2007, 6) which include privatizing environmental regulation and commodifying more of the environment, reducing corporate regulations (or abstaining from regulating corporations), the gutting of government environmental programs, dovoling regulatory responsibility to lower levels of government that are poorly resourced, and using market-based regulations as opposed to government-directed standards. AB and NL fit this characterization well. Both cases exhibit neoliberal

regulatory tendencies that prize corporate convenience and benefit over environmental and public protection.

What we find overall, therefore, is that the government/industry mutuality of interests to forward frontier oil development in these cases has been conveniently paired with an environmental regulatory regime that is similarly weakened or underutilized. I note also that this analysis may be delineating a particular environmental regulatory regime in these petro-provinces that can be extended to other similar cases. The research I had initially conducted for this project on Alaska and Wyoming, as well as new research on SK (seventy-five additional interviews combined with reviews of scholarly, "grey," and publicly-oriented literature), certainly confirms these regulatory trends. I hope to extend the analysis to include these cases in future writing.

Understanding these regulatory trends within the context of the (predominantly) provincial political-economic context is no doubt essential to understanding the environmental impacts of frontier oil extraction in NL and AB. But to see the fundamental motivation for this system, I place the domestic circumstances within a continental and global context.

III. America's Oil Colony in the Global Petro-Capitalist Context

As emphasized in political ecology methodology, a rich and complex understanding of the human-ecological interface is an essential place to start analysis. But we need a globally contextualized perspective that understands individual cases as impacted by, and impacting, sites and trends more distant from them. Oil extraction from the cases studied here only makes sense from the wider perspective of the continental and global petro-capitalist system. The basic driving forces of the issues analyzed over the last chapters emanate from these broader sites. Taking a more distant view of these cases

from the global and continental perspective allows us to situate AB and NL as key parts of North American petro-capitalism. Therefore, below I re-embed the cases in a larger political economy of oil.

World oil consumption has nearly doubled since 1971. In terms of actual volumes, global oil demand was at 87.8 million barrels per day in 2010 (International Energy Agency 2011), driven in great part by the need for transportation fuels in OECD countries where two-thirds of global oil is consumed. Within the OECD, the U.S. clearly dominates oil demand. Consuming over 20% of total global oil, the U.S. is the largest oil consumer in the world. However, recent *new* growth in oil demand is coming from non-OECD countries, and nearly half of this new demand is from China (International Energy Agency 2010a, 33, 2010b, 4).

While demand ramps up, increases in supply are less certain. The "all-time peak" of global conventional oil production was in 2005 at 70 million barrels a day, nearly 20 million barrels a day less than 2010 global consumption. Several strategies are used to make up the shortfall between conventional supply and demand. Oil producers attempt to expand production by exploring for secondary fields at the margins of major "mature" fields. Or they attempt to squeeze the last drops out of mature fields using new enhanced oil recovery technology. But the real hope for enhanced supply is in seeking new supplies in frontier regions or unconventional production fuels. To date, unconventional oil and natural gas liquids are making up for declining conventional production (International Energy Agency 2010b, 4).

The remaining proven oil reserves are concentrated in Saudi Arabia, Canada, Iran, Iraq and Kuwait. Approximately 70% of these remaining oil reserves are in OPEC countries (International Energy Agency 2010a, 114), leaving Canada as the leading major non-OPEC supplier. Yet Canada's oil reserves are almost entirely tar sands deposits in AB and SK (Howard et al. 2009, 47). As Rubin notes, although expansions in offshore deep-water extraction will make a dent in demand growth, from now on most

new non-OPEC oil production will primarily come from unconventional sources such as the tar sands (Rubin is cited in Rowell 2007).

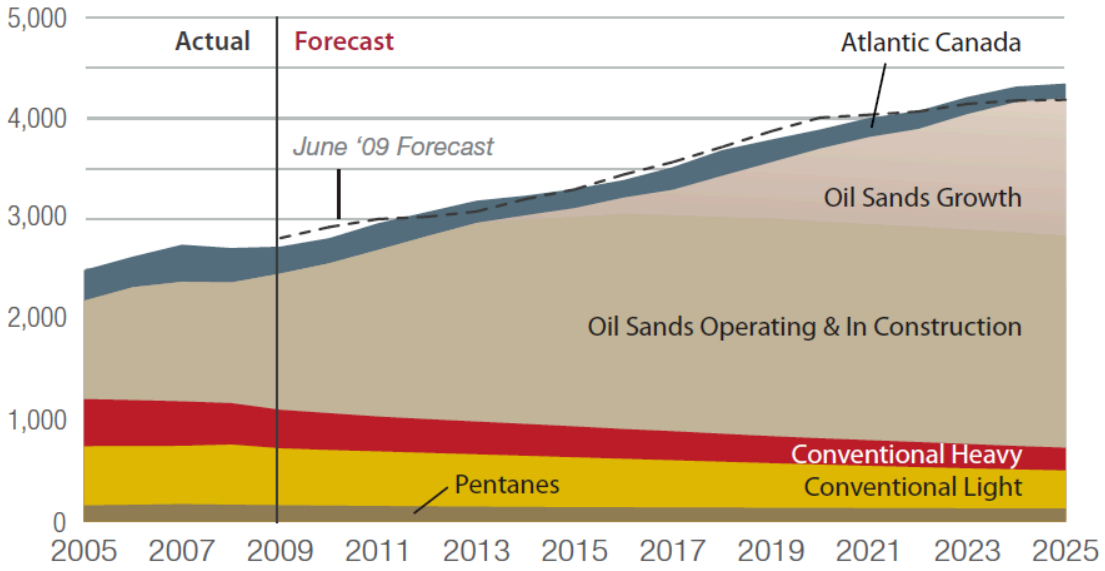
That Canada has the world's largest oil non-OPEC supply has caught the attention of American oil security analysts, particularly since energy security fears have intensified in recent years. There has been a growing public and political recognition of the U.S.'s need for oil and the growing dependence on foreign oil since the 1970s and the events of September 11, 2001, further drove home this point. The Bush administration's response to the heightened energy anxiety was the *National Energy Policy* released in May 2001, developed by the National Energy Policy Development Group led by Vice-President Cheney. The policy stressed the importance of securing geographically closer oil reserves from more politically stable supplies in North America. Canada's tar sands were specifically identified as part of the solution to American energy security (McCullum 2005, 19). The problem of oil insecurity and the solution of diversifying oil by finding reserves closer to home, primarily by drawing on Canadian resources, has become a frequent theme in American political discourse.

The American need for closer, more politically stable oil reserves has produced a very close relationship between the two countries. Gattinger (2005) describes the Canada-U.S. energy relationship as "mutual interdependence" but what kind of interdependence is it? This characterization by no means signals a relationship of equality.

Both Canada and the U.S. share the problem of extremely high per capita oil consumption rates. But absolute consumption and available reserves to maintain this consumption are vastly different. The U.S., the largest global oil consumer, uses 18.7 million barrels of oil per day, 22% of global consumption. In contrast, Canada consumes of 2.2 million barrels per day, representing 2.6% of global consumption (2009 estimates). Comparative supply capacity is also very different. The U.S. can draw on domestic proven oil reserves estimated at only 19.1 billion barrels. Therefore, the U.S. must rely

on foreign oil imports. Indeed, the U.S. is the also the largest global oil importer, importing 11.3 million barrels per day in 2008 (calculations based on data from Central Intelligence Agency 2011). In contrast, Canada has 175.2 billion barrels of oil in reserve. Predictions for total Canadian oil production are optimistic given the high hopes placed on expanded tar sands production. The CAPP anticipates total Canadian daily per barrel production to increase by 63% between 2009 and 2025—from 2.7 million barrels per day to 4.3. Growth will come solely from Western Canada's tar sands deposits in both AB and SK (Canadian Association of Petroleum Producers 2010a, i, 2). The forecasted oil production trend is illustrated below.

Figure 29: Actual and Forecasted Growth in Canadian Oil Production, By Fuel Type (in thousands of barrels per day)



Source: CAPP's 2010 report "Crude Oil: Forecast, Markets & Pipelines," i.

Apparently possessing oil in excess, Canada has proven eager to accommodate American energy needs. Canadian and provincial officials frequently and explicitly underline the secure, reliable and close oil resources available to the U.S. just north of the border. And this "open door" rhetoric—combined with U.S. need—has had a real trade impact. U.S. oil imports from Canada have grown substantially, from 242 million

barrels per year in 1990 to 658 million barrels in 2007 (Hughes 2010, 2697). Most recent available data indicates Canada exported 682 million barrels of oil to the U.S. in 2009—73% of Canadian production is directly exported to the U.S., while the remaining 27% predominantly goes to refineries, many of which, in turn, export to the U.S.[85]

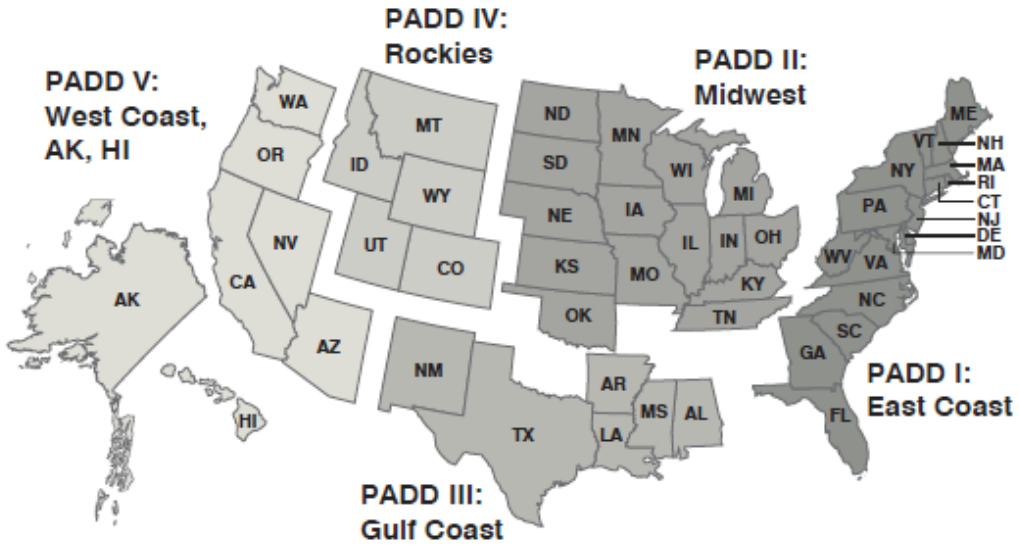
The U.S. has begun to shift from importing from OPEC countries to importing from Canadian sources. Canada took over Saudi Arabia's role as the number one foreign supplier of oil to the U.S. in spring 2004 (McCullum 2005, 5). Canada, the new top supplier of American oil imports, provides approximately 15% to 20% the U.S.'s total oil imports (U.S. Energy Information Administration 2009a).

Exporting to the U.S. is, of course, the goal in the major provincial oil producers studied here. AB is reported to have exported over 1.37 million barrels of oil per day to U.S. markets in 2008. This is 76% of the province's total production.[86] Furthermore, of the oil that remains in AB for refining, much of this is also eventually exported to the U.S. Therefore nearly the entirety of Albertan oil is exported to the U.S., specifically to American Midwest states (to Petroleum Administration for Defense District (PADD) II) or to Rocky Mountain states (PADD IV) (U.S. Energy Information Administration 2009b). A depiction of the PADD system, provided by the CAPP (2010a, 11), is below.

[85] Data are from Statistics Canada's CANSIM Table 126-0001.

[86] This percentage is based on AB production volumes of 0.5 million barrels per day for conventional crude (International and Intergovernmental Relations 2008) and 1.31 million barrels per day for tar sands (Alberta Energy 2009a), for a total production of 1.81 million barrels per day.

Figure 30: U.S. Petroleum Administration for Defense Districts



Source: CAPP's 2010 report "Crude Oil: Forecast, Markets & Pipelines," 11.

NL oil production is similarly destined for U.S. markets. According to Hughes' analysis of 2007 data, 73% of oil produced in Eastern Canada (96% of which is produced by NL) is exported directly to the U.S. eastern seaboard, to PADD I. The remaining 34% goes to Atlantic Canadian refineries which in turn export two-thirds of their product to the U.S. (2010, 2692-95). In 2009, every barrel of oil that NL exported directly internationally went to the U.S.[87]

This export-orientation of the Canadian oil industry represents an important change in the national approach to oil regulation. Following the 1973 and 1979 oil price shocks (see figure 22 above), the Canadian government, led by Prime Minister Trudeau, initiated the National Energy Program to ensure Canadian oil security. The policy restrained oil exports, created national oil companies, commenced price controls and encouraged far more domestic exploration in federal lands (Plourde 2010a, 4-6). The oil

[87] Data are from Industry Canada's Trade Data Online.

policy tide changed, however, with the 1984 election of Prime Minister Mulroney and the Progressive Conservative party which was ideologically close to U.S. President Reagan and U.K. Prime Minister Thatcher. Supported by western Canadian groups that felt slighted by Trudeau's nationalistic policies, the new government dismantled the NEP and swung the pendulum of energy policy in the opposite direction, toward privatization and deregulation to enhance production and exports. Government policy disengagement and the turn to reliance on market mechanisms was solidified in great part by the 1989 Canada-US Free Trade Agreement and 1994 NAFTA (Plourde 2010a, 6-7). Canada's oil sector is now tuned to fulfilling U.S. oil demand, with a major role for U.S. companies. Transportation systems bear this out: the densely woven pipeline system clearly depicts the orientation of the Canadian industry toward U.S. markets.[88] Indeed, in 2009, 99.3% of Canada's oil exports went to the U.S. [89]

Canada's ardent oil export orientation has had major impacts on the country's economy, as discussed at the outset of section I. Most evidently, the Canadian dollar has been an oil currency particularly since 1993, when Canada's role as an energy exporter (80% being oil and gas) became more pronounced and earlier policies of energy deregulation and North American energy market integration (entrenched in free market agreements), began to take effect. The impact of Canada's "more accommodating attitude towards foreign investment" also became noticeable at this time, with the inflows of foreign capital becoming significant (Issa et al. 2008, 739-40, 56).

Even more worrisome is the fact that Canada's rush to export product to the U.S. has helped recreate in Canada the very problem that drove the U.S. to seek foreign oil supplies: Canada's conventional oil reserves are now in decline. As noted in the proceeding case chapters, NL's oil reserves have, or soon will, peak—hence the

[88] See, for example, CAPP's pipeline and refinery map available at www.capp.ca/GetDoc.aspx?DocID=137798.

[89] Data are from Statistics Canada's CANSIM Table 126-0001.

scramble for increased exploration to discover new fields in ever-deeper waters. AB's conventional production has long been in decline, hence the province's transition to tar sands. Fortunately for these petro-provinces, as global oil prices (and fears of energy security) mount, tapping into these previously economically unviable reserves has become viable—indeed highly profitable. Suddenly what Nikiforuk describes as the "ugly, difficult and tough stuff at the bottom of the barrel" (2010)—extraction with high risks, including great environmental risks—has become feasible. At high oil prices it becomes economically rational to invest previously unthinkable amounts of capital, energy and resources into projects such as the tar sands and ultra-deep offshore wells. Canada's plans for Arctic oil develop follow in this trend (as does the pressure to develop ANWR in the U.S.). In fact, at the time of this writing in March 2011, an emergency meeting organized by the international Inuit Circumpolar Council is ongoing in Ottawa to debate conflicts between oil development and the potential environmental and social fallout.

The link between prices and pressures to develop oil is clear. But is there a discernable relationship between oil prices and stronger or weaker environmental policy? I see two potential pathways. Strengthening environmental policy is perceived by industry as increasing costs. (Although I would argue this is not necessarily the case— "greener" operations may be more efficient and therefore have lower costs.) Assuming this perception, the oil industry would be most adverse to costly environmental regulations in times of low oil prices when profit margins are already compressed. Therefore, at a time of higher oil prices, governments would have a better chance at implementing stronger environmental policies with less industry backlash. However, as oil prices increase, industry also has access to more resources to engage in political lobbying with governments and communities to oppose changes to environmental regulation. And industry actors would be acutely aware that strengthened regulatory systems would persist into times of oil price declines or

declining production, meaning increased costs in the future when profits are lower. Industry, therefore, even at times of high prices, would resist strengthened environmental policy. That said, industry actors could also perceive an advantage in implementing tougher standards if they would be more difficult for new entrants to implement. In this way, meeting environmental standards could act as a barrier to competition over access to the resources.

In an effort to keep up oil production at a moment of declining conventional reserves, Canada heavily subsidizes frontier oil development (which is, of course, blatantly contrary to the Conservative Party's commitment to receding government intervention in the market). The annual value of federal subsidy to the fossil fuel sector is estimated at $1.38 billion, with major oil provinces (AB, NL and SK) matching and slightly exceeding that amount to bring the total Canadian subsidy to the sector to $2.8 billion per year (EnviroEconomics Inc. et al. 2010, 15). Further, Canada's financial community is also heavily committed to supporting this sector. A recent report detailing the extensive financial commitments made by all major Canadian banks (RBC, TD Bank, Scotiabank, BMO Financial and CIBC) to fossil fuel production showed these institutions financing approximately $155 billion in fossil fuel investments in 2007 alone (*Financing Global Warming: Canadian Banks and Fossil Fuels* 2009).

Yet while assuming the costs of subsidizing the industry, Canada simultaneously experiences a revenue penalty from frontier oil development sites. Tar sands and offshore oil royalty rates are typically low until these enormously expensive projects hit "payout" (Plourde 2010a, 15)—this means governments can wait a long time to tap into rents from these sites comparable to conventional reserves. Therefore, governments are interested in companies producing greater volumes of product. There is a built-in motivation to extract high volumes of oil quickly.

One major irony, therefore, of Canada's role in North American petro-capitalism is that in an effort to satisfy American demand, Canadian conventional reserves have

declined and the petro-provinces now must search for new reserves. These unconventional and far offshore fields are economically costly (in terms of subsidies and the environmental legacy of these developments) with less economic benefits in the short term given the lower royalty rates for these projects.

Further, in becoming a key oil reserve for the energy insecure U.S., Canada is now vulnerable to that same problem. (And perhaps the problem is even more severe given that, unlike most other developed industrial states, including the U.S., Canada lacks strategic petroleum reserves (Laxer 2008, 1).) Albertan oil is destined for U.S. markets leaving eastern Canadian provinces reliant on importing as much as 1.2 million barrels per day of oil from foreign sources. As Hughes observes, "to meet demand for Canadian crude in the United States […] Canada is importing crude to meet its own needs" (2010, 2697). Eastern Canada imports as much as 90% of its oil (Laxer 2008, 1) primarily from Algeria, Norway, the UK, Angola, Saudi Arabia and Iraq in recent years. (OPEC countries provide almost fifty percent of Canada's total oil imports) (Laxer 2008, 4). Of course, each of these countries faces domestic security risks, political stability risks or peak oil (declining production) risks, or a combination of all three (Hughes 2010, 2696-97).

Instead of having its own strategic oil reserves, Canada is the strategic oil reserve for the U.S. This is the relationship of "mutual interdependence" between Canada and the U.S.: American oil needs gradually drain Canadian supply. This leaves Canada's oil security at risk, while it is burdened with the environmental costs of oil extraction and the financial burden of subsidizing this sector.

This problematic Canada-U.S. energy relationship is a stable one given that it is virtually locked into place by trade agreements. The FTA in 1988 and the NAFTA in 1994 altered Canadian west-to-east oil flows from AB to Quebec and Ontario to a north-to-south orientation, from AB to the U.S. (Hughes 2010, 2692). These geographic shifts in oil flows were cemented by NAFTA's "proportionality" clause, article 605, which

requires Canada to supply oil continuously to the U.S. proportional to its own use. Canada can only reduce its oil exports to the U.S. if there is an equal reduction in Canadian domestic supply (Hughes 2010, 2697; Laxer and Dillon 2008, 7-8; Laxer 2008, 6).

One potential way to gain more control of Canadian exports is by diversifying the destination of exports. China, which surpassed the U.S. in 2009 as the world's largest consumer of energy, is a primary contender and one of great concern to the U.S. (International Energy Agency 2010a, 87; U.S. Department of Energy 2006). China is assertively seeking energy supply and its presence grows in Canada. China invested $8 billion in Canadian oil companies in 2009 alone (Brearton 2010). Instead of securing outright full ownership of projects, China is gradually buying into more and more operating oil and gas projects as a project partner.

China has shown particular interest in the AB tar sands since 2005. 2010 marked the first time a Chinese company purchased a direct stake in an operating tar sands company, with Sinopec's $4.7 billion purchase of a 9% stake in Syncrude Canada Ltd. (McCarthy 2010). Chinese companies have also recently expressed strong interest in tar sands projects in SK and invested $5.4 billion in a B.C. natural gas deal with Encana. Transportation lines are obviously a key interest of Chinese investors as well, hence Sinopec's stake in Enbridge's Northern Gateway Pipeline which will bring tar sands fuel to Kitimat, B.C., then on to Asian markets.

These larger political-economy forces incite Canadian frontier oil extraction, particularly the country's relationship with the U.S. Global oil demand continuously intensifies while accessing easy oil supply becomes more difficult. The U.S. is particularly at risk, given its enormous appetite for oil and resultant dependence on foreign imports. Fortunately for the U.S., it northern neighbor has become an accommodating energy reserve.

To summarize, Canada has become an energy state restructured to deliver

product to the U.S. Further, Canada's obliging relationship to the U.S. has been formalized through international trade agreements. In this way, Canada's oil provinces have become stable oil suppliers for U.S. oil demand. But in supplying the U.S. with oil, Canada faces similar oil reserve limitations and so needs to extend exploration to frontier sites to keep the oil flowing—while it imports oil to meet demand in the east. However Canada's recent steps toward diversifying export destinations to trade with China and other Asian countries may upset this stability.

IV. Conclusion

If we look up from the individual cases of AB and NL and attempt to see patterns across them, we observe two major Canadian petro-provinces that meet or vastly exceed every standard threshold of high oil dependence as established by the resource curse literature. Government revenues, GDP and exports are dominated by the oil sector. And the economic and political fallout from this dependence is suggestive of typical resource curses. Although economic growth appears to be strong for the moment, the petro-provinces are setting themselves up for a hard economic fall should oil reserves decline (which is the eventual reality for both cases). Tax bases have been eroded while oil revenues have not been saved or wisely invested in economic diversification. These amount to structural constraints to dealing with the volatility of oil. Further, even now in the midst of this period of apparent economic advantage, there is the notable problem of economic inequality across regions and classes. The rising tide of the boom is not lifting all boats, and certainly not equally. Then in terms of politics, while there are no civil wars over oil in these cases, there are obvious growing tensions between the oil "have" and "have not" provinces that are straining national governance. Inside the provinces, political power is increasingly concentrated, stable and insulated from public accountability; democratic participation is strained or waning.

The impacts of oil dependence are also reflected in the environmental policy regime that I have emphasized in this study. Government dependence on oil revenue from private oil companies' continued production, combined with acute pressure from these companies that are driven to maximize profit, results in a permissive environmental regulatory system. This system is marked by important problematic trends such as the withdrawal of the federal government from environmental regulation, the ascent of corporate power, delayed and inconsequential consideration of environmental impacts, limited and disregarded public consultation, as well as obvious regulatory gaps. These petro-provinces have tied their fates ever more closely to oil. The environmental risks of this, especially considering the weakened environmental regulatory regime managing oil development, are substantial.

Of course, AB and NL are not just stand-alone cases marked by similar political economy and environmental policy trends. They are bound together by a much larger context as the expansion of frontier oil extraction in these provinces is driven by a broader petro-capitalist system. Herein, Canada is situated as an obliging supplier of oil to the globe's greatest oil consumer, the energy-insecure U.S. These provinces are, in this light, willing reserves of oil for American consumption.

The cross-case trends and global petro-capitalist context framing these cases flesh out the critical comparative analysis. But what is to be done from here? Alternatives to the current environmental political economy are presented in the next and final chapter.

CHAPTER 5: THE WAY FORWARD

Given political ecology's commitment to what I have called "normative reconstruction," simply critically analyzing the economic, political and environmental trends of oil-dependent cases (the task of the last chapter) is insufficient. There is a need for both critical comparative analysis and then improving on or rebuilding destructive human-environment interactions revealed through that analysis. What is needed to redress the problems raised in these cases? Or, going farther, what convincing, potentially utopian "counter-narratives" (Walker 2006, 384) can we imagine for more democratic, environmentally sustainable futures? This chapter provides at least preliminary answers by offering recommendations to improve the current human-ecological interaction on the Canadian oil frontier.

I proposed two directions forward. The first is to attempt to correct or fine-tune the petro-state to avoid the resource curse and the worst environmental impacts of oil extraction while not fundamentally challenging oil development as it currently unfolds. I propose specific policies and institutions for better fund management and environmental policy. This approach aims to "tweak" the petro-state without challenging it outright. The second way forward is to rethink the political-economic system of oil dependence and extraction in more far-reaching ways. Here I follow political ecology's inclination to pose a more fundamental challenge to petrocratic political-economies. This move also raises the troublesome relationship between democracy, policy and environmental outcomes.

Rather than seeing these recommendations as paths in two different directions, I think of them as complementary. I would propose attention to the first—the lower hanging fruit; the easier policy changes—as we then redress the larger systematic issues. The "tweaking" path could be a first step toward more fundamental system restructuring.

The chapter closes with an overview of the most promising current sources or opportunities for change in the system but I also note the backlash to them. Given these, I end by proposing three specific future interventions for beneficial environmental policy (and also democratic) outcomes.

I. Averting "Curses" and Redressing Environmental Regulation

In the "system tweaking" approach, there is a clear consensus developing on what is needed in terms of institutions and policy to avoid the resource curse (this is the focus of new publications like Humphreys et al. (2007)), and to improve environmental regulation. To do this, several policy changes are required related to managing revenue and spending, and enhancing several key aspects of the environmental regulatory regime.

Within the resource curse literature in recent years there has been a turn toward offering pragmatic solutions to the long-term negative economic and political consequences of oil dependence. There are four typically recommended ways in which the management of revenue and spending can be improved in highly oil dependent states. Oil states must adopt natural accounting systems that document oil as capital, not income. This is the point well made in Warnock's (2006) study of SK: exploitation of oil and gas resources is, ultimately, the dwindling of a stock of non-renewable capital assets. Basing an economy on oil extraction is likened to a household becoming financially dependent on selling the family silver. In both instances, economic security is built on using up a finite asset rather than generating more sustainable income. And this approach is bound to fail in the long term.

To avoid this problem, or at least become aware of its depth, states need to maintain clear accounts of how quickly they are exhausting the natural resource or natural "capital," and with what environmental and economic impact. Methods already

in use include the System of Environmental and Economic Accounts (SEEA) (Auty 2007). These accounting tools remind citizens and political leaders of the difference between revenue from one-time natural resource extraction (capital) and revenue from, for example, taxation (income).

Once accounting is broadened to include environmental value and distinguish between one-time versus enduring resources, oil dependent governments need to differentiate oil rents from general revenues, keeping oil rents separate from other types of income. This prevents the temptation of governments in power to waste oil rents on patronage projects of only short-term value, or to succumb to the demands of a "grabbing" industry lobby. Norway's example, where resource rents are "depoliticized and taken out of the hands of incumbents" (Robinson et al. 2006, 23), is frequently noted. The idea of giving oil revenue to citizens directly, to force the state to develop broad-based taxation, is sometimes suggested (Shaxson 2007, 1135) as a creative (but also problematic) way to avoid this common problem.

These separate oil rents should then be spent productively in ways that avoid Dutch-Disease effects. Long-term investment plans are required, particularly those that facilitate the transition to a more sustainable energy economy. The resource curse literature recommends states to develop institutions that encourage spending of oil rent in areas of long-term value, particularly education and economic diversification—that is, to use revenue from natural resource capital to develop other forms of capital or strengthen other sectors (manufacturing or agricultural) thus ensuring future generations can also benefit from the resource.

To do this, Stevens and Dietsche (2008, 60) note the importance of developing and implementing longer-term development plans. This would require oversight by an independent, diverse group (what Auty calls a "public sector investment evaluation unit" (2007, 631)) that can take a longer-term view without intense, direct pressure from industry.

Perhaps more important than wise spending, however, is the judicious *saving* of oil rents, primarily through natural resource funds. Petro-states need to remove boom-time rents from general revenues and to facilitate saving for the inevitable moment of a resource bust. This serves to "sterilize" oil rents from causing unwanted changes to the states' exchange rate and inflation rate, and from challenging other sectors. A state's level of savings has been demonstrated as key to averting the resource curse (Costantini and Monni 2008, 869; Auty 2007). These funds also encourage states to maintain a tax system that is not fully reliant on natural resources revenues (Jones Luong and Weinthal 2010, 3-4).

Stated succinctly, applying this policy advice from the resource curse literature to these cases means several changes are in order. Oil revenue needs to be insulated from general revenue so that oil rents can be treated as capital rather than as income. And this special revenue must be saved for future generations as well as reinvested in diversifying and transforming the economy to one that is sustainable, based on renewable energy sources and "green jobs," where we get employment, goods and services with less environmental fallout. Finally, rather than increasing economic dependence on oil rents, the governments of AB and NL need to return to focusing on maintaining and enhancing the personal and corporate tax system.

However, as I stressed at the outset of this dissertation in the theoretical discussions, the resource curse is a limited framework primarily because it does not address the obvious paradox of the long-term environmental impacts of oil dependence. And these inevitably interact with—or even drive along—the economic and political circumstances at the heart of the resource curse theory. The resource curse literature offers an invaluable analysis of the initially counter-intuitive outcomes of great natural resource wealth. It provides essential insights into how this wealth translates into weak economic growth and stagnating democracy, in great part due to the weakening or inertia of institutions. But comments on environmental outcomes are

muted in this work. Turning the focus to the ecological impacts of frontier oil development requires, therefore, another theoretical lens; hence my turn to the theory and research approach of political ecology. This perspective, with its new emphasis on policy, guided a close analysis of the environmental regulatory problems in these cases. In so doing, I have a clearer sense of improvements in the environmental regulation system that need to be paired with the above fund management recommendations to ensure economic, political and environmental sustainability in these cases.

As a first important step, the environmental regulator needs to be strengthened. Both cases have seen the capacity of the environmental regulator (the Board in NL and AENV in AB) as lacking in sufficient budget or expert staffing or as seeing these resources eroded while the pace of oil development expands. This constrains the regulators' ability to conduct in-house analysis or to evaluate corporate analysis.

The role of the environmental regulator in the decision-making process also needs to be given more prominence and authority. In AB and NL, environmental concerns must be documented and addressed earlier in the process, before leasing has occurred and rights to development are assumed. Environmental assessments need to have more weight in the decision-making process, rather than being treated as non-binding advice that is easily overruled by economic interests. Once projects commence, there must also be expert, on-site, dedicated environmental regulators or monitors who are independent from industry influence and who have the authority to stop work if the environment is at risk. Likewise, impact predictions made in environmental assessments need to be verified and there must be consequences for impacts exceeding predictions made. The regulators must also overcome their reluctance to use their authority to prohibit or stop oil development. Compliance measures such as fines need to be used more frequently and bolstered to become effective incentives in this high-profit industry.

Once the environmental regulatory is placed on more equal ground with other

departments or agencies, key regulatory gaps need attention. Three areas are particularly problematic for both cases. First, AB and NL need regional, long-term land-use planning that identifies significant "no-go" protected areas. Both need effective carbon emissions regulations as well that ensure emissions decline over time. Putting a price on carbon might be a primary incentive to emissions reductions. In addition, remediation practices need clarity in both cases. There needs to be a firm "no development without guaranteed remediation" policy. Finally, resource use (such as water withdrawals in AB) and waste disposal standards (routine discharges of produced water in NL) need to be within ecosystem limits as determined by "disinterested" science. A price on the use of environmental resources might be needed here to internalize these externalities.

The environmental regulator at the provincial level then needs to be assisted by federal government counterparts that appear to have relinquished their responsibility in these cases. EC—facing its own political constraints—seems to have handed authority for environmental regulation over to the C-NLOPB in NL and to the AENV in AB. There is an obvious reluctance for the federal department to exert its regulatory authority and this creates a gap in national accountability while also leaving the provinces without federal expertise. Instead of a strong provincial and federal regulatory system, the cases are marked by a preference for privatized or corporate-driven regulation, such as industry self-reporting. A basic return to more publicly oriented regulation process is required here.

The role of the public in the environmental regulation processes needs strengthening as well. Public involvement in both cases is currently limited or occurs too late in the decision-making process—after the leasing of oil development areas has occurred and the wheels of oil development are already set in motion. Or where public consultation does occur, it appears to be co-optation or window-dressing as public concerns are rarely addressed in any substantive way. A more genuine, authentic public

engagement process on these projects is needed.

I should emphasize that public consultation is an essential component of democratic practice in these mega-development cases (I enlarge on the discussion of democracy and policy later in this chapter as well). There is an obligation for project proponents to consult with the public according to federal and provincial legislation that applies in these oil development cases. The intent of the legislation, for example the *CEA Act*, is to allow for the sharing of information about the project and its impact as well as to provide an opportunity for those outside of government and industry offices to engage in dialogue on the risks and benefits of the project. Note that here "the public" does not refer (only) to special interest groups that, if heeded, could somehow thwart the public interest. While groups with targeted interests across the political spectrum do become involved, the aim of public consultation is to bring together a much wider range of "stakeholders," particularly those directly impacted.

Citizens can cast a vote in provincial and federal elections on the broader issues of political parties and platforms but I would argue that authentic democratic engagement requires more than sporadic voting. Engagement also needs to happen in the period between voting. Broad public involvement between elections, especially on major development projects, is essential to keep elected officials accountable and on track. Unfortunately, as I have noted in the case analyses, participants in these consultations and observers of them frequently interpret these processes not as genuine dialogue but as a box project proponents check to proceed with the project as originally planned.

As a final point on improving the environmental regulation regime, there is a need in both cases for improved research to inform the regulatory process. Cumulative environmental impacts are seldom studied in AB and NL. Instead, strategic regional or grouped assessments might further erode the environmental assessment process. What is needed is expert, long-term, cumulative impact research that is independent from

industry control. At the same time, both cases need improved baseline data and scientifically valid studies in important areas such as water quantity and quality studies in AB or seabird impact analysis in NL. Funding is needed for the required long-term, independent, scientific studies. Post-secondary institutions in both provinces have emphasized technological research to increase oil finds and production but far more attention is needed on environmental studies and protection.

What do these system-tweaking policy changes amount to, *tangibly*, with regard to the ongoing oil development processes in AB's tar sands and NL's offshore? I take a "Lougheed-ian" approach on this:[90] current developments must be halted, or dramatically slowed, to allow time for the development of effective fund management and environmental regulatory systems to manage them. The oil is a non-wasting resource that is increasing in value. It is not a "use-it-or-lose-it" resource. If we want to spread out the benefits over time and to allow time for the development of the best possible environmental and fund management practices, we would be best to take the industry slowly.

At a minimum, movement toward developments in new regions (such as new fields in AB, and into Labrador gas fields and Arctic oil development in NL) should be halted until we have effective systems in place to deal with the potential fallout and to capture maximum benefit from these new projects in a way that is fair to all resource owners, present and future. Note that there is a possibility, particularly with Arctic development, that it will be very difficult, or even impossible, to develop technology to deal with spills in these exceedingly harsh ice environments. And in this case, a

[90] Progressive Conservative Peter Lougheed was the premier of AB from 1971 until 1985. While his leadership of the AB Government commenced the long reign of the Conservative Party which continues to this day, his approach to developing the tar sands was dramatically different than current Conservative Party members. For example, similar to initiatives in Norway and Alaska, Lougheed created an oil revenue saving oil fund for the province, the Alberta Heritage Fund (which was subsequently gutted by succeeding administrations). In more recent years, he has been an outspoken critique of current development and an advocate for slowing the tar sands industry.

permanent moratorium on oil development may be in order.

Which Ideal Case to Replicate?

At the very center of this work are the perhaps mundane yet (I believe) vitally important details of the regulatory problems in these cases and how we might overcome them. Understood systematically, these distinct problems cumulatively signify a broken system, one that facilitates oil development in frontier sites. The fund and environmental management recommendations outlined above would go far in redressing or preventing resource curse and environmental degradation outcomes. But can we look to a real-world case that has applied this policy "package"? Is there a real or imagined model against which I am comparing these cases? There are obvious worst-case scenarios, with Nigeria frequently cited. But what of "best practice" cases?

No North American cases are notable; however, looking to Europe, one example is frequently suggested. Norway is often hailed as having an unparalleled record on environmental impacts related to oil development. This claim is usually supported in reference to the country's "zero-discharge" policy (one that far exceeds standards in AB and NL), the early creation and implementation of regional plans that prohibit oil exploration and production in critical areas (currently missing in NL and only recently developed in AB), the suspension of exploration after scientific reports noted impacts on fish from the oil industry (Hasle et al. 2009) (while such evidence is often ignored in NL and AB), and the banning of ultra-deepwater drilling in response to the GOM disaster (unlike in NL where the provincial government asserted the ultra-deep drilling projects would continue regardless of the GOM experience). Overall, in comparative policy analysis, Norway seems to be using a stricter more "coercive" policy approach. The country employs stronger, direct "command and control" government regulations and economic instruments, such as taxes, to meet environmental goals in its oil sector (Wettestad 2004).

Yet for all it apparent environmental regulatory success, Norway faces the contradictions of "being a big petroleum producer with green vanguard ambitions" (Wettestad 2004, 780). Even our most promising example of environmental regulation of the oil industry is plagued by many of the same regulatory gaps and issues as the cases at hand.

Since the mid-1990s, Norway has generally struggled to meet its sustainable development goals and has shown reluctance to implement policies developed during Brundtland's period of national (and international) environmental policy leadership (Lafferty et al. 2007). For example, government officials claim Norway's oil industry is much less carbon intensive than the sector in other countries (and that it is committed to green energy projects[91]), but given the massive size of the industry, the emissions are significant. In fact, from 1990 to 2004, Norway's GHG emissions—driven by the oil sector—had already grown by 27% (United Nations Framework Convention on Climate Change 2007, 6), with a 50% increased expected by 2012. This is far from Norway's commitment to *reduce* emissions by 5% over the same period. And the public response to this failure has been described as apathetic due to the widespread recognition that the country's impressive wealth and standard of living are a direct result of oil development (Norgaard 2006). Norway has also shown evidence of other regulatory problems common to my cases, such as delayed environmental assessment. For example, the environmental impact statement for the Norwegian Barents Sea came some eight years after exploration drilling commenced in 1980.

The regulation of Norway's oil industry is certainly not perfect at home. And its foreign activities might be a sight worse. Norway's 67% nationally owned oil company, Statoil, has oil operations extending into Nigeria, Libya, Iraq and other countries with

[91] But note that the Norwegian oil industry is noted as flaunting its "green" reputation to discredit the development of alternative energy and to argue for increased oil production (Ihlen 2009).

questionable human rights and environmental records. Since 2007 Statoil has also been active in AB's tar sands (its first oil production there began in early in 2011), and in NL where it owns small shares in offshore operations.

So rather than serving as an ideal-type of environmental regulation, Norway contends with many of the same problems as other industrialized oil states and exhibits many of the same problematic regulatory trends. Certainly, this case shows advances in important areas but it does not provide an ideal example on which to model regulation.

My point here is that I have not raised solutions to the regulatory processes in AB and NL with a real-world ideal case as a point of comparison. One does not exist. What the interviewees identified early on in the research, and what was later confirmed in my reviews of public, government and scholarly literature, were the main impediments to better environmental outcomes in these particular cases. Rather than arguing for the replication of regulation elsewhere, I have drawn out the regulatory "sticking points"—the important areas in each case that, if improved, would have the greatest chance of improving or limiting environmental impacts.

Comprehensive, ideal models for the environmental regulation of oil to correct these problems are seldom noted by those working on these issues or presented in the literature in any rigorous way. Instead, specific examples are drawn from a variety of cases. For example, experts on environmental policy in AB's tar sands might stress the importance of a detailed cumulative analysis of the impact of oil and refer to the effort in Alaska to do this, as encapsulated in the report "Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope" (Committee on Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope 2003). Or experts on environmental policy in NL's offshore might highlight the importance of suspending ultra-deepwater drilling and refer to the exploration bans used in the Norwegian case. But there is certainly no consensus that environmental policy in the oil fields of Norway, Alaska or some other case ought to be a complete model for

development in AB and NL. I have outlined the regulatory changes required but the great challenge is to implement them not in a piecemeal way but as a coherent framework alongside essential fund management policies. In the final section of this chapter, I propose a few key elements of this framework.

II. Radically Rethinking Petrocracy

The above discussion on policy recommendations for improved revenue management and environmental regulation represent what I take as the consensus in the literature and within policy communities involved in debates on oil development. This is what needs to be done in terms of policy to mend the system to avoid the resource curse and severe environmental degradation.

However this analysis is limited because it does not question the basic political-economic of the current system.[92] Above I noted the first obvious steps toward the important regulatory improvements needed in these cases. But even more fundamental changes are required to the underlying political-economic assumptions at play in these cases. And this is where political ecology's more radical edge is of great use. Political ecologists argue that to arrive at more socially and environmentally just oil development, deeper changes to the political economy system are needed.

Promising systemic changes to challenge *status quo* economics involve an emphasis on "steady state," "self-maintaining," or "circular" economic models oriented around the original intent of sustainable development (as opposed to the current capitalist system based on increasing growth) (M'Gonigle 2000, 10, 1999, 19-20, 22). Such a system is based not on continuous profit growth through increasing demand (consumerism), supply and throughput of material and energy. Rather conservation,

[92] I thank Laurie Adkin for raising this point as she reviewed other work on the AB case (Carter forthcoming).

efficiency and demand reduction are its central features. The energy driving this system is, therefore, renewable and far more local. Environmental costs are no longer external to economic accounting; rather they are incorporated into the system. Also, recognizing that poverty and economic marginalization are the result of, but also the *cause* of, environmental degradation, economic security would also be a central feature of political ecology's proposed alternative—otherwise there would always be pressure to accept development at any environmental cost (Alperovitz et al. 2000, 167-71).

This kind of sustainable economic system is, of course, in direct opposition to the current approach of both cases. Applying these ideas to the cases, we would note that the dominant economic system needs to be re-conceptualized toward more localized "steady state," efficient models that require less through-put of energy and natural resources and that "internalize" the current economic externalities. In terms of economic equity, we would then advocate for a frank assessment of the inequalities of oil development across geography, class and time—and then work for redistribution measures to ensure more equity. Likewise, more benefit of the resource needs to be captured by the resource owners (provincial and/or federal citizens, now and in the future)—and nationalizing the industry is the most promising route forward to attain this goal. In these oil dependent province cases, an obvious start to leveling the political playing field is a move to more public (provincial or national) ownership of oil reserves and development. This would include recasting the leasing processes from corporate-driven to informed by long-term public social and environmental goals (more on this below). Increasing government involvement (for example via significant equity stakes), enhancing royalty regimes and eliminating subsidies would be a good start in the meantime.

Political ecology then suggests that these economic reconfigurations need to be paired with political readjustments. Given the interaction between social relations and

ecological impacts,[93] political ecology proposes less coercive, less exploitative, more democratic and fairer political organization. This is Adkin's crucial point: she advocates building "the most inclusive solidarities possible" crossing class, gender, race and generation divides (2000, 68-73) and working toward "deepened and broadened participation by individuals and groups in decisions about the direction of society (*vis-à-vis* states, élites, corporations and other institutional actors" (2000, 78). Simply put, this political critique is calling for the retrieval of democratic ideals and enacting them.

An idealistic interpretation of democratic practices at work in these cases could be as follows: AB and NL are democratic governments where citizens freely elect representatives who devise and implement the environmental policies that citizens want. Government and the policies flowing from it are the will of the people. Therefore, whatever is (for example, a trade off of environmental integrity for industrial growth or weak environmental policy to facilitate oil development), is what voters democratically chose. And if voters want something different, they will vote differently. From this perspective, it would seem I am arguing for a technocratic elite to wrest decision-making power from "the people" who elected to have things as they are. This sounds very undemocratic indeed.

However, I would argue the depiction of government as the will of the people is a highly simplistic and naïve view of how democratic institutions actually work in these cases. Further, proposals I would suggest for the creation of bodies at "arm's-length" from government for better environmental protection and fund management (discussed in the final section) are not measures to thwart the will of citizens. Rather they are urgently required temporary solutions to improve the current system, which has many

[93] As Watts notes, the "*pressure of production on resources* is transmitted through social relations which impose excessive demands on the environment" (Watts 2000, 262, original italics). Disparity in power so very often the problem—ecological problems see as rooted in inequity (cf. Bookchin), therefore solutions to ecological problems must include more equitable politics.

undemocratic tendencies, while we undertake the longer and more difficult work of fixing democratic institutions, or developing them to move closer to democratic ideals.

The criticisms of the democratic system as it now stands in Canada are well known. Most importantly, the first-past-the-post, winner-take-all electoral system (as opposed to a proportional representation system) means that some parties in Canada and the provinces can win the majority of seats and govern based on very low percentages of the public vote. For example, Conservative Stephen Harper became Prime Minister in 2008 with 36% of the popular vote, gaining 143 seats (46% of the total seats). Given low voter turnout—the lowest in Canadian history at 59%—this means only 22% of the total electorate cast a ballot in support of this party. In contrast, for example, the New Democratic Party won 18% of the popular vote, but took only 37 of the seats in the House of Commons (only 12% of the seats). Similar patterns repeated in the recent 2011 federal election where the Conservative Party won 54% of the seats (finally giving majority government status to Prime Minister Harper) with 40% of the popular vote. Votes do not equally translate into seats and, therefore, political power.

A similar pattern is obvious in AB as well. In the 2008 provincial election, Conservatives won 52% of the popular vote and got 86% of the total seats. Given the very low voter turnout—here the lowest in Albertan history at 41%—only 22% of the total electorate voted for this party. In NL, the difference between votes and seats was less pronounced but still noticeable. In the 2007 provincial election, the Conservatives won 70% of the popular vote to take 92% of the seats. Here a slide in voter turnout to 62% was also noted; thus 42% of the total electorate cast a ballot in support of Williams.

Given the potential to govern with minority support, candidates can win elections by catering to smaller groups of constituents using targeted policies rather than attempting to appeal to a broader public with more wide-spread or universal policies. The winner who takes all (or most) can represent a minority and forward minority policy interests. (Note also the additional complication of the divergence

between party platforms and party policy in practice. For example, the Liberal Party of Canada is often satirized as campaigning from the left and governing from the right. For what voters vote is not necessarily what they get.)

So there is a problem of the preferences of those who vote not translating into governance leadership. But another perhaps more worrisome problem is the proportion of citizens who have withdrawn from voting. As in many industrialized countries, voter turnout is sliding in Canada and the provinces, as noted above. Of course, a common explanation for low voter turnout is frustration with the problems of representation also noted above. There is also the issue of whether voters feel there is a party on offer that represents their views. In Canada federally and in AB and NL, the two parties that have a realistic chance of forming government hover at the center and center-right with little to distinguish them (particularly in NL). Low turnout may be related to this as well. Other issues of note include the impact of negative advertising that can have the effect of making voters tune out rather than turn out, as well as the pressures of increasing work hours and the dearth of widespread civic education.

Citizens choose not to vote in growing numbers. But the opposite problem to this is that interests which ought to be represented are not easily given voice. Who votes for coming generations or for people outside provincial or federal borders who are impacted by decisions taken within these jurisdictions? An electoral system focused on the present electoral cycle of a few years as it relates to issues within the narrow boundaries of provinces or the federal government has difficulty representing the concerns of intergenerational or global justice. The same is true of the environment itself—no traditional party is taking a position to preserve ecological integrity in its own right, rather environmental considerations are at best weakly incorporated into discussions of economic-environmental "balance" or poorly accounted for in rough-cut cost-benefit analysis where the environment is reduced to the dollar value of specific goods and services.

The result of these electoral issues means that voters do not get the governments they want, much less the policies they would choose. The chasm between public opinion polls and actual policy demonstrates this well. For example, polls repeatedly show Canadians highly value the environment and environmental protection (as well as universal health care and other social programs). Yet the last decades have delivered an ever-deepening progression of cuts to the very agencies responsible for environmental protection which has ended in the loosening of environmental regulation. Citizens resoundingly state that they want one thing (sustainable economies, health care, environmental protection) and yet they get quite another (tax breaks for the wealthy, and cuts to healthcare and the environmental protection). Political leadership and the environmental policies that follow from it do not represent what voters want. Instead we find striking correlations between campaign spending and election success. Political will is not simplistically driving along elections and policy.

But beyond these electoral problems, I would add that democracy is about far more than free and open elections. Voting is of course the most obvious marker of democracy but democracy needs more than voting. On other important aspects of democracy, Canada and the case provinces fall short, particularly with regard to the lack of government transparency, unequal access to the political process, and surging inequality.

Beyond the boundaries of the resource curse literature, guided instead by the critique of political ecology, we come to a critique of the larger political system in which the policies of fund management and environmental regulation are embedded. What is needed to move toward more politically just and economically and environmentally sustainable oil development? A more authentic democratic system is centrally important to this.

Democratic practices in these cases need to be rethought by implementing proportional representation that ensures political power better reflects voters'

preferences. Work is also needed on the tricky issues of party accountability, campaign financing and voter turnout. Perhaps even more difficult to attain, we also need traction on our international responsibilities and our responsibilities to future generations given the global intergenerational "commons" of our shared climate and oil reserves. Of course note that many of these policy recommendations for better revenue and environmental impact management as well as the recommendations for broader political-economic changes apply not just to petro-states. They might be basic aspects of good governance for states regardless of the major revenue source.

And we could take this discussion to an even higher level of analysis to rethink oil reserves, a critical global commodity undergirding our carbon age, as part of a global commons—a global *intergenerational* commons. How could we democratize global hydrocarbon reserves, ensuring fairer access to energy? International debates on climate change sometimes suggest an equal rationing of GHG emissions as the only fair way to proceed. A similar equal rationing of oil resources comes to mind here as well. (Yet this outcome is highly unlikely. It is exceedingly implausible the U.S. would consent to having its access to oil rationed. These notions are theoretically just, but politically impossible.)

Taken together, these ambitious economic and political changes provide a "radically transformed model of development" (Adkin 2003, 393), one reoriented around the limits of our environmental reality. Significant changes are needed, potentially Neumann's "major, if not revolutionary, redistributions of power and wealth" (2008, 729). But how do we get to fairer political organization with more citizen participation in decisions that have major social, economic and environmental impacts? Or, at the very least, how do we simply tweak the system to get improved environmental outcomes?

III. Potential for Change and Petrocracy Resurgent

The system of "petrocracy" that I have described is resilient to the kinds of system "tweaking" and fundamental systemic changes proposed above given the weakened state capacity and institutional inertia effects that come with entrenched oil interests. This, I think, is the key conundrum of the resource curse literature. Institutional improvement might prevent negative economic, political and, I would add, environmental outcomes. But this literature also shows that institutions are eroded and compromised by oil dependence. This is an elementary paradox.

Still, there are prospects for change from several directions now evident the cases from civil society opposition, international pressures, random crises, and price impacts. I summarize these below. Yet, I also note that, to date, these combined oppositional forces have had only limited impact on actual development practices and environmental outcomes. In fact, recent crises, particularly the nuclear disaster in Japan, and price shifts may be working against effective environmental regulation. I briefly discuss these issues then turn to a discussion of three specific critical interventions in the regulatory regimes that hold promise.

A broad range of civil society actors demand change in these oil dependent cases. In AB in particular we see an enormous span of civil society actors working in tandem to oppose tar sands developments and demand environmental policy change. Environmental, social justice, labor, religious, aboriginal community, local community and health organizations work with non-partisan research institutes that are independent of industry funding, prominent individuals such as doctors, actors and filmmakers, as well as academics and scientists who have entered the public debate to communicate their research to the wider public. Coalitions cut across levels from very local settings to provincial, national and international sites. They work "inside" the political system, commissioning research to better understand the issues, participating in government hearings and consultations, and using the courts to ensure policy is

applied. They also work "outside" the political system, using direct action methods to take over work sites and interrupt campaign suppers to shame provincial politicians, coordinate cross-border campaigns to raise awareness of American policymakers, lobby banks and international European shareholders of those institutions providing the investment dollars, and target fuel users (such as airlines). These are sometimes massive international campaigns using new and traditional media. Through these interactions a consensus has developed that tar sands projects must be slowed or stopped outright until the social and environmental impacts are well known and can be dealt with through effective environmental regulation. This opposition has succeeded in drawing attention to Albertan and Canadian environmental policy problems surrounding oil development.

But the view from NL is markedly different. Perhaps the explanation for the far more constrained public debate in NL is the poorer and more long standing economic circumstances faced by the province and its much narrower economic base since the collapse of the cod fishery in 1992. Perhaps it is also the remote location of the extraction, approximately 350 kilometers offshore. Unlike in AB, there is no "upgrader ally" on clear public display from major cities and people cannot easily directly experience the tailings ponds—the pollution is more or less diluted in the North Atlantic, flowing east away from coastlines. Perhaps the limited opposition is also due to the memory of the Greenpeace sealing fiasco in the 1980s that, to this day, makes "environmentalist" a highly negatively-charged word in the province. Or perhaps it is due to the obvious dearth of independent public policy analysis in the province.

The muted debate due to this combination of factors in NL compared to that in AB could give the false impression of consensus in NL, that the environmental policy regime in the province is unproblematic. Yet this would miss the early and vigorous objections of fisheries groups in the 1980s as well as the longstanding efforts of a small group of scientists, government scientists, academics and ENGOs who have raised

environmental and social concerns about the province's whole-hearted commitment to developing an oil economy over at least the last twenty years. Union organizations have also participated, for example in lobbying for an economic shift to green jobs. Many of these organizations and individuals, particularly the ENGOs who are very small and woefully underfunded and staffed, have grown frustrated of two decades of repeating the same concerns through the traditional channels of public consultations with no uptake by government. However this frustration has not yet been transformed into more direct actions outside normal politics.

Alongside the pressure from civil society groups, change in environmental policy comes from other political factors. For example, great hope was placed in Obama during his campaign due to his criticisms of tar sands oil that had Prime Minister Harper and Albertan Premier Stelmach scrambling to defend the fuel and secure clean energy agreements with the new American president. This, combined with policies in California and big city mayors that aimed to restrict imports or use of the "dirty" fuel, suggest AB's tar sands might not be as warmly welcomed as conventional exports in the U.S.

Another potential source of environmental policy change is from public outcry following oil-induced environmental crises. After the *Exxon Valdez* spill in 1989 off Alaska, space was opened in the political debate across the U.S. and Canada to question oil development and to tighten environmental regulation. Worsening climate change impacts might provide a similar opportunity. But more dramatic events might be more effective. The most obvious example is, of course, the April 2010 blowout of the BP Deepwater Horizon rig in the GOM that caused a continuous, uncontrolled spill for nearly five months and wrecked havoc in ecosystems and the communities dependent on them across the region. The disaster provided an opportunity to galvanize North Americans to demand better regulation of oil development.

And in NL, just prior to the blowout, there was another crisis with great local

impact that has also opened a space for rethinking oil dependence and environmental regulation. The crash of the Sikorsky S-92A helicopter servicing the offshore oil sector in March 2009 which killed seventeen workers focused public attention on the need for improved regulation of workers' safety in NL's offshore while also raising questions about the adequacy of the regulatory regime surrounding environmental impacts. In the inquiry following the crash, the report commissioner noted that protecting workers and protecting the environment are, from a regulatory standpoint, closely intertwined (Wells 2010).

Change could also be market driven if oil prices were to drop, as lower prices mean these extremely expensive frontier oil projects would be priced out of the market. This is also the issue of declining reserves, as a long-term solution to the problems in these cases. In approximately eighty years in AB and twenty in NL, at current rates of extraction, there will be little oil left to extract from these sites and, therefore, no need for a debate on environmental policy regime change in this sector (at least not here).

These pressures from civil society, international shifts, environmental crises, and price change are political openings for policy change. Yet to date, taking a clear-eyed view, in reality very limited progress has been made on environmental regulation or on rethinking oil dependence and development more fundamentally in these cases. Rather, the dominant petrocratic order is reasserted against the challenges posed by civil society, shifting politics and environmental crises.

In response to civil society resistance to *status quo* oil development, particularly in the case of tar sands development in AB, there has been a government-led backlash and re-legitimation of the projects. The provincial and federal governments, alongside or pressured by industry, work to undermine the opposition, downplay or spin crises, and sooth international concerns (or, in the end, some of the international pressures have lost their force).

Given the strong opposition to tar sands in AB, the backlash was most evident

there. As soon as media outlets' coverage of the negative impacts began in the late 1990s, companies and the lobby association enhanced "communications" efforts to dispel what they referred to as the "myths" of the opposition. They attempted to discredit the opposition—and subtly threaten job loss and economic decline—across the traditional and new media spectrum. The provincial governments and the federal government stepped up efforts as well. Albertan officials have also been extremely active in countering messages casting the tar sands in a negative light. The Alberta Entreprise Group has gone as far as lobbying investors via "missions" to Europe. In my second case, recent years have seen NL's former Premier Williams travelling widely particularly through the American northeast to tout NL's "green" energy economy, focusing on the province's hydro-power developments while underplaying the actual oil economy of the province.

And while it seemed Obama could make implement emissions regulations during his campaign, the reality of stalled American progress on this issue is now clear. Prime Minister Harper has explicitly stated Canada will follow the lead of the U.S. on climate change and, to date, there is little leadership to follow. As the vulnerability of the American economy becomes more obvious, it is increasingly doubtful emissions "externalities" will be accounted for in American production processes. North American-wide emissions regulations are far off. While awaiting Obama's leadership on emissions, as of 2009 Harper began loosening environmental assessment, apparently so that environmental regulations would not impede projects intended for stimulus growth.

The backlash against change in these oil cases was most obvious in the recent federal and provincial response to the BP Deepwater Horizon blowout. Many hoped the disaster would provide a lesson for other frontier oil developers; instead, the incident is being spun to serve the frontier oil development industry and deepen *status quo* oil dependence and development in frontier Canadian cases.

Since the disaster, numerous assessments of environmental policy have been undertaken provincially and federally dealing primarily with offshore oil development but extending to onshore projects as well. The list includes the Government of NL's "Review of Offshore Oil Spill Prevention and Remediation" (commenced May 2010)—which followed on the long-awaited release of the NL south coast oil spill risk study (Transport Canada 2007), the House of Commons Standing Committee on Natural Resources hearings on energy security and oil development impacts (commenced in the summer of 2010), and the NEB's "Arctic Offshore Drilling Review" (commenced September 2010). Most recently, the Federal Environment and Sustainable Development Commissioner released the "2010 Fall Report of the Commissioner of the Environment and Sustainable Development" which described Canada was unprepared for a major oil spill (Vaughan 2010). These are indications of an opportunity for change to the environmental regulation of offshore and onshore oil developments across Canada. But will the multiple reviews have real policy impact, or simply result in changes at the margins?

The latter result is most likely, as is evident by the immediate reaction of NL officials after the spill. After the explosion, as preventative measures such as relief wells were discussed, Premier Williams warned that requiring these measures in NL's offshore would slow or stop the industry—and the billions of dollars of revenues the province receives from it. Not even two months after the blowout, as oil was still gushing into the GOM, NL Minister of Natural Resources Dunderdale assured the NL Oil and Gas Industries Association that "We are wide open for business" (Sibonney 2010). Meanwhile the head of the Board, CEO Max Ruelokke, expressed confidence that a comparable disaster would not occur in offshore NL (Antle 2010), even though NL's new Orphan Basin drill sites are six times farther out to sea and nearly twice as deep as the disastrous BP well.

Note also the biased leadership of the NL review of oil spill prevention meant to

identify any outlining problems with NL's regulatory system to prevent disasters offshore. The Government of NL selected Captain Mark Turner to lead this project, former CEO of North Atlantic Pipeline Partners and Newfoundland LNG Ltd. who had proposed a liquefied natural gas transshipment and storage terminal for Grassy Point, Placentia Bay in the mid-2000s. We cannot expect a former proponent of an oil and gas project to have a neutral perspective on the risks of oil development.

Nor has the GOM disaster disrupted development in AB's tar sands. On the contrary, the NEB recently approved the Mackenzie Gas Project in December 2010 (National Energy Board 2010), a pipeline project to deliver natural gas nearly 1200 kilometers from the Northwest Territories to fuel AB's tar sands projects. This highly contentious project was stalled since the early 1970s due to the extensive social and environmental impacts identified in the well-known assessment by Justice Thomas Berger.[94] That it should be approved now, only four months after the BP hole was finally plugged, is a clear indication that Canadian oil development regulators have not become reluctant to commence major new oil projects.

On the contrary, AB's tar sands are increasingly officially *glorified* in light of the disaster. During the summer of 2010, media commentators began asking if the GOM disaster justifies expansions in the tar sands, given that they are less environmentally dangerous than offshore oil. Soon after, Levant published *Ethical Oil* (2010) which presented AB's tar sands as a morally superior oil than reserves benefiting corrupt and/or authoritarian governments that use oil to fund terrorism and other unsavory activities and that have even worse environmental records. The book is now used widely as a justification for the tar sands by Albertan officials as well as Prime Minister Harper and the new Environment Minister Peter Kent (Egan 2011). It provides the

[94] Justice Berger was appointed the chairperson of the Mackenzie Valley Pipeline Inquiry over the 1973 to 1978 period. His exhaustive, creative approach to working with people in the Arctic is considered an example of genuine engagement with communities—in stark contrast to most current attempts at public consultation.

illusion of oil producing provinces' moral authority, as if their oil development was a kind of altruistic international aid. Rather than the GOM spill drawing attention to the problem of oil dependence and oil extraction broadly, in AB it allows the tar sands to be recast as a less risky alternative to offshore extraction. Meanwhile, in NL it is has come to stand for an unlikely risk, a potential cost of doing a very lucrative business on which the province depends.

Another more recent and poignant example of environmental crises working *against* effective policy change is, of course, the recent Fukushima nuclear disaster. Recent events in Japan plainly exposed our energy conundrum yet they do not necessarily point to palatable alternatives. As Nikiforuk wisely notes, "Japan reflects both our petroleum pasts and our energy futures. […] In many ways Japan's fate is our collective fate" (2011).

The incident underscored our awkward predicament. The most powerful energy source we have tapped to date, the one on which we have built the global economy, is oil. But along the way, oil has wrought global climate change and its terrible consequences. Now oil-addicted states try to cope with declining conventional oil production (the cheap and easily accessible resources are gone) and, therefore, rising oil prices amidst global efforts to bring down carbon emissions. How can we achieve the dual aims of replacing oil energy while emitting less?

Improving energy efficiency—finding ways to use less fossil energy—is one appealing solution. But the reality is that the efforts of some to consume less oil will be overtaken by the growing global demand for energy from old and new oil addicts. Worse, following the Jevons Paradox, gains in energy efficiency might result in *greater* energy use (hence the growing demand for energy in industrialized societies). The more realistic solution to the energy conundrum is to find new sources of energy that are not based on fossil fuels and do not result in high emissions. In this vein, Simpson et al. (2007) have proposed several "wedges" that, if used in tandem, will bring emissions

down (they focus on the Canadian case but the proposal applies globally). CCS and "fuel switching" take the largest share, with the latter implying a transition from fossil fuels to renewables or nuclear energy.

Renewable, low-emissions energy (such as wind, solar, geothermal and wave energy) is the ideal contender to fossil energy. But each of the renewable energies comes with challenges that go beyond the well known problem that many of these are new technologies needing more development. Unpredictable supply, energy storage difficulties, the need to expand the grid, and NIMBY local resistance to the infrastructure are all problems impeding the rapid expansion on renewables' share of energy generation. Given this, renewables are not expected to account for much of the total energy supply for decades to come.

The great non-carbon, non-oil hope, therefore (for all its own environmental controversy[95]), is nuclear energy. But the disaster at Japan's Fukushima Daiichi nuclear power plant due to the March 2011 earthquake and tsunami throws this energy source again into contention. The "Fukushima Effect" has been to undermine efforts to transition to nuclear as a viable replacement to conventional oil. And what will be the impact of this? Ideally, we would see the expansion of renewables—a re-doubly of efforts to get environmentally sound energy on line. However, the reality is that countries formally committed to nuclear are now rolling back plans for nuclear energy facilities and *returning* to fossil fuels development, particularly coal. But coal (the fuel of choice for many countries going off nuclear), comes with a heavy burden of environmental/climate and labor/human health risks, ones arguably comparable to those posed by nuclear energy (Monbiot 2011a). Even in countries like Germany, which has publicly committed to replacing nuclear plants with renewable energy, the probable

[95] On this controversy, see the notable exchanges between George Monbiot (climate change solutions author, environmental activist and now nuclear proponent) and Helen Caldicott (medical doctor and longstanding anti-nuclear activist) in *The Guardian* newspaper over March and April 2011.

result, as noted by Monbiot in a recent discussion in *The Guardian* newspaper online (2011b), is that it will face energy shortages and need to import more coal-fired electricity from the Czech Republic. Japan, for its part, will burn more coal, liquid natural gas and other fossil fuels to make up the energy shortfall from reduced nuclear power.

It seems that, post-Fukushima, a disheartening realization is becoming clear: renewables cannot replace both fossil fuels *and* nuclear energy. And with nuclear at least momentarily off the table, this means an expansion of fossil fuels. Given the decline in conventional oil, this means the expansions of fuels like coal and unconventional carbons (tar sands, heavy oils, shale gases and so forth). The nuclear disaster could result in a great push toward renewable energy. But given the state of renewables, the more likely end result might be a renewed dependence on fossil fuels of the worst kind. All this is to say that combined environmental and energy crises like the most recent one in Japan might serve to reinforce a global reliance on oil. Post-oil societies might now look farther out of reach than ever after the Fukushima disaster.

Environmental crises might not permit the kind of policy changes needed in these cases. Nor is waiting on oil prices to drop far enough to impede these very expensive frontier projects viable. Such declines are highly improbable, at least in the short- to medium-term. Prices will stay high given the slim chance of a major discovery of more easily accessed supplies, the slow progress on developing alternative energy sources (due to the technological barriers, reluctance to act in many jurisdictions, and the subsidies to the oil sector), and the slow progress on international systems to price carbon.

Instead, we are more likely to see dramatic price *increases* rather than decreases that end frontier oil extraction—most likely we are moving instead toward Rubin's (2009) predicted "$200 oil." And as prices rise, this makes previously economically unthinkable oil projects feasible, including transporting natural gas from Alaska to fuel

AB's tar sands projects, transporting bitumen from AB across the Rocky Mountains to new mega-ports with tankers headed to China, and extracting oil in NL's offshore from wells twice as deep as the BP Deepwater well and much farther out from land. These extraordinary feats of technology requiring mind-boggling investment commitments are already possible now with the price of oil hovering around triple digits. Further price increases will motivate oil "entrepreneurship" in directions we might now find hard to imagine—full development of Arctic oil reserves among them. Prices are not going to drive the kind of positive policy change needed in these cases.

For these reasons, the potential for significant, effective environmental policy change in AB and NL does not seem great, even after years of well-organized civil interventions and promising environmental crises or price circumstances that in theory provide openings for change. Given the many points of backlash against the several promising pressures for policy changes in these cases, admittedly there is not much hope that we will see the kind of needed improvements for environmental and other kinds of management in these cases. What, then, is to be done?

IV. Critical Interventions

I propose focusing growing civil society opposition on implementing three very specific and strategic policy interventions that might be effective in improving environmental outcomes and that might also have positive, self-sustaining political culture and democratic impacts. If pressed for at the right time, as the environmental crises of our energy paradox intensify—and they undoubtedly will, as scientific evidence documenting the health impacts of the tar sands developments in AB is building and more spills or accidents in NL's offshore are unfortunately inevitable—new frameworks might stand a chance of being implemented.

Figures 10 to 13 in chapters two and three provided basic flowcharts of the major

regulatory stages and environmental assessment process. Combining these in broad stokes, case nuances aside, we have the process outlined below, moving from initial disposition of rights to the project's end.

Figure 31: Basic Regulatory and Environmental Assessment Process

In this system, I would argue that the most promising changes to be made, for both environmental and democratic outcomes, are threefold.

First, we need to open up the "black box" of decision-making activity that occurs *before* the first step above, the leasing of rights to land or resources. This is the critical point at which decisions are made to list lands for auction for leasing. Companies that purchase these leases interpret them as property rights they now own and as such the leases are difficult to revoke once issued. And once issued, there is an expectation, and not an unreasonable one, that companies will develop these areas for oil production. All the regulatory issues that follow in these systems are set in motion at the point of leasing. Yet, in both cases, there is limited information on how decisions on environmental impacts are made and limited public access to or involvement in this process. What is clear is that the process for releasing lands for oil development is more often than not driven by corporate requests for particular parcels rather than scientifically based notions of environmental integrity or public good. I am

recommending, therefore, that pressure be exerted to open this process to public scrutiny at which point broader debates can be had on regional land use planning for the long term.

Second, to guide the decision making from the point of land leasing forward, an environmental board needs to be established that is independent from the profit pressures of industry and from the revenue pressures of government. It is this board that would guide the environmental assessment and monitoring processes featuring in the figure above. The board would be mandated to ensure environmental protection and the long-term public good and have sufficient capacity to do this work. It would also be guided by independent scientific expertise. Further, to be effective, it would have the authority to reject projects. In both provincial cases, past experience indicates that proposed projects are seldom rejected; rather they are revised until satisfactory to regulators who, as I have shown, often do not have the capacity to monitor the actual environmental outcomes. An institutional change is needed that permits a change of tenor in the environmental assessment process from "how" to "if"—from focusing on how the project might best be developed to reduce environmental impact to evaluating if the project should proceed at all. Such an independent environmental agency has already been proposed in NL (Carter and Fraser 2011). In addition to this change, following the Norwegian model, I would also suggest the creation of an oil revenue authority. As a pair, these bodies would insulate the protection of the environment as well as the collection, spending and saving of oil revenues, from short-term partisan and industry interests.

Third, throughout the new approach to leasing and the activity of the independent environmental and fund management agencies, simple but powerful procedures of transparency are needed. They would bring to light basic but essential environmental and economic information that are currently difficult to access, particularly the following: (1) the dollar value of the resource (both in the ground at

current and projected prices, as well as in terms of the value of sales), (2) what revenues governments and corporations are capturing, (3) the level of provincial and national dependence on oil-related revenues and exports, (4) the costs incurred (costs of development, environmental costs, and the subsidies and other government investments), (5) how much of the resource has been extracted to date and how much remains. There are currently effective ways to do this, for example by participating in the Extractive Industries Transparency Initiative (EITI).

Making data on oil revenue, spending and environmental impacts available on the regulators' websites is an easy but fundamentally transformative practice. Better public transparency is essential to better government accountability to citizens. It incites citizens to stay informed about the benefits and costs of the industry and to demand a fair share of resource rents as well as industry practices that are more environmentally sustainable. These demands are often the impetus for governments to initiate policy to avert the resource curse (Stevens and Dietsche 2008, 63) and protect the environment. Transparency may be a necessary condition for citizens demanding and governments enacting the needed policy changes.

Environmentally, these three specific changes would provide for invigorated ecologically-based decision-making, environmental assessment, and monitoring. Politically, these changes enhance the practice of democracy in these cases. They would give more access to fundamental early decisions, provide structures for more balanced decision-making, access to more information and, therefore, increased awareness about the real state of the environment (and economy dependent on it). And once established—once the leasing process becomes accessible, the independent environmental agency is in place, and basic information is transparent—these institutions may even open space for discussions on moving toward more "radical" political-economic system shifts.

The question, then, is how to initiate these three small but powerful institutional

changes, even given the inertia and under-capacity of these cases and the backlash against them. Changing the institutions of a petro-province is indeed a daunting task. But progress can be made toward the critical, self-sustaining, democratically re-invigorating interventions described above if there is a new kind of public debate on several basic but essential points. First, widespread public awareness is needed on the powerful fact that these oil resources are *public* resources. Companies assisting the public in extracting revenue from these resources deserve a fair profit return, but few would agree they deserve the windfall. What is a fair rate of return for people, governments, and corporations? This is, I think, an often evaded but powerful line of questioning. Second, debate on the issue of intergenerational justice would be valuable as well. This would be a conversation highlighting that the public resource owners are not just people here and now—the one-time, finite resource belongs to future generations as well. The option of leaving the non-wasting resource in the ground for future extraction would also mean even more could be gained from the resource in the future as prices rise and extraction technology improves. Discussion is also needed, as a third point, on the fact that these are increasingly rare high-value resources, given that independent multinational companies have few other places available to them and these Canadian jurisdictions are politically stable. These cases are do not need to pander to or feel held captive by corporate interests—quite the opposite. Fourth, information on the reality of declining finite oil reserves in these cases is needed, as well as information on similar oil-dependent jurisdictions (such as Alaska) that have had great difficulty managing public services as oil supplies have declined. Lessons of fallen oil-rich cases will indicate where these cases are potentially headed. Finally, public conversations on the environmental costs of oil development as well as the enormous subsidies to the industry are crucial. There needs to be a public weighing of oil versus other kinds of economic growth, particularly growth from developing sustainable energy economies which bring local, long term employment and easily build on current

local skilled trades. Public discussions on points such as these would help in rethinking *status quo* petro-political-economics.

From where could these conversations come? The origin of the new debates will necessarily come from outside industry and government—these two entities are too intertwined with *status quo* oil development. In AB, independent research institutes such as the Pembina Institute and Parkland Institute are already making inroads on developing these debates. Researchers there are joined with journalists associated with media outlets (traditional and new) who are freer from corporate influence and with progressive academics focusing on energy and equity issues. In NL, which lacks comparable public policy research institutes with a critical edge, the onus is on journalists and academics, but the pool is much smaller in this province compared to AB. That said, conversations are already underway across the provinces and territories to share the bitter lessons of oil dependence and find solutions. New research programs are joining universities and public policy research institutes. A new institutional framework for re-designing oil development in Canada's frontier, such as I have proposed above, is anticipated to come from this work.

But these efforts are now confronted by a major political setback due to the May 2011 Canadian federal election. Given this, Canada is farther than ever from the goal of implementing effective environmental policy in the oil frontier—and this is regardless of the significant gains made by an environmentally and socially progressive party.

The rise of the New Democratic Party to the official opposition party for the first time in Canadian federal politics might seem to hold some promise for the possible implementation of policies I have recommended here, given the NDP's commitment to environmental sustainability, social justice and energy diversification. Garnering more than two million votes across the country (due to the implosion of the Liberal Party and the collapse of Bloc Québécois support), the NDP opposition signals a strengthened progressive voice in the House of Commons crossing the English-French divide. The

election also gave Canada its first Green Party Member of Parliament.

Yet while the election saw the strengthening of the Canada's social democratic party, the party among the most likely to embrace effective environmental policy change in the frontier oil patch, and the arrival of the Green Party in the House, it also resulted in the election of a majority Conservative government. With just 40% of the popular vote, thanks to the deficiencies of the first-past-the-post electoral system, Prime Minister Harper is now moving forward on the presumption that he has a clear mandate from Canadians to implement his party platform. This includes a commitment to "streamlining" environmental regulation as well as to expanding oil and gas development, particularly in the tar sands and in the Arctic, to solidify further Canada's role as a global energy superpower.

The Harper government is already internationally recognized as a climate change laggard due to its blatant defiance of attempts to set global targets on emissions reductions. On the national stage, the June 2011 *Kyoto Protocol Implementation Act* plan shows Canada as comfortable increasing carbon emissions while other federal policy documents demonstrate a clear reluctance to isolate and deal with major emitters. For example, EC's spring 2011 National Inventory Report on emissions as part of the UN Framework Convention on Climate Change conspicuously omits precise data on tar sands emissions.

Instead of taking effective measures to deal with emissions from the oil sector, the federal government is increasing lobbying efforts in Europe to thwart fuel quality directives that would prevent imports of fuel from the tar sands on the grounds of high emissions. The Harper government is also restructuring the *CEA Act* to facilitate federal environmental assessments of oil pipelines and tar sands projects and quietly underfunding effective environmental programs to the point of incapacitating them, or simply not renewing programs as they expire (the precarious future of ecoEnergy for Renewables program being a case in point). The erosion of environmental policy begun

in previous terms of Conservative Party minority governance will now be expanded and deepened from the government's majority position. And this will occur alongside the continuation of subsidies to oil and gas developments.

So while policy solutions to the resource curse and anemic environmental regulatory systems are obvious and potentially easy to implement, and while the structural changes for more social equity and environmental/economic sustainability are equally evident, implementing these changes will undoubtedly be challenging within the new Canadian political context. Conversations to galvanize public debate toward the regulatory and political-economy changes are growing out of civil society demands, particularly in AB and particularly in response to the experience of environmental crises. Yet the obstacles to change are formidable, given the powerful government/industry backlash against resistance to *status quo* oil regulation. Oil dependent governments rush to defend and re-legitimate their oil economies, to the point that even environmental disasters caused by oil extraction are used to justify apparently "safer" oil extraction in other sites or by other methods that have equally problematic impacts. Even more daunting are the realities of the over-arching oil-dependent global petro-capitalist system that continues to press for more and more oil.

APPENDIX I: FORMAL INTERVIEWEE LIST

AB Case

1. Alberta Employment, Industry, and Immigration policy maker, April 27, 2007. Edmonton.
2. Alberta Energy policy maker, Policy, Planning and External Relations (1), April 27, 2007. Calgary.
3. Alberta Energy policy maker, Policy, Planning, and External Relations (2), October 18, 2008. Edmonton.
4. Alberta Environment policy maker, Environmental Policy Branch (1), April 23, 2007. Edmonton.
5. Alberta Environment policy maker, Environmental Policy Branch (2), October 16, 2008. Edmonton.
6. Alberta Environment policy maker, Oil and Gas Policy Sector and Electricity / Minerals Sector (1 & 2), April 23, 2007. Edmonton.
7. Alberta Environment policy makers, Oil and Gas Policy Sector and Electricity / Minerals Sector (3), April 23, 2007. Edmonton.
8. Alberta Environment policy maker, Strategic Policy and Innovation, October 23, 2008. Phone interview; call to Edmonton.
9. Alberta Federation of Labour researcher, April 30, 2007. Edmonton.
10. Arusha Centre activist. April 14, 2007. Edmonton.
11. Canadian Institute of Resource Law lawyer (1), University of Calgary, April 11, 2007. Calgary.
12. Canadian Institute of Resource Law lawyer (2), University of Calgary, April 11, 2007. Calgary.
13. Council of Canadians researcher, April 3, 2007. Edmonton.
14. Edmonton Social Planning Council researcher, April 2, 2007. Edmonton.
15. Energy and Utilities Board policy maker (Business Operations and Development), April 24, 2007. Phone interview; call to Calgary.
16. Energy Resources and Conservation Board policy maker, Fort McMurray Office, October 20, 2008. Fort McMurray.
17. Environmental Law Centre lawyer, April 23, 2007. Edmonton.
18. Fort Mckay community leader, April 17, 2007. Fort MacKay.
19. New Democratic Party representative, April 26, 2007. Edmonton.
20. Oil Sands Development Group researcher, October 20, 2008. Fort McMurray.
21. Parkland Institute researcher (1), April 4, 2007. Edmonton.
22. Parkland Institute researcher (2), April 23, 2007. Edmonton.
23. Pembina Institute researchers (1 & 2), April 11, 2007. Calgary
24. Pembina Institute researcher (3), April 12, 2007. Canmore.

25. Polaris Institute researcher, April 16, 2007. Fort McMurray.
26. Professor of Political Science (1), University of Alberta, April 8, 2007. Edmonton.
27. Professor of Political Science (2), University of Alberta, October 16, 2008. Edmonton.
28. Public Citizen researcher, April 16, 2007. Fort McMurray.
29. Public Interest Alberta researcher, April 27, 2007. Edmonton.
30. Quality of Life Commission researcher, April 14, 2007. Edmonton.
31. Regional Aquatics Monitoring Program member, October 22, 2008. Fort McMurray.
32. Sierra Club researcher, April 14, 2007. Edmonton.
33. Wood Buffalo Alliance Ltd. representative, April 17, 2007. Fort McMurray.
34. Wood Buffalo Environmental Association researcher, October 23, 2008. Fort McMurray.

NL Case

1. C-NLOPB Environmental Affairs researcher, February 14, 2008. St. John's.
2. Department of Finance researcher, Fiscal Policy, ongoing since March 2007. St. John's.
3. Department of Human Resources and Labour Relations policy maker, Poverty Reduction Strategy, February 26, 2007 and March 16, 2007. St. John's.
4. Department of Natural Resources policy maker, Energy Branch, Petroleum Projects Monitoring (1), March 7, 2007. St. John's.
5. Department of Natural Resources policy maker, Energy Branch, Petroleum Projects Monitoring (2), March 7, 2007. St. John's.
6. Department of Natural Resources policy maker, Energy Branch, March 7, 2007. St. John's.
7. Department of Natural Resources policy maker, Energy Policy, Planning and Coordination, March 21, 2007. St. John's.
8. East Coast Response Corporation (ECRC) - Atlantic Region representative, February 4, 2008. Mount Pearl.
9. Environment Canada policy maker, Newfoundland Provincial Office (1), February 11, 2008. Mount Pearl.
10. Environment Canada policy maker, Newfoundland Provincial Office (2), March 13, 2007. Mount Pearl.
11. Environmental consultant, February 27, 2007. St. John's.
12. Fisheries and Oceans Canada policy maker, Environmental Response, March 26, 2008. Mount Pearl.
13. Former senior provincial energy policy maker, July 18, 2008. St. John's.
14. Long time employee with key federal departments (1), March 6, 2007 and March 27, 2008. Mount Pearl.

15. Long time employee with key federal departments (2), March 6, 2007. Mount Pearl.
16. Natural History Society scientist and researcher, February 12, 2008. St. John's.
17. New Democratic Party (NDP) representative, March 5, 2007. St. John's.
18. Newfoundland and Labrador Environmental Association (NLEA) representative, January 22 and 28, 2008. Mount Pearl.
19. Newfoundland and Labrador Federation of Labour (NLFL) researcher, March 1, 2007. St. John's.
20. Sierra Club researcher (1), January 29, 2008. St. John's.
21. Sierra Club researcher (2), February 12, 2008. St. John's.
22. Sierra Club researcher (3), February 14, 2008. St. John's.
23. Tekoil (onshore oil development company) representative, March 5, 2008. Corner Brook.
24. Transport Canada (TC) policy maker, March 28, 2008. Mount Pearl.
25. University environmental sciences professor (1), December 20, 2006. Phone conversation.
26. University environmental sciences professor (2), August 17, 2007. St. John's.
27. Graduate student researching oil and environmental issues, January 23, 2007. St. John's.

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