

Provincial, Federal, and International Regulatory Drivers of Possible Stranded Assets in Alberta, Canada

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Introduction

The Alberta oil sands are vast deposits of crude bitumen mixed with sand, water, and clay located on the Treaty 6 and 8 lands of the Cree, Dene, and Métis First Nations. The oil sands sector represents 10% of Canada's greenhouse gas emissions (Environment and Climate Change Canada, 2018) and contributes about 2.5% of national GDP (Statistics Canada, 2016). Due to the high energy needs of extraction, the carbon intensity of Canadian oil is among the highest in the world, after only Algeria, Venezuela, and Cameroon (Masnadi et al., 2018). Because oil sands bitumen is a low-quality high-sulphur heavy crude (Millington, 2018), it may be among the first oil resources to suffer devaluations as a result of various regulatory changes, including global decarbonization efforts. This situation makes Alberta a salient jurisdiction to study as a potential site of stranded assets, a concept that refers to "assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities" (Caldecott, 2018). A proposed typology for environment-related drivers of stranded assets includes changes in regulation, environmental impacts, resource landscapes, technologies, social norms, and litigation (Caldecott, 2018). This paper focuses on the first type of driver: regulation.

The analysis will adopt the theoretical lens of economic geography, which emphasizes the importance of multiscale inquiry in understanding economic phenomena (Clark et al., 2018). Concerning the impacts caused by regulatory drivers of stranded assets, jurisdictional scale matters. Larger scale regulatory bodies have different priorities from local ones and therefore different impacts. This is partially explained by their lack of political proximity to those affected by their policies. Using the case of the Alberta oil sands, this paper will argue that policies of more remote regulatory bodies will be stronger drivers of asset stranding compared to regulations implemented by those with a closer physical and political proximity to the assets in question. Three key policies established at different jurisdictional levels will be explored. A range of environmental policy types were selected, since a major misunderstanding of the stranded assets concept assumes that climate policies are the only possible drivers and that they are not being established fast enough to ever create stranded assets. This paper goes beyond climate policy and also looks at regulations that target other environmental problems, since those are often overlooked as potential drivers of stranded assets.

At the provincial level, the Oil Sands Emissions Limit Act 2016 is a climate policy that could potentially

cause stranded assets by constraining oil sands production. At the federal level, an increasingly restrictive approval process for pipelines could limit export capacity and thus impact oil sands operations. This regulatory environment is not specifically motivated by climate change concerns and instead aims primarily to reduce the local social and environmental impacts of resource development. At the international level, the International Maritime Organization (IMO) has recently established new standards on the sulphur content of shipping fuel, which has implications for crude oil refining across North America. The IMO regulation is a non-climate environmental policy that will impact the market for oil sands bitumen because it is a sour (i.e., high sulphur) crude. With respect to comparing the relative impacts of regulatory risks at multiple scales, there is a gap in the burgeoning literature on stranded assets.

Stranded assets and climate policy

Most climate policy is intended to drive a global energy transition away from the use of fossil fuels. Along with the implicit concept of "unburnable carbon", climate policy is often interpreted as the only way that fossil fuel assets will become stranded (Butler, 2015). The idea of unburnable carbon gained public attention in 2009, when Nature published a paper stating that less than half of global fossil fuel reserves could be exploited if global warming is kept below 2°C (Meinshausen et al., 2009). A study on the financial impact of this article found that investors responded to the findings, leading to a small but significant 2% drop in American oil and gas companies' stock prices (Griffin et al., 2015). However, the study found that later media coverage on the possibility of a "carbon bubble" based on overvalued fossil fuel assets resulted in no significant stock price reaction. Based on these findings, it seems that projected climate policies are not yet impacting the valuation of oil assets in general, but may begin to do so in the future.

The concept of unburnable carbon is especially significant in Canada: if global warming is restricted to 2°C, 85% of Alberta's oil sands cannot be exploited (McGlade and Ekins, 2015). However, serious climate policy is still lacking, making some dismiss the entire possibility of stranded assets (Butler, 2015). What these

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critics fail to acknowledge is that policies focused on unburnable carbon are not the only possible regulatory drivers of stranded assets. Initially, asset stranding was imagined as resulting from the top-down enforcement of a carbon budget by governments, but the dominant view has now tended towards acknowledging that stranded assets may be caused by a bottom-up series of indirect policies, social pressures, and physical risks at many levels (Caldecott, 2018). Indeed, there are other policies, implemented at various scales and focused on environmental concerns beyond climate change, that could indirectly and unexpectedly strand fossil fuel assets. Those broader risks must be considered by asset owners.

Provincial regulation

For the past decade, oil and gas extraction has accounted for about 25% of Alberta's GDP (Government of Alberta, 2018a) so the phenomenon of asset stranding could severely affect the province's economy. In 2015, the leftist New Democratic Party (NDP) was elected after over forty years of conservative provincial governments. The NDP established a Climate Leadership Plan to phase out coal power, set a carbon price, and cap emissions from oil sands production at 100 megatonnes (Mt) of carbon dioxide equivalent (Government of Alberta, 2018b). In theory, this cap could restrict the oil sands' expansion, and cause stranded assets, unless producers decouple emissions from output. However, the 100 Mt limit is projected to be reached only in 2030 at current production growth rates (Millington, 2018). The Act itself notes that the limit is designed to provide "room for growth and development of our resource as a basis of a strong economy by applying technology to reduce our carbon output per barrel" (Oil Sands Emissions Limit Act, 2016). Therefore, the intention of this regulation is not to restrict oil sands production.

In April 2019, the United Conservative Party (UCP) won the provincial election. The NDP loss is partially due to the economic hardship caused by low oil prices throughout the government's time in office (Dehaas, 2019). The UCP repealed the provincial carbon tax but has so far left the oil sands emissions cap in place. As a climate policy, it seems resilient to government change, but perhaps only because it does not pose an imminent threat to the province's resource extraction priorities. Even under the NDP government, the primary motivation for climate policy in Alberta was improving the oil sands sector's rather negative environmental reputation (Boyd, 2018). The political proximity between the Alberta government and the oil industry is notable: in addition to lobbying, oil industry representatives use a "revolving door" to circulate in and out of regulatory agencies and political campaigns (MacLean, 2018). Due in part to this influence, climate-related regulations at the provincial level do not seek to constrain oil sands operations, but rather to allow them to grow while maintaining a degree of environmental

respectability. This concern for reputation is a result of evolving social norms, which is another possible driver of stranded assets.

Federal regulation

The federal regulatory framework for pipeline approval has grown stricter under the current Liberal government, in part due to the severe opposition faced by pipeline projects in Canada. Most notably, the government recently passed Bill C-69, which alters the regulatory framework for environmental impact assessments. It replaces the existing National Energy Board with a less powerful regulatory body called the Canadian Energy Regulator and establishes an Impact Assessment Agency to determine if a given project is in the public interest (Bill C-69, 2018). The Bill is criticized for mandating laborious consultations and assessments that would restrain new energy infrastructure, lending it the nickname the "no more pipelines bill" (Neufeld, 2019). Critics claim the expansion of bureaucracy will increase the costs and risks of project development and thus reduce investments in Canadian energy infrastructure. By increasing the risks associated with a given project, regulatory delays could increase the minimum acceptable rate of return by \$127 million on a \$1 billion pipeline proposal, which would make the project uneconomic if that rate exceeds the project's rate of return on capital (Mintz, 2019). This could spillover into reduced investments in upstream oil sands projects.

A lack of export capacity through pipelines has been cited as one of the causes of the low relative market price for oil sands crude (Millington, 2018). Oil sands bitumen, a heavy sour crude, is valued at the oil price benchmark Western Canadian Select (WCS). Because most Albertan crude is shipped to American refineries, WCS is closely linked to the West Texas Intermediate (WTI) price for sweet Texas crude. WCS is priced at a discount of around US\$13 per barrel relative to WTI due to its lower quality (Millington, 2018). If the price for oil sands falls and remains low, much of Alberta's bitumen could become uneconomic to extract and therefore stranded. There are two extraction methods used in the oil sands: steam-assisted gravity drainage, which uses steam to melt and extract bitumen from deep underground, and surface mining, which is more expensive. With a higher discount on WCS relative to WTI, caused by factors like pipeline construction delays, a higher overall oil price is required for extraction projects to be profitable. Fluctuations in oil prices, the exchange rate, and supply costs make it difficult to determine whether a given asset will be permanently or only temporarily stranded.

Federal pipeline policy thus may affect the valuation of oil sands assets both by increasing the risk of investing in associated infrastructure projects and by affecting the price of bitumen. While the provincial government is not likely to cause stranded assets because of its close proximity to the oil sands industry,

the federal government is influenced by a broader scope of voices from other provinces. British Columbia, for example, strongly opposes the Trans Mountain pipeline expansion, which would transport greater volumes of oil sands crude to the west coast of Canada. The federal government's necessarily divided priorities of satisfying conflicting provinces leads it to make regulatory decisions that may moderately harm the valuation of oil sands assets.

International regulation

The new sulphur limit on fuel oil implemented by the International Maritime Organization (IMO) could affect oil sands assets. The IMO is a specialized agency of the United Nations that governs global shipping, ensures safety at sea, and prevents marine pollution (IMO, 2019a). In 2008, the International Convention on the Prevention of Pollution from Ships was amended to reduce the maximum sulphur content permitted in shipping fuel from 3.5% to 0.5% with the aim of preventing the health impacts in port cities and broader ecological impacts of sulphur emissions (IMO, 2019b). In order to comply, shipping companies can either purchase low sulphur fuel oil, blend or refine high sulphur fuel oil (HSFO), or install exhaust gas cleaning systems, also known as scrubbers. Only 3% of the volume of HSFO is likely to be addressed by scrubbers; the majority of shipping fuel will be made compliant through desulphurization in refineries (Nduagu et al., 2018). Roughly three quarters of Canadian crude oil is exported, almost exclusively to the United States (Natural Resources Canada, 2017). Thus, the effects of the sulphur standards on North American refineries will necessarily affect oil sands operations.

Due to the increased costs of refining compliant fuels, the IMO sulphur standard could decrease North American refinery margins by US\$16-20 per barrel. This loss will be directly transferred to the price differential between light and heavy crudes, thus deepening the discount on WCS (Nduagu et al., 2018). Unless the widening price differential is offset by rising overall oil prices, the IMO regulation may seriously affect western Canada's oil sector. It is estimated that 20% of Albertan oil sands production is below the profitability threshold that is projected for 2020, when the IMO regulation comes into force (Nduagu et al., 2018). Such a large production drop threatens the valuation of oil sands assets and could potentially lead to permanent asset stranding. In terms of its regulatory decision-making, the IMO of course lacks any proximity to oil sands interests, so it takes little consideration of potential impacts on fossil fuel assets. This political distance allows for a greater potential to cause stranded assets. Regulations at the international level can be especially impactful because they can affect the demand for oil on a macro-level, which is likely to lead to more serious and persistent impacts on oil price. In addition, it is more difficult for provincial and federal actors to

predict and mitigate these kinds of impacts.

Discussion: Why jurisdictional scale matters

Researchers in economic geography use a multiscale framework to understand the forces that shape economic change (Clark et al., 2018). In the case of asset stranding in Alberta, jurisdictional scale matters for three reasons, summarized in the table on the next page. First, political proximity to affected assets restricts the strength of a potential regulatory driver. Regulatory pressures from institutions closer to the local resource may be weaker than regulatory pressures from more distant institutions. One reason for this difference is the political proximity of oil sands firms and workers to the provincial government and, to a lesser extent, to the federal government. Governing bodies at the intermediate national level are beholden to local industries and citizens, but must make political trade-offs to satisfy voters residing in other provinces, thus making the federal government a more likely cause of stranded assets than Alberta's provincial government. Political remoteness and a broad, globalized regulatory reach make international regulators an even more significant cause of stranded assets, though they may do so indirectly and unintentionally. In order to make a concrete statement about the relative strengths of each policy as a driver of stranded assets, their individual effects on oil sands valuation would need to be quantified.

Second, the scale of a jurisdiction implementing regulations that could cause stranded assets affects the permanence of their impact. Elections at the provincial and federal levels can lead to the reversal of policies that threaten to cause stranded assets. The new conservative government of Alberta is repealing much of the NDP's Climate Leadership Plan (Kaiser, 2019), while the federal conservative party has promised to repeal Bill C-69 if elected in the upcoming 2019 election (Harapyn, 2019). Such policy reversals mean that certain regulatory drivers may only temporarily cause stranded assets. In contrast, the lumbering giant of international environmental law, with its committees of numerous member states, does not often reverse its decisions (Birnie et al., 2009). Thus, the permanence of a regulation's impact on oil sands assets may depend on the scale of the jurisdiction implementing the regulation in question.

Third, the scale at which possible regulatory drivers of stranded assets are implemented determines the potential for vertical policy interplay, a concept that describes how regimes interact across different levels of social organization (Young, 2016). The possibility of policy interplay depends on the institutional proximity of the regulatory bodies in question. As conceptualized in economic geography, institutional proximity defines the relations between agents, laws, and organizations at the macro-level rather than the individual level (Boschma, 2005). There is greater vertical policy interplay between the provincial and federal

governments than between the federal government and the IMO due to differences in institutional proximity. Canada is a confederacy, meaning the national government must seek provincial consent before assuming obligations that the country will adopt

addition, interactions between regulatory bodies at different scales can either protect or further threaten the oil assets of Alberta, depending on whether they are cooperative or combative. Both the federal and international policies discussed in this paper are not

		JURISDICTIONAL LEVELS		
		Provincial	Federal	International
REGULATORY CHARACTERISTICS	Proximity to oil industry interests and oil-dependent communities	high	moderate	low
	Permanence of established regulations under changing political conditions	low	low	high
	Potential for policy interplay between jurisdictional scales	high	high	moderate

motivated by climate change concerns. Rather, they respectively focus on the local impacts of pipeline spills, and the global health and ecological impacts of sulphur. This paper contributes to the academic work on stranded assets, which has argued that owners of fossil fuel assets should consider potential risks beyond existing and potential climate policies.

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Figure 1: Characteristics of potential regulatory drivers of stranded assets

as a whole (Young, 2016). The vertical policy interplay between provincial and federal governments could either raise or lower the financial value of oil sands assets. The provincial NDP government worked mostly cooperatively with the federal Liberal government. For example, it established a carbon tax in response to the threat of a federal carbon price to be imposed on provinces that do not implement one themselves. The new conservative government of Alberta has promised to overturn provincial climate policies in order to more aggressively promote the oil sands. However, this combative policy interplay may threaten regulatory stability if the federal Liberal Party remains in power. Somewhat ironically, this instability, rather than the climate-related regulations of the previous provincial government, could represent a financial risk to the oil sands sector since investors seek jurisdictions with policy stability (Bakx, 2019).

Conclusion

The oil sands of Alberta are a potential site for stranded assets due to a range of regulatory and other drivers. By examining regulations that could cause stranded assets at three jurisdictional levels, this essay has argued that scale matters when considering the possible impacts of regulation on fossil fuel assets. The analysis of this multiscale spectrum of risks found that, in the case of the policies discussed, regulations implemented by more remote governing bodies are more likely to cause stranded assets, and to do so more permanently. This is at least partially due to the proximity of oil industry interests to the provincial and federal governments, which lends them influence over policies that are developed at those levels. In

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