

ENVIRONMENTAL SUSTAINABILITY VERSUS ECONOMIC INTERESTS: A SEARCH FOR GOOD GOVERNANCE IN A MACROECONOMIC PERSPECTIVE

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Abstract

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Finding the proper balance between economic benefit and sustainable development has been an issue for many local governments, especially in the regions that depend strongly on natural resources. One of Canada's largest contributors to environmental degradation is the oil sands in Alberta. The degradation occurs on land, in water, and in the air as a result of oil extraction and tailings ponds. The purpose of the paper is to argue that although the government of the province of Alberta and the federal government have developed legislation including licensing and policies (frameworks and directives) to reduce and prevent environmental degradation, they fail to ensure compliance with the legislation and policies because the governments prefer economic gain to environmental sustainability. The lack of strong compliance enforcement suggests a lack of effectiveness and efficiency. Subsequently, a failure in the rule of law occurs because oil corporations, due to their economic impact, are treated as above the law. The bias for the corporation over the environment hinders good governance. Overall, both governments find balancing protecting the environment and gaining financial benefits challenging.

Keywords: Governance, Government, Regulation, Environment, Oil Sands, Sustainability

INTRODUCTION

In Canada, good environmental governance is emerging to ensure the sustainable development of natural resources. Sustainable development is using resources appropriately to guarantee that they are available presently and in the future (Rasso, 2017) (Borowy, 2014). Good governance includes principles of, amongst others, fairness (the rule of law) and performance (effectiveness and efficiency) (Graham et al., 2003). Environmental good governance differs from the general definition of good governance in that it recommends extreme consideration in managing people's economic, social, and political activities (Rasso, 2017). To establish good environmental governance, governments protect the environment by developing policies, legislation, setting standards, licensing, and controlling compliance (Rasso, 2017). In Canada, at the provincial and federal levels, governments are actively engaging in efforts to

ensure good environmental governance to reduce climate change (Gosselin et al., 2010) (Government of Alberta, 2017) and other environmental degradation issues. One of Canada's largest contributors to environmental degradation is the oil sands in Alberta (Global News, 2016) (Woynilowicz et al., 2005). The degradation occurs on land, in water, and in the air because of oil extraction and tailings ponds. As natural capital theory suggests, these resources are needed to produce the oil (Aronson et al., 2012). The following paper argues that although the government of the province of Alberta (Alberta) and the federal government (Canada) have developed legislation including licensing and policies (frameworks and directives) to reduce and prevent environmental degradation, they fail to ensure compliance with the legislation and policies because the governments, due to neoliberalism, prefer economic gain to environmental sustainability. The lack of strong compliance enforcement suggests a lack of

effectiveness and efficiency. Subsequently, a failure in the rule of law occurs because oil corporations, due to their economic impact, are treated as above the law. As suggested by the environmental economics theory, prioritizing the economy neglects the environment (Singh and Shishodia, 2007). The bias for the corporation over the environment hinders good governance.

The paper is divided into two parts. The first part provides a context of the historical and current oil status, discuss neoliberalism, and consider the relationship between the economy and the environment by addressing natural and manufactured capital and the environmental economics theory. Subsequently, the second part identifies the environmental issues and argues that legislation and policies created by Alberta and Canada to tackle the issues are inefficient and ineffective suggesting that the oil corporations are above the law.

1. BACKGROUND AND THEORIES

1.1 History and Neoliberalism

Since the early 1900s, provincially, Alberta has been working vigorously to expand the oil sector. In 1912 the first pipeline from Lethbridge to Calgary was constructed (MacInnes, 2017) (Chastko, 2004) and after the First World War, the Alberta Research Council (ARC) was formed to support oil sands research (Regional Aquatics Monitoring Program, 2017). In 1962, the Alberta Oil and Gas Conversion Board (AOCGB) created oil sands policy that included high royalties, and it was modified in 1968 to allow for more extracting freedom to the oil operators (Gosselin et al., 2010). In 1973, nationally, Canada created Petro-Canada and in 1975 created the Albertan Oil Sands Environmental Research Program (Gosselin et al., 2010). The historical background shows that in early oil development the government focused most policy on the industry and its expansion with little consideration of the environmental implications until 1975. Since the creation of the oil policies, extraction continues, and Alberta's government continues to invest in the oil industry. The government states that between 1999 and 2013, there has been almost \$201 billion invested in the oil sands industry, including \$27.2 billion in 2012 (Alberta Energy, 2017). The significant investment suggests oil is economically valuable for the province. The timeline shows that Alberta has not slowed down its oil extraction. In fact, it continues to expand the industry even though there are multiple environmental issues (which will be discussed later in the paper).

Regarding the value of economics in Canada, the approach may be an outcome of neoliberalism. Theorists suggest that neoliberalism promotes economic achievement and neglects the environment (Heynen, 2008). Nationally and provincially, oil from revenues and exportation provides significant income. In 1995, the National Oil Task Force created by Alberta and Canada assessed and determined economic implications of the oil industry are positive (Gosselin et al., 2010). In 2008, the total royalty and land-related payments were \$3.8 billion (Gosselin et al., 2010). In 2012, a report by the Canadian Energy Research Institute (CERI) suggested that Alberta's government would collect \$1.2 trillion

in royalties from the oil sands over the next 35 years (Tencer, 2012). In 2014, CERI suggested that in the next 25 years the governments would gain \$988 billion in taxes. Specifically, the federal government will gain \$574 billion; the provincial governments will gain \$353 billion, with Alberta claiming the majority, \$303 billion (Cattaneo, 2014). The projected income clearly shows that the oil industry is economically beneficial for every province and Canada. In addition, nationally, Alberta's average annual Gross Domestic Product (GDP) is 3.2% per year, which is the highest amongst all provinces and territories. Provincially, in 1985 the GDP in Alberta was \$67.6 billion with gas and mining accounting for 36.1% of the total. In 2015, the GDP was \$333.1 billion with gas and mining accounting for 18.3% (Government of Alberta, 2016). Therefore, the oil sands are an enormous economic achievement for Alberta and Canada. However, the decline in GDP relying on gas and mining suggests that the province is moving away from relying on it as a source of revenue. Since the trend shows that oil is no longer a significant part of the GDP, the government should not continuously invest.

1.2 Natural and manufactured capital

Looking at the economic and environmental relationship, the economy and the environment are areas that both have resources, which are useful materials to the public. Thus, governments must consider these resources when creating policies and other initiatives. These resources are natural capital and manufacturing capital. Natural capital is the finite supply of natural resources (land, water, minerals, etc.) which industries use for production (Aronson et al., 2012). The manufactured capital is products created by operators (Porritt, 2016). In this paper, the manufactured capital refers to oil. Natural capital theory suggests that manufactured capital usually requires natural capital for its production. Therefore, the economy is a "subsystem of the larger ecological system" (Cheng, 2011) (Patterson and Glavovic, 2012). In Alberta's oil sands, the extraction of oil uses land and water. As a ramification of the production and extraction, the air quality is also being affected. Operators use these natural resources to extract and refine the oil. When the natural resources end, the manufacturing of oil may no longer be possible. In addition, non-refined oil is a non-renewable resource which is considered natural capital. Oil as natural capital produces manufacturing capital like petrol for cars, tires, eyeglasses and telephones. In the 1960s, the economic and geographic assessments determined that 105,000 barrels of oil could be extracted daily for five years (Chastko, 2004). Recently, the Government of Alberta stated that as of 2014, Alberta's oil sands proven reserves are at 166 billion barrels (bbl) and the total oil sands production (mined and in-situ) reaches about 2.3 million barrels per day (bbl/d) (Alberta Energy, 2017) (Timoney and Lee, 2009), (Charpentier et al., 2009) (Gosselin et al., 2010). The statistics suggest that the oil extraction will only be feasible for another 197 years (Calculation: $365 \text{ days} \times 2.3 \text{mil} = 839,500,000$. $166 \text{ billion} / 839,500,000 = 197$). Therefore, if oil as a natural capital ceases, it may cause the termination of producing manufactured goods. Overall, if oil or

the other natural resources are wasted and cease to exist then there is a lack of sustainability.

1.3 Environmental economics theory

Aside from manufactured capital needing natural capital to function, prior to creating initiatives the government needs to consider what may occur if the environment is disregarded when developing economic interests. According to the environmental economics theory, economic development depletes natural resources and eco-systems (Singh and Shishodia, 2007). In addition, the waste of resources because of manufacturing the product (oil) will lead to degradation and depletion of natural resources and ecosystems (OECD, 2015). The theory suggests that when the oil operators use a resource like water, it will become depleted and natural resource waste like used water from the extraction process will have an adverse environmental impact. Furthermore, in environmental sustainability, there is the concept of public goods. Land, water, and air are considered public goods. If one individual uses the resource, there still should be enough available for others and individuals cannot be excluded from using the resources (McNutt, 2002). Thus, when operators waste resources, deeming them unusable, other individuals can no longer benefit from them. A lack of regulation or mismanagement of resources it is a by-product of the rule of law because laws are not ensuring that everyone is held to the same standard of using resources. Lastly, the literature states that as a result of natural capital being valuable for commercial markets, there is less priority given to the issue of natural capital stocks in policy making (Cheng, 2011) (Constanza et al., 1997). The observation suggests that as long operators use the natural resources for economic benefit, there is less policy enforced in protecting the environment. As mentioned previously, manufacturing capital cannot exist without natural capital because one is reliant on the other. When these resources are not given equal priority or respect in production, this will cause environmental instability and degradation.

2. GOOD GOVERNANCE – ENVIRONMENTAL ISSUES AND GOVERNMENT INITIATIVES

2.1 Land degradation

One of the main ways that the oil sands damage the environment is through the process of extracting oil. The oil in Alberta refers to bitumen. Bitumen is similar to conventional crude because it is made out of hydrocarbons, but it contains other substances like nitrogen, sulfur, and heavy metals (Luhning and Gray, 2014). Currently, there are two types of extraction options, mining and in-situ. Surface mining is the process of removing oil sand deposits by shovel, and then the bitumen is extracted by mixing the oil with water heated by natural gas (Jordaan, 2012). Mining accounts for 52% of Alberta's oil and production. In-situ is expected to exceed mining production by 2017 (Dyer and Huot, 2008). Since the 1970s, the main way to extract oil in-situ is by Steam Assisted Gravity Drainage (SAGD). The process requires two wells, one deeper than the other. Then, using natural gas, steam is pumped into

the first well to melt the bitumen. Afterward, it is drained into the second well and mixed with lighter oil and pumped out (Chastko, 2004) (Shah, 2004). Wells dug into the ground cause degradation to the soil and plants on the land. To regulate extraction, the Government of Alberta created the Oil Sands Conservation Act and Oil Sands Conservation Rules. Section 4(1) of the Act and Rules require an operator to license wells (Government of Alberta 2017). The licensing of wells indicates that the government is monitoring the oil extraction process, but not specifically related to the environment. Overall, both mining options create degradation to the land because the natural ecosystem is being disrupted. In 1993, Alberta created the Environmental Protection and Enhancement Act whose primary objective is returning the disturbed lands to the equivalent of previous conditions (Vitt and Bhatti, 2012) (Davis, 2002). Reclamation is different from restoration because it is restoring the land, but not restoring the ecosystems (Gosselin et al., 2010). The legislation suggests that the government wants to restore the environment. However, according to a recent government report, since 1992 less than 10% of the disturbed lands from mining are in the process of being reclaimed (Government of Alberta, 2017). Additionally, there is an increase in wells abandoned by operators with no reclamation completed (Johnson, 2017). The departure of operators after they have extracted all the oil without improving the state of the environment reveals that the government is not guaranteeing that it is doing everything they can to ensure environmental sustainability or to improve the environmental conditions significantly. Moreover, current reclamation is ineffective. To support this claim, in 2010, the Royal Society Expert Panel released a report stating that operators achieve some reclamation, but it is not keeping up with all the land disturbances (Gosselin et al., 2010). The panels view on reclamation suggests that if the oil sands do not stop or slow down their oil extraction practices, reclamation is useless. Overall, the suggestion of reclamation will not effectively improve the environment because operators continuously damage the environment and it will never be restored to its exact previous state. The government should consider minimizing extraction or stopping the extraction.

Aside from licensing wells, the operators need to follow government created processes before opening up an operation. The Albertan government created the Oil Sands Regulatory Processes, which are processes that new operators to the industry need to follow before opening up a new operation (Alberta Energy, 2017). The process document does not discuss any environmental requirements. In fact, the majority of the document discusses royalties. If an operator wants to join the business, they should be informed of the environmental responsibility when they operate. Lastly, there is the Environmental Protection Enhancement Act, which requires operators to prepare a project plan before extraction; the plan is subject to a public meeting to determine the public interest (Gosselin et al., 2010). However, the Energy Resources Conservation Board (ERCB), which holds the public meetings, can exclude public interest groups, and the government has not been attending public meetings (Gosselin et al., 2010). The lack of attendance of the government

suggests that they will make decisions regardless of the public's opinion. The exclusion of participants suggests that the public meetings may be ineffective. Interest groups may bring forth valuable information regarding environmental degradation which the government may not consider if it is not present.

2.2 Air pollution

Another environmental concern due to oil extraction is air pollution. Greenhouse gases (GHG) are a major concern for Canada due to the link to climate change. In Alberta, for each barrel of oil, the process produces three times as much greenhouse gases (GHG) as a barrel of conventional oil (Nikiforuk, 2010). The GHG from extraction includes carbon dioxide (CO₂), methane, and hydrogen sulfide (Marriott et al., 2015) (Percy, 2012) (Kutz and Elkamel, 2010). These pollutants can travel far distances before falling on land, or into the water. In all three areas, the hydrogen sulfide is unhealthy for people and the environment. Depending on the degree of exposure, hydrogen sulfide could cause death in humans (Manahan, 2013). To regulate the hydrogen sulfide, Section 7(1) of the Oil Sands Conservation Act and Rules states that if hydrogen sulfide gas is present, the operator must put up signs and must follow the maximum permissible concentrations as determined by the Department of Environment and Sustainable Resource Development (Government of Alberta, 2017). The Act/Rules show that the government is regulating this area, but it is not effective. Posting signs stating that hydrogen sulfide may be present near the oil extraction areas does not safeguard people and the environment since the hydrogen sulfide can travel through the air and settles on land and the water. For people to be aware of the danger, signs would need to be present across Alberta, nearby provinces, territories, and states. On the other hand, signs do not prevent harm. In environmental studies and public policy, there is the precautionary principle. It states that government is obligated to prevent harm if they are within the power regardless of if they have proven evidence that an action can cause harm (Peel, 2005). In the case stated, there is evidence that hydrogen sulfide is harmful to humans and the environment, but the government has not implemented policies to prevent the exposure to the substance strictly. Overall, the government is not doing its due diligence to be accountable for long-term effects of the exposure. Placing economic interest over environmental and human health is not demonstrating good governance.

As mentioned in the introduction, climate change is a concern for both levels of government. A pollutant that the extraction of oil emits, which contributes to climate change, is CO₂. To curb CO₂ emissions Alberta placed corporate fines. In 2007, the government of Alberta enforced the Specified Gas Emitters Regulation (SGER). The regulation requires all large emitters to reduce the carbon intensity of their energy production by 12% (Alberta Environment and Sustainable Resource Development, 2012). However, operators' compliance with the regulation is flexible, meaning that facilities can continue to emit as long as they pay \$15 per ton of carbon dioxide equivalent (CO₂e) (Radu, 2014),

(Gosselin et al., 2010). In June 2016, Alberta reported that there was a reduction of 69 million tonnes (Mt) of carbon, thus, the government extended the regulation until 2017 (McCrack and Ross, 2015) (Alberta Environment and Parks, 2017). The evidence suggests that the regulation was successful in reducing GHG. However, it is important to consider the fact that operators can still emit pollutants as long as they pay. In fact, the initiative earned the province \$740.1 million (Alberta Environment and Parks, 2017). The finding shows that the government enforces a fee when an operator emits carbon, which should prevent and reduce industries from emitting. However, the fine is ineffective because these operators have economic advantages. For example, in 2016, Suncor Energy earned a profit of \$4 billion from the oil sands profits, exploration and production (Suncor, 2016). In 2014, Suncor Energy identified they emitted 20.5 Mt, and their projections to 2019 do not expect a decline in CO₂ emissions (Suncor, 2015). Using the data provided expected payment for the emissions is (\$15 per tonne x 20 500 000 =) \$307 500 000. Thus, the amount which is required to pay does not make a significant impact on Suncor Energy's profits to nudge the operator to want to reduce CO₂ emissions drastically. In fact, Suncor Energy suggests that their emissions will increase which suggests that environmental impact reduction not being a priority. The lack of impactful changes in CO₂ emissions by Suncor Energy shows that SGER is inefficient. The Pembina Institute indicates that operators receive \$1.4 billion in tax breaks annually (Pembina Institute, 2016). The tax breaks are counter-productive to reducing GHG emissions. All the fees paid as a requirement of SGER are returned to the industry suggesting that the legislation is ineffective.

On the other hand, it is important to note that some operators have considered the environmental impact and have developed a new method for extraction. Many operators have started using an Electro-Thermal Dynamic Stripping Process (ET-DSP) (Sweeny, 2010). The process is better for the environment because it uses the least amount of energy by using electricity and water to extract the bitumen (Hein et al., 2013). The process does not emit any greenhouse gases because it uses renewable energy. However, this method will not stop the destruction to the land because oil is continuously extracted. In fact, the process enables producers to extract 400 billion more barrels of oil at \$26/Barrel (Wang, 2009). Therefore, the intentions of the new process may not improve the environment. Instead, it may be one of economic interest. As mentioned previously, oil and resources like land and water are finite. Thus, extracting more oil, even with environmentally approved methods, does not prevent the unsustainability of resources.

In addition, internationally, Canada has set a goal to reduce climate change. It set a target of 523 million tonnes of carbon dioxide equivalent (Mt CO₂e) by 2030. However, according to recent reports by Environment Canada, GHG emissions are expected to be between 697 and 790 Mt CO₂e in 2030 (Government of Canada, 2017). The report reveals that Canada is nowhere near meeting its goals, suggesting that there is ineffective governance in the initiative. On a provincial level, the oil sands emit 66 megatons of GHG (Giovannetti, 2016). In

2016, Alberta introduced Bill 25 to cap the amount of GHG it emits. However, Alberta also mentioned that they have no way of enforcing the 100 megatonne limit (Giovannetti, 2016). Also, even with the cap on emissions, the industry would continue to grow by 47.5% above 2014 levels. The other limitations of the cap are exemptions to cap only the steam portion of extraction and upgrade exemptions (Hussey, 2017). The limitations and expected results of the bill are minimal. The government is not acting responsibly because creating legislation that brings limited benefit does not support the principles of good governance.

Moreover, an action that Canada has taken internationally to present itself as a country motivated to reduce climate change is its involvement in the Paris Climate Agreement. In the agreement, countries are only obligated to reduce GHG in their country. Thus, Canada only creates legislation to minimize the effects on carbon within the country and does not consider carbon transported out of the country (Tencer, 2017). Until the discrepancy changes, Canada can still be exporting oil in large quantities, which does not benefit the environment. In fact, Canada is extracting and exporting at a quicker speed (Tencer, 2017). The rush to extract and export suggests that Canada wants to profit from the oil industry rather than improving the environment. In addition, the Canadian Energy Research Institute states that because of the increase in production the efforts to lessen GHG do not affect the emissions (Tencer, 2012). The observation suggests that the current practices of reducing GHG will not keep up with the demand. The report also mentions that even with technology innovation, emissions will still rise at the same rate as oil output (Tencer, 2012). The research completed by the experts' shows that emissions would increase unless extraction is completely stopped. The government should consider the research before creating policies. In summary, all current legislation does not effectively tackle any of the GHG concerns. Participating in international discussions to prevent climate change is deceitful when the governments allow operators to continue their practices with full knowledge of the environmental degradation.

2.3 Water pollution and tailings ponds

There are three main ways that water is affected due to the oil industry, operators take large amounts of water from the Athabasca River, used water dumped into the Athabasca River, and tailings ponds seep into the Athabasca River. Also, tailings ponds pollute the air. In the natural environmental process, oil seeps into land and water without causing much degradation. However, the extraction of oil has a significant impact on the water in Athabasca. The current method of the SAGD significantly increases the amount of pollution in water, and the mining method wastes water. To use the SAGD method most industries take water from the Athabasca River (Partanen et al., 2015). Every barrel of bitumen requires three barrels of water (Grant et al, 2013). According to the Pembina Institute, in 2011, the oil sands operators used approximately 170 million cubic meters (1.1 billion barrels) of water (Grant et al, 2013). Thus, there is a lot of fresh water being used to operate the industry. The reduction of water

in the Athabasca River has a significant impact on fish and surrounding ecosystems. Fish use the Athabasca River to breed and migrate, and data shows that there is a general decrease in fish in the river (Black et al., 2014). The evidence suggests that removal of water is hazardous to the fish. If the removal continues, the fish stocks could be depleted, potentially causing the fish to be endangered, altering the entire ecosystem in the river.

When the water is taken out of the river and used in the extraction process; it becomes contaminated with chemicals. Adding any chemical to water in an ecosystem pollutes its natural state. As long as oil operators are licensed, they can dump extraction discharge into the river. A previous government report states that Suncor accidentally released approximately 9.8 million liters into the river, but there is no comprehensive report of the volume or chemical compounds. In 2007, licensed discharge was 11.9 billion liters (Timoney and Lee, 2009). The dumping causes fish to be contaminated with amongst others, aluminum and selenium (Timoney and Lee, 2009). The evidence suggests that the operators can act environmentally degrading regardless of the impact. Overall, the government is not monitoring accidents efficiently if there is no known record of how much waste is dumped into the river. To tackle the water extraction and quality issues, in 2007, Alberta created the Athabasca River Water Management Framework, and in 2015 it was replaced by the Lower Athabasca Region Surface Water Quantity Management Framework for the Lower Athabasca River (Regional Aquatics Monitoring Program, 2017) (Athabasca River Water Management Framework, 2017). There are no results available for either framework (Alberta Environment and Parks, 2017). To be efficient and effective Alberta should provide data on how much water operators take out of the river and how much-contaminated water is being dumped. Research states there is a decline in government monitoring (Timoney and Lee, 2009). In 2012, Canada and Alberta developed the Joint Canada-Alberta Implementation Plan for Oil Sands Monitoring (Government of Canada, 2013). According to the website, the plan was to monitor water and air quality. Since 2013, there has been no update on the progress of the plan, and the government states that the plan ceased in 2015 (Hatfield Consultants, 2016). Within the plan, it states that the Regional Aquatic Monitoring Program (RAMP) in Alberta is supposed to assist in monitoring water trends. According to the 2017 aquatic monitoring assessment by RAMP, in the Athabasca River, fish communities had a low change while wild fish health had a high change (Hatfield Consultants, 2016). The report proposes that the wild fish have continued to live in hazardous standards. The governments need to reconsider their policies and create legislation that will be effective in improving water quality and reducing pollutants. In summary, the governments are attempting to monitor water levels and quality, but there are no results of the initiatives. In this instance, the government should be more accountable and transparent by gathering data and showing the public if the initiatives are effective.

Another concern related to water is the impact on the land. When using the mining method,

companies dump used water onto the land. The dumping creates tailings ponds. Suncor's Tar Island Pond One covers 145 hectares (Timoney and Lee, 2009). By 2020, tailings from Syncrude and Suncor may exceed 1 billion cubic meters (Bergerson and Keith, 2006). The tailings ponds are made of sand, and since they do not have any lining, the contaminated water with mercury, ammonia, selenium and other chemicals seeping into the Athabasca River (Timoney and Lee, 2009) (Gosselin et al., 2010). Research mentions that seepage from Syncrude Mildred Lake has a high concentration of naphthenic acids and government is aware of the seepage (Timoney and Lee, 2009). The toxins cause fish to have abnormalities and tumours (Jordaan, 2012) (Nikiforuk, 2010) (Pentland and Wood, 2013) (Timoney and Lee, 2009). In addition, the increasing size and quantity of tailings ponds cause concerns for migratory birds. The birds are unable to land. Thus, they migrate further (Timoney and Lee, 2009) (White, 2010). The change in migration may lead to the extinction of birds if they are no longer able to live their traditional lifestyles. In addition, birds, which consume or been exposed to the toxic water can die. In 2008 1,600 ducks died after landing on the tailings ponds (Nikiforuk, 2010) (Gordon, 2015). The ducks landed in operator Syncrude's tailings pond. The operator's defense to the deaths was that it was allowed to have the tailings pond (Gosselin et al., 2010). In 2007, under the EPEA Section 227, there is a requirement to submit a Waterfowl Protection Plan. It is unknown if the plan was established (Gosselin et al., 2010). The Minister of Energy spoke against the prosecution of the operator (Gosselin et al., 2010). In the end, Syncrude was guilty and paid \$800,000 in charges. After the case had been settled, 350 additional ducks died (Gosselin et al., 2010). The findings suggest that if the birds continue to use the toxic water, it could potentially lead to their extinction. The operator was found guilty meaning that it was not obeying the law. The additional, deaths following the verdict reveal that the government did not immediately enforce environmental protection. Overall, there was a lack of efficient compliance to the legislation.

Tailings ponds influence not only the land and the water, but also the air. As the tailings ponds evaporate, they release carbon-containing gases known as volatile organic compounds (VOCs), sulfide and NO₂ into the atmosphere (Speight, 2017) (Environment Canada, 2016). A report by the Canadian government found that VOCs contribute to the smog and odour causing compounds (Timoney and Lee, 2009) (Environment Canada, 2016). Therefore, it is clear that VOCs contribute to air pollution. There has been involvement by the Albertan government in curbing the creation and expansion of tailings ponds. In 2006, Directive 074 was placed to force operators to move to a dry tailings process by 2013 to limit and reduce the growth of tailings ponds (Nikiforuk, 2010). The drive was to ensure that the Energy Resources Conservation Board (ERCB/Board) could hold operators accountable for tailings management (Alberta Energy Regulator, 2009). However, during the implementation of the directive, companies were permitted extensions, exceptions and were not required to meet their annual reduction goals (Grant et al, 2013). According to the results, operators did

not meet the targets set under Directive 074 (Snyder, 2015). Therefore, the legislation indicates that tailings ponds were planned to be slowly stopped and reduced in number. However, the government did not enforce compliance from the companies, which ultimately failed to achieve the goals. The Pembina Institute criticized the government stating that the government was ineffective. In a report from 2011 to 2012, none of the companies complied and the government did not penalize the companies (Grant et al, 2013). In 2015, Alberta suspended the directive, and tailings ponds are still being used (Alberta Energy Regulator, 2013). The Lower Athabasca Region: Tailings Management Framework for Mineable Athabasca Oil Sands (TMF) replaced the directive, and in 2016, Alberta introduced Directive 085: Fluid Tailings Management for Oil Sands Mining Projects (Alberta Energy Regulator, 2017). The Directive 074 was clearly inefficient and ineffective. The TMF and Directive 085 do not have any results yet. However, the framework suggests that there is greater control over the tailings ponds because it considers all the effects on the environment, is enforceable with compliance guidelines, manages all tailings ponds, requires ongoing reclamation and is clear for stakeholders to understand (Alberta Energy Regulator, 2017). Therefore, the government has developed the directive appropriately to ensure that it is effective and efficient. In summary, tailings ponds are causing environmental degradation due to the seepage into the Athabasca River which causes harm to the fish and ultimately to humans. Not all initiatives created by Alberta have been enforced effectively to stop or prevent the problems.

2.4 Industry governance

It is important to note that the industry is aware of the degradation of the environment. Some companies in the industry have implemented the "triple bottom line" where one of the principles is to environmental sustainability (Henriques and Richardson, 2013). For example, Suncor Energy adopted a climate change action plan aimed at increasing energy efficiency and reducing corporate-wide greenhouse gas emissions. According to their results, it has reduced 50% of CO₂ intensity per barrel at mining operations since 1990. Other initiatives included in areas of tailings ponds, reclamation, and water use (Suncor Energy, 2017). Although any effort is beneficial, it seems that the operator is not working with the government. Rather, it appears that as long as an operator introduces a plan, they can complete environmental improvements at a pace that is beneficial to their business. Overall, the lack of government creating effective laws for environmental sustainability and the ineffectiveness of ensuring compliance to the past and the current legislation questions if the government is setting the standards or if the industry is taking charge of the progress of environmental sustainability.

CONCLUSION

The Albertan and Canadian governments do not present good environmental governance over the environmental effects resulting from the oil industry. Oil corporations receive legal flexibility

from both governments in return for increasing investments. Legislation and policies should conserve natural and manufactured capital, monitor environmental impacts, and remove hazards. Good governance is treating the environment fairly. The industry will not comply with legislation or policies voluntarily since its focus is to make a profit. The government appreciates the income it receives from the oil industry and favours economic success over the environment. The favouritism in pursuing economic interests suggests that the economy is above the law, which alludes to a lack of the rule of law. Ideally, the oil sands should be decommissioned, but there are major impacts, which are beyond the scope of this paper. However, if stronger legislation and policies are created and enforced, the environment can still be saved, and the industry may slowly close on its own. The governments should impose more forceful compliance including high monetary penalties, license and permit revocations

to the current legislation and regulations, and a process to track operators who abandon wells without reclamation. In addition, government officials should attend all public meetings to respond to questions and identify plans to mitigate environmental degradation. The public meeting results should have a significant weight on the decision to permit oil companies to operate. Lastly, the governments should consider placing a cap on the quantity of oil extracted and encouraging oil operators to contemplate a business in the sustainable energy sector. For example, if an operator wants to remain in the oil business, they may consider the process of converting algae to oil. The alternative will continuously bring revenues to the government and operator while conserving the environment. In conclusion, the governments need to decide if they can enforce compliance and lose economic opportunity to improve the environment to ensure it is sustainable for the future.

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