

Inquiry-Driven Thesis Paper

Down the Pipeline: What Direction is the Value- Added Industry of the Alberta Oil Sands Headed?

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Abstract

Located in north-eastern Alberta and covering up to 140 000 km², the Alberta Oil Sands make up the world's second largest proven oil reserves next to Saudi Arabia. This unconventional petroleum deposit contains naturally occurring mixtures of sand, clay, water, and a highly viscous petroleum product commonly referred to as bitumen. Producing liquid fuels from oil sands is an energy intensive process that involves "in-situ" techniques to recover the unconventional product, and either producing it into synthetic crude via bitumen upgrading, or refining it into other valuable petroleum products by specialized refineries. The Alberta oil sands have exponentially grown in recent years exceeding the decline in conventional crude oil production, and making Canada the largest supplier of oil and refined products to the United States.

The "value-added" processes, including upgraders, refineries, and petrochemical facilities of the oil sands, is the driving force of the industry. These processes produce thousands of jobs and opportunities for a highly skilled and educated workforce contributing to the economic boom in Alberta, while capturing more of the hydrocarbon value chain. This value-added development is essential to the long-term sustainability of Alberta to maximize the full value of its energy resources. However, recently the management of the oil sands has been publicly criticized creating concern as to which direction the value-added industry is headed. With the addition of three major pipelines the Alberta Clipper, Keystone (including Keystone XL) and the Northern Gateway Pipeline, it seems Alberta is willing to flush away their value-added industry down to our neighbors to the south by shipping raw bitumen to refineries and upgraders in the United States at a cheap market price.

This inquiry paper focuses on the loss of the value-added jobs in Alberta as a result of these pipelines. In these hard economic times, is the Government of Alberta doing enough to keep value-added oil sands jobs within the province and Canada. The paper focuses on current policy issues around the Alberta government and the oil sands industry which includes an analysis of Alberta's Mine Reclamation Security Program, a recent policy which has many flaws that could leave the liability of the oil sands cleanup to Alberta tax payers. Finally, the study is concluded with some policy alternatives that could shift the scenario around and put Alberta back in the driver's seat where it belongs. If no immediate action is taken, we're left with a giant hole in the ground and the cost of the clean-up, while all the value goes down south.

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1.0 Introduction

1.1 The Alberta Oil Sands

The Alberta oil sands have long sought out to be a controversial topic amongst industries, politicians and legal institutions, and as well the general public. Oil sands, which were historically known in the industry as the tar sands, can be found in various locations around the world such as Venezuela, United States, and Russia, but it is the north-eastern Alberta deposits of the Athabasca region which are the largest and most developed around the world ("Government of Alberta: Energy"). The oil sands region in Alberta (here now called the oil sands) occupies approximately 140 000 square kilometers in the Athabasca, Cold Lake, and Peace River districts of the province (Ministry of Energy, 2010). To put into perspective, this is roughly the size of New York State. Figure 1 shows a detailed geographical display of the Alberta oil sands.



Figure 1: The Alberta Oil Sands (ERCB, 2006)

The province of Alberta is known to have the second largest oil reserves in the world with approximately 171.3 billion barrels of oil in proven oil reserves; of which 99% come from oil sand reserves (Ministry of Energy, 2010). Figure 2 displays Alberta's oil reserves comparatively to the world's proven oil reserves. This oil, trapped

under the complex surface of sand, water, and clay, makes for an energy intensive process to extract.

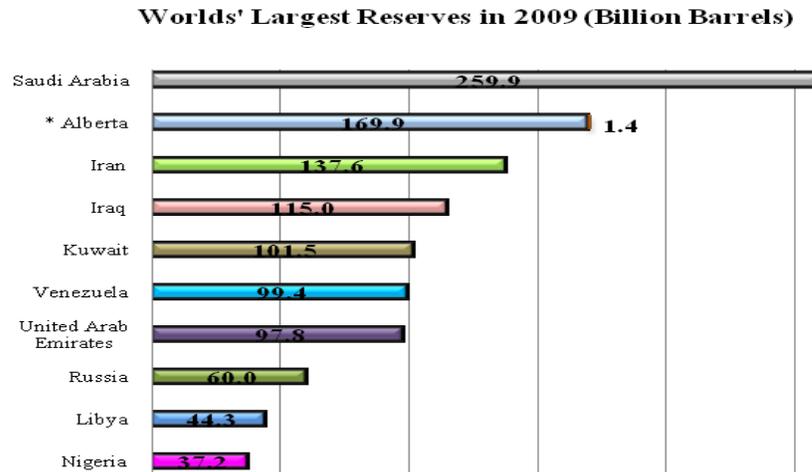


Figure 2: World's Proven Oil Reserves (ERCB, 2006)

Though it's no secret that the oil sands contribute to Canada's green house gas emissions, more and more supporters look beyond this spectrum and focus their attention on the economic benefits of the oil sands industry. With the amount of hydrocarbons available to be processed into gasolines, jet fuels, and other valuable petroleum products, the markets, the industry and its supporters strongly believe the oil sands will play a leading role in Canada's economic future.

Figure 3 shows a comparison in the cost of production of the oil sands in Alberta relative to oil production in other parts of the world. As it is observed, the oil sands are some of the world's most expensive oil to produce due to its complex nature extraction process methods. Yet, with large amounts of reserves and Canada's energy demand steadily increasing, it's easy to ignore this fact and focus more on the economic matters.

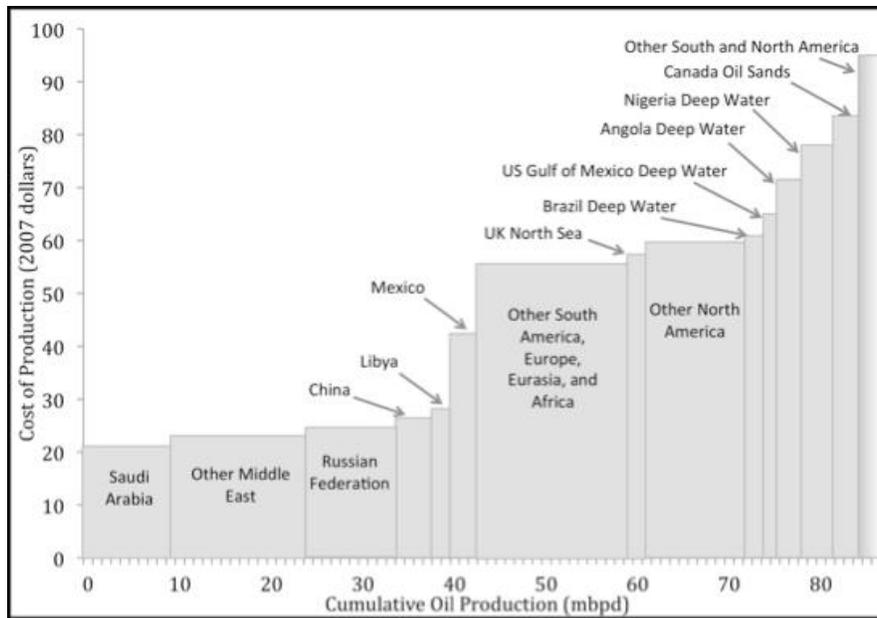


Figure 3: Estimates of the Cost of Production for Oil from Various Locations (The Oil Drum, 2010)

1.2 Future of the Oil Sands

So it may be easy to look past the environmental hazards, the expensive production costs, as well as the publicly criticized “development and management” of the oil sands. But where is the future of Canada’s oil sands headed? With the recent expansions of the bitumen pipelines along with the proposal for two more larger pipelines, how much of the oil sands’ bitumen will be refined and upgraded within the province and country? How much will Alberta and Canada be benefiting from the future development of the oil sands? How much of the “value added” processes of the Canadian oil sands will actually stay in Canada? What is the Government of Alberta doing to keep value added jobs and opportunities in the province and in Canada? This research paper will explore these questions and shift focus more to the economic aspects in the future of the Canadian oil sands. An analysis of the value added component of the oil sands will be displayed and the concerning policy issues around value added opportunities will be highlighted. Finally, a short list of policy suggestions and alternatives will be made.

2.0 Developing a Business Case of the Oil Sands

To better understand the oil sands as a whole, we must first study the business case of the oil sands venture. This chapter will explore implications behind the business case, the recent growths of the oil sands and its effects on the U.S. oil market and the current financial situation with the oil sands in Canada.

2.1 Beyond the Scope of Economics

Before we go into the details of the economics of the oil sands, it's important to understand that this so called phenomenon has many implications which make it highly controversial in a global context. As mentioned earlier, the oil sands signify one of the most expensive oil sources to produce in the world. For many years the oil sands projects have been on the threshold of profitability and operating costs are only expected to rise as development shifts to more complicated in-situ methods, lower quality reserves and a deep labor crunch (Lemphers, 2011a). In addition, macroeconomic implications of the business case need to be considered as well. For instance, if speedy oil sands expansion causes "labour shortages in other industries or locks the value of the Canadian currency to the volatile price of oil, the business case for the oilsands weakens" (Lemphers, 2011a). It is important to note that this inquiry focuses on the current market trends and policies of the value-added industry and suggests alternative policy if we are to continue to develop the oil sands and rely on them as a major source of energy in the future the way we are today.

2.2 Growth of Oil Sands and the U.S. Market

With its rapid expansion in recent years, oil sands growth and development has offset the recent declines in the conventional oil production in Canada and North America. From 2000 to 2009, the oil sands more than doubled its production from 0.6 million barrels per day (mbd) to 1.35 mbd. It's important to note that during the same time period, the U.S.A. increased its import of oil from Canadian sources from 1.4 mbd to 1.9 mbd. As of September of 2011, the current crude oil imports from Canada to the USA stood at 2.3 mbd. Though not all of this increase was due to the oil sands production, the oil sands development has contributed to a large part of this growth in trade.

The United States imports oil sources from many different countries in the Middle East and South America such as Saudi Arabia, Venezuela, Mexico and Nigeria. However, with the recent growth in oil sands development, Canada has now become the largest supplier of oil and refined petroleum products to the United States. The US has a large oil market and currently consumes over 20% of the world's oil production.

2.3 Current Value Added Market in Canada

With current business-as-usual standards, the oil sands affect the jobs of more than 100 000 Canadians from coast to coast. When many people think of the oil sands, there's a biased opinion directly related to the business benefits to Alberta alone. But the opportunities created by this valuable source are shared all across Canada. After taking a look at Figure 4 which displays the employment impact distribution of the oil sands, it's not fair to say the oil sands are an Alberta affair. With 44% of the employment generated outside Alberta, the oil sands are a Canadian undertaking.

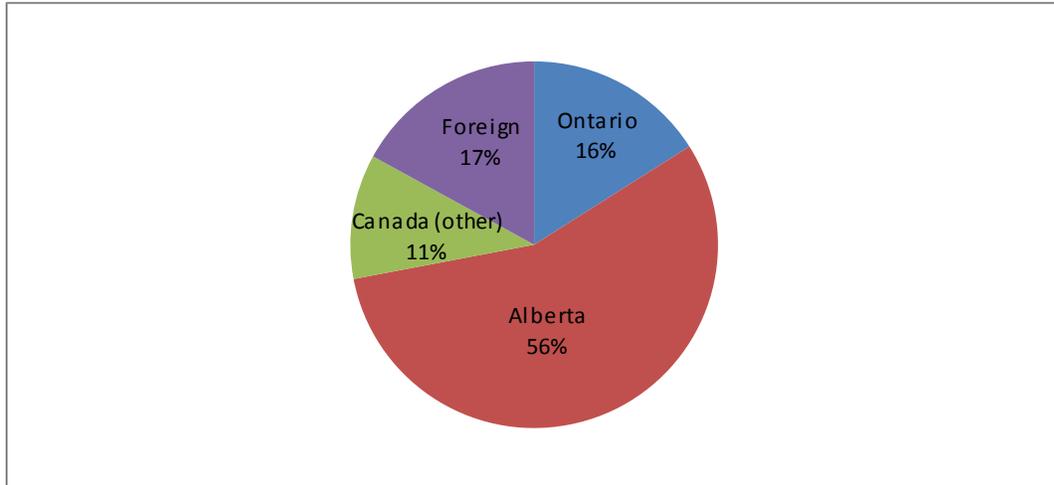


Figure 4: Oil Sands Employment Impact Distribution (CAPP, 2008)

3.0 Economic Downsides

3.1 Pipelines

Raw bitumen deposits of the oil sands are of different complexity than the traditional conventional oil. Bitumen at room temperature has a high viscosity and can be compared to cold molasses; it is difficult to flow (Masliyah, 2008). Therefore, the bitumen has to be treated on site to reduce viscosity, before it can be transferred via pipelines to refineries and upgraders where it is processed to produce gasoline, jet fuel, heating oil, diesel oil, etc. (Masliyah, 2008). Figure 5 is a simple schematic diagram of the bitumen extraction from water-based processes. Due to its properties and its highly toxic nature, bitumen cannot be transported in the same pipelines as conventional oil pipelines.

Over the past few years, two major pipelines have been planned, designed, and constructed to transport Alberta's raw bitumen into the refineries in the United States. TransCanada's Keystone pipeline transports Alberta's diluted bitumen to Illinois and Oklahoma, while Enbridge's recently built Alberta Clipper pipeline departs to Wisconsin (Swift et al, 2011).

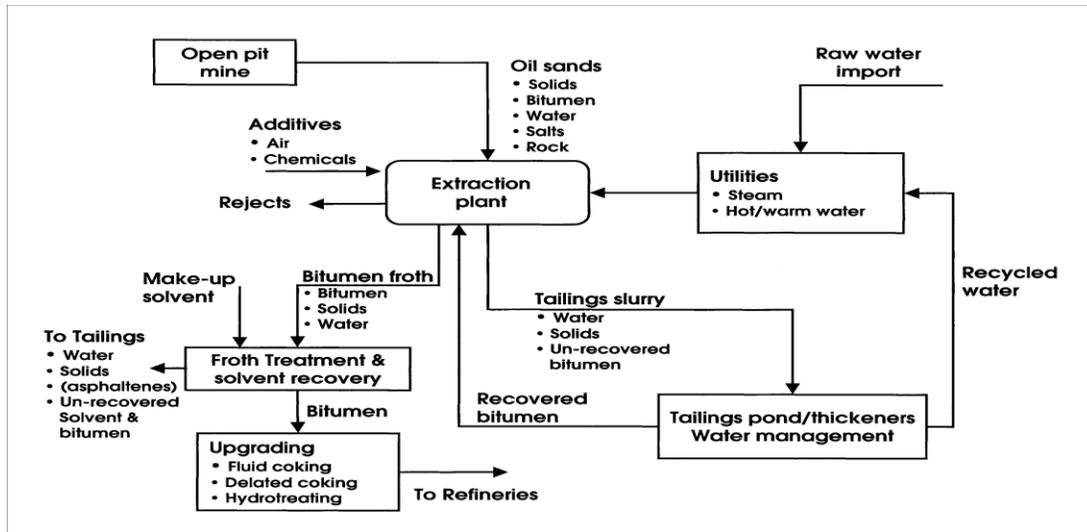


Figure 5: General Scheme for Oil Sands Processing Using Water-Based Extraction Processes (Masliyah, 2008)

3.1.1 Keystone

Calgary based TransCanada designed and constructed its \$13 million Keystone pipeline project, which commenced its commercial operation of the first phase in June of 2010. Phase one stretches from Hardisty, Alberta, down to through Steele City, Nebraska, and then east wards to Wood River and Patoka, Illinois, while phase two which began operation in February of 2011, extends from the Steele City terminal stations to Cushing, Oklahoma. The proposed 2 700 km Keystone XL expansion project would also start in Hardisty, Alberta, and have its own pathway to Steele City, Nebraska. From there, it would join the primary Keystone pipeline to Cushing, Oklahoma, and then expanded to continue to the Gulf Coast refineries and to Port Arthur, Texas (Hovey, 2008).

The expansion was proposed in 2007, and will increase the delivery of the initial 590 000 barrels per day (bpd) from the first two legs to nearly 1.1 million bpd of Alberta's crude directly from the oil sands (TransCanada, 2011). An independent study conducted by The Perryman Group found that the proposed expansion would improve the

American energy security, have a positive contribution to the U.S. economy of nearly \$20 million, and provide approximately 118 000 person-years of employment (The Perryman Group, 2010).

In March of 2011, the National Energy Board (NEB) approved the Keystone XL expansion project for its construction and operation on the Canadian portion which stretches approximately 529 km, and is expected to cost \$1.7 billion (NEB, 2011). At times, it seemed the Obama administration was likely to approve the proposal as it would instantly benefit the U.S. and would significantly cut down gas prices, trumping Obama's thirst for re-election in 2012 (Koenig, 2011), but the project is still pending federal approval in the United States. Alberta's Premier at the time, Ed Stelmach, was in full support of the Keystone XL expansion project, and elected to get himself involved with the U.S. permitting process. In a response letter to U.S. Congressman Henry Waxman (Chair of the House of Representatives Energy and Commerce Committee), Stelmach defended the environmental concerns of the oil sands and also stated that "the Canadian Energy Research Institute recently forecast that over the next five years oil sands development will result in an additional 343, 000 jobs in the U.S. and over the next fifteen years, an average annual increase in the U.S. GDP of over \$30 billion" (Lewis, 2010).

3.1.2 Alberta Clipper

The Alberta Clipper pipeline project was proposed in early 2007 by North American pipeline giant, Enbridge, and its affiliates. The \$3.3 billion project was granted a Presidential Permit by the U.S. State Department on August 20th, 2009 (U.S. Department of State, 2009). As of April of 2010, the Alberta Clipper was mechanically

completed and has since started to ship raw bitumen from the oil sands in Alberta to the U.S. Midwest markets (Enbridge, 2011).

The initial capacity was set as set at 450 000 bpd, but ultimate capacity of up to 800 000 bpd is available with the Alberta Clipper (Enbridge, 2011). The 1600 km pipeline, which also starts at terminal stations in Hardisty, Alberta, stretches in a south eastern direction towards Superior, Wisconsin and is self-proclaimed as Enbridge's answer to the growing energy demands for North American complimented by the expected growth of 1.8 mbd from Alberta's oil sands by 2015 (Enbridge, 2011).

Like the Keystone, the Alberta Premier made a big push with Alberta Clipper, silently working with the National Energy Board to attract the least amount of media attention as possible (Alberta Federation of Labour (AFL), 2008). A geographical map of the Keystone, proposed Keystone XL, and the Alberta Clipper pipelines are displayed in Figure 6.



Figure 6: Geographic Map of the Keystone and Alberta Clipper Pipeline (NRDC, 2010)

3.1.3 Northern Gateway Pipeline

The pipelines don't end there, as Enbridge has production plans for a third major project for the Alberta oil sands. The Northern Gateway Pipeline, a multi-billion dollar project, will run a twin pipeline system between Bruderheim, Alberta, and a newly developed marine terminal in Kitimat, B.C., according to the project website (Enbridge Northern Gateway Pipelines, 2011). The system will export petroleum based products from the oil sands westerly to Kitimat, while import condensate back from B.C.

The pipeline opens up gateways to bitumen markets in Europe, Asia, and even the south west coast of the USA. One of the major stakeholders interested in this pipeline is The People's Republic of China, who have expressed great interest in the opportunity to be able to process and refine Alberta based bitumen.

The building of this pipeline illustrates the significant growth of the oil sands projects, however recent scrutiny has come to show an alliance formed between Enbridge and the BC Government, through sponsorship of a cancer research charity event. Long story short, Enbridge focused on branding and gaining popularity through "Enbridge Ride to Conquer Cancer" charity bike ride, in a counter over their controversial pipeline project which would craft oil tankers on BC's coast; something 80% of British Columbians are against (Gillis, 2011).

Since the Northern Gateway Pipeline is just in the early stages of its regulatory application for approval, it wasn't the core focus for this inquiry. However, it does bring into consideration how much more bitumen Alberta could potentially be selling away and also questions the ethical intentions or behaviors of the oil sands expansion projects outside of Alberta.

3.2 Opportunities Flushed Down the Pipeline

The Obama administration continues to face the decision of the Keystone XL project as the U.S. Department of States' biggest concern is the environmental consequences. However in Alberta, there's something else to be alarmed about with all this pipeline activity. Not only are we sending raw bitumous oil down to the States, we're sending thousands of possible "value-added" jobs along with it. This has Gil McGowan extremely worried about the future of the oil sands in Canada. The president of the Alberta Federation of Labour (AFL) stated in an interview that "[w]e're sending jobs down that pipeline...[n]ot just Alberta jobs but jobs for all Canadians" (Steward, 2011).

The conservative Government of Alberta is known for their strong defense of job creation through merit of natural resources, a strong labour force and of course, free trade. In fact, it was only five years ago when the former Premier promised to keep more value added oil sands jobs in Alberta. During his 2006 run for the leadership of the provincial Conservative party, Stelmach questioned the value in selling raw bitumen, stating that "[s]hipping raw bitumen is like scraping off the topsoil, selling it, and then passing the farm on to the next generation" (Kleiss, 2011).

Looking at the Alberta's refining capacity trends back in 2009 displayed in Figure 7, we can see how the economy could have played a critical role in the postponing and cancellations of many projects. The AFL reported that the postponed and cancelled projects could have added a capacity of over 1.5 mbd to Alberta's refining and upgrading picture. In a statement released on December 5th, 2008, StatoilHydro Canada President Geir Jossang stated the following:

“In line with several other players in the Canadian oilsands industry, StatoilHydro has decided to discontinue the upgrader project at this time, but will continue to monitor the cost and price environment and reassess downstream options going forward. This decision does not impact the upstream part of the company’s oilsands venture. The production from the project will be marketed as unprocessed bitumen.” (Oil Sands Truth, 2008)

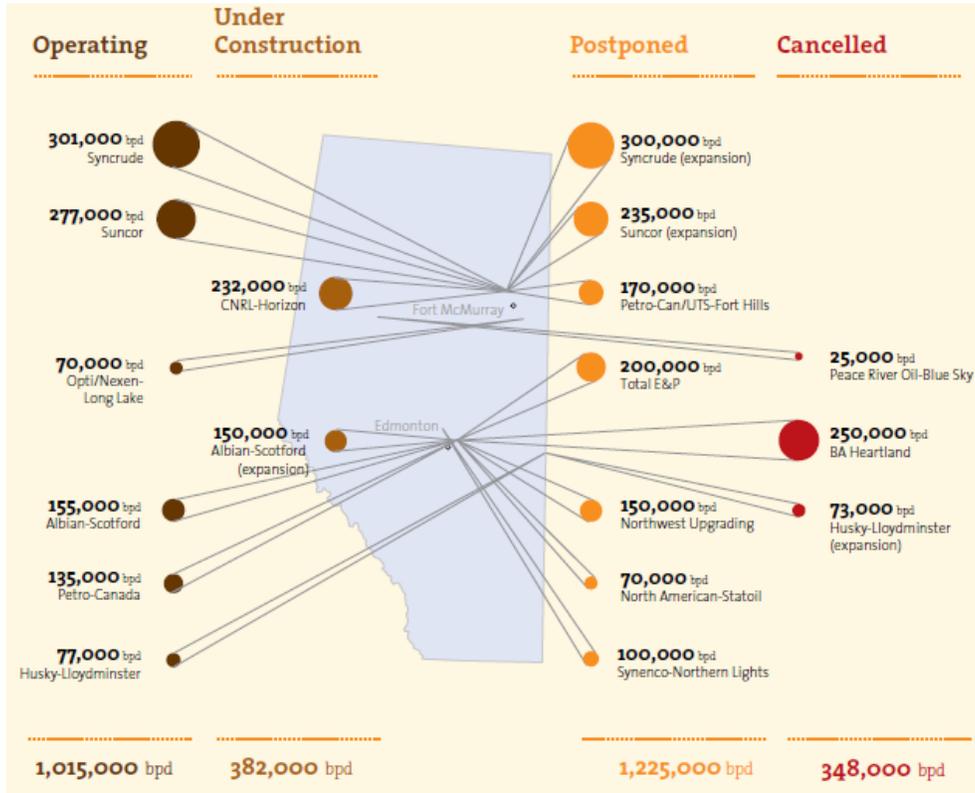


Figure 7: Oil Sands Refining and Upgrading Projects in Alberta as of 2009 (AFL, 2009)

While the economy was slowly gaining its strength back in early 2009, most energy companies found it more feasible to be able to ship bitumen into their U.S. based refineries or to sell the bitumen to other energy companies in America. Figure 8 shows the activity of oil sands refining in the U.S. as of 2009. These ten refineries and upgraders are among many that have expanded to adapt and process Alberta bitumen into their facilities. The estimated total investment into these refineries alone was over \$31 billion, with the likelihood to be able to process over 2.8 mbd of oil sands bitumen (AFL, 2009).

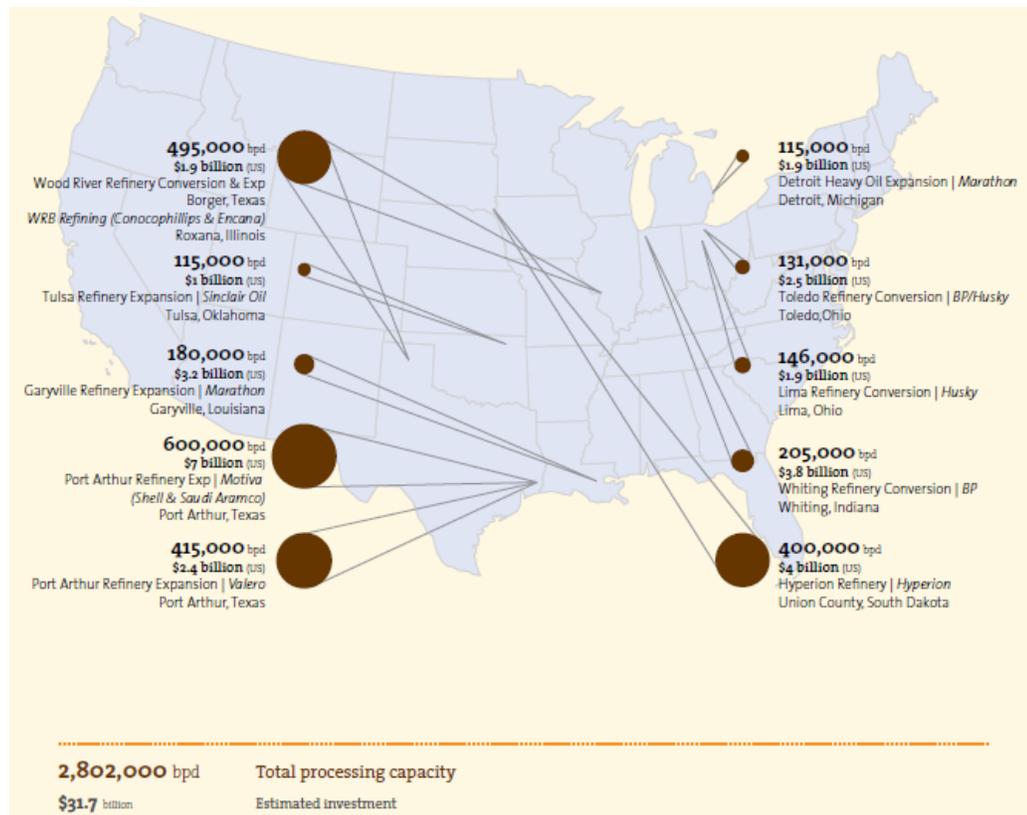


Figure 8: U.S. based refineries with expected expansions for Alberta bitumen (AFL, 2009)

If Government of Alberta were to focus on building more refineries and upgraders in the province, they would have the opportunity to create thousands of jobs through operation and maintenance of these industrial projects. Instead, it seems the tides have turned as Albert legislation is fixated with exporting the raw bitumen down to our neighbors to the south, and hence leaving numerous amounts of high paying, long term jobs in upgrading and refining and oil sands manufacturing to the U.S and outside Canadian borders (McGowan, 2010). In a trip down to Houston, Texas, Stelmach addressed an audience of American oil executives where he stated that he was pleased to see a “number of Houston-area refineries are re-tooling to process bitumen from Alberta’s oil sands (Audette, 2009).

The current bitumen production in Alberta as of 2011 is approximately 1.5 mbd and of that, 1mbd gets processed and refined in Alberta. Scientific estimates have shown

that with business-as-usual trends to continue, the estimated output in 2020 will be roughly 3.3 mbd (CAPP, 2010). With the growing number of expansions on U.S. based refineries, America will have an estimated bitumen refining capacity of 2.8 mbd. As a result, the size and number of U.S. refineries and American-bound pipelines is significant because it means the U.S. oil refineries can “easily handle all the expected increase in Alberta’s bitumen production between now and 2020, leaving no new value-added opportunities for Alberta” (AFL, 2009).

Without the addition of more value added activity in Alberta, it is quite clear that the province will lose out on thousands of potential jobs, both in the short term and long run (AFL, 2009). The Industrial Heartland Association has estimated that eight of the ten postponed or cancelled upgraders and refineries planned in Alberta would have created well over 22 000 construction jobs and over 12 000 direct permanent jobs, not even accounting for all the spin off jobs (AFL, 2009). Keep in mind that this research inquiry focuses on value added jobs if we are to continue to develop the oil sands at the current pace and scale that they are being developed. If the goal was to create jobs, there are many other industries that would create even a higher number of jobs if the money was invested in the (Lemphers, 2011a).

What else is at stake for the province of Alberta? Losing out on the opportunity to move up the value ladder and diversify the strong energy sector. Without the additional upgrading capacity in Alberta (the necessary foundation for higher value refining), the province loses out on the dreams of diversification (AFL, 2009). Figure 9 shows the evidence behind this as raw bitumen is traded at a market value price far lower than any other products which can be derived from it.

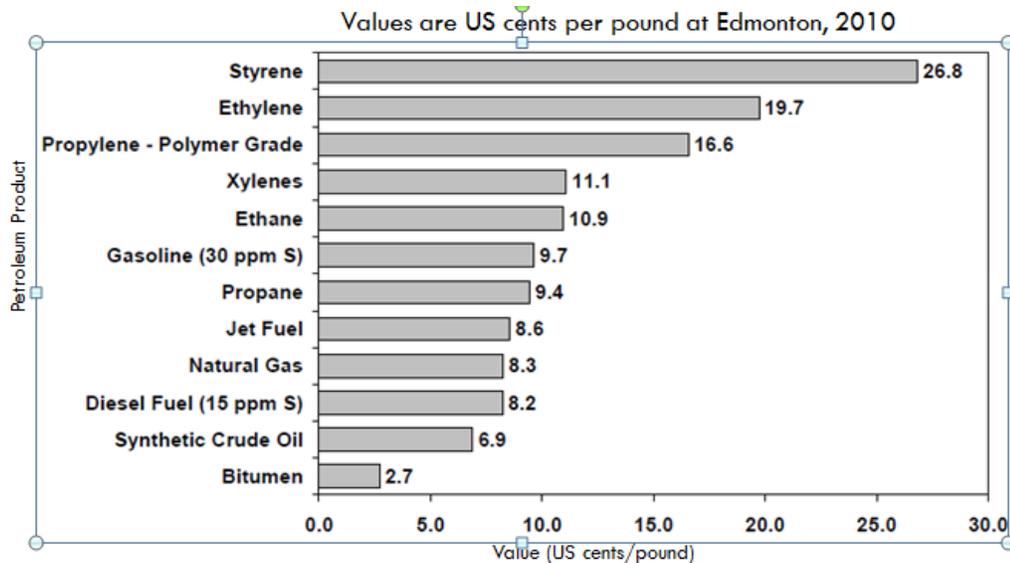


Figure 9: Petroleum Products and their Values in US cents (AERI, 2010)

But the former Premier argues that the pipelines create access to bitumen markets, therefore creating jobs in Alberta for those working on the extraction sector of the oil sands (McGowan, 2010). Sure this is true, if your primary motivation is just to sell raw bitumen. But if we are all in agreement that creating jobs in the province is a positive movement, then of course creating more jobs – more long term sustainable jobs – is a better option (McGowan, 2010). Instead, the Government of Alberta seems content with the short term job opportunities from pipeline construction, and minimal long term opportunities in the extraction of bituminous sands.

This raises the question: Is the Government doing enough to keep value added oil sands jobs in the province? As the stagnation of growth in Alberta based refining capacity continues, we face the possibility of two-thirds of our bitumen being processed in the states, when it was Alberta's very own legislature that promised to continue at least two-thirds of Alberta bitumen upgrading or refining in the province (AFL, 2009). In a press release of the AFL's report, McGowan stated the following:

“Essentially what we've been seeing over the last few months is the creation of a continental energy system in which Albertans are being assigned the role of low value extractor and Americans are reserving for themselves the role of high value upgrader

and refiner. This is happening without broad public discussion, it's happening right under our noses, and it's happening frankly with the tacit approval of our provincial government. That's why we think the public needs to rise up, see what's being lost and demand that our provincial government take action - the kind of action that was taken in the seventies with the Lougheed government to build a value added industry here in Alberta instead of simply shipping jobs down the pipeline''(AFL Lost Down the Pipeline, 2009).

McGowan stresses that when we talk about oil sands jobs, it's important to remind ourselves that the oil sands belong to Alberta. Therefore, it's important that if jobs are going to be created (in manufacturing, mining, or upgrading), the government should do everything in their power to ensure as many of those jobs stay in the province; this is part of the government's role (McGowan, 2010). Unfortunately, it's a role where the Alberta legislature is falling behind in comparison with other provinces. For example, Ontario's governing policy on electrical generation restricts companies from feeding into the electrical grid unless 50% of the generation has been manufactured in the province. The result: Samsung's recent \$7 billion investment to set up solar panel and wind turbine manufacturing facilities, which will create over 16 000 jobs (AFL, 2008).

4.0 Previous Policy Blunders

After a detailed analysis on current policy issues with the Alberta Government relating to the oil sands, let's revise some of the previous mishaps. We'll focus attention on land reclamation securities of oil sand companies in Alberta, and the provincial government's recently new policy implementation.

4.1 Mine Reclamation Securities Policy

It's clear by now that for oil sand companies to continue to make a business case for themselves, they disturb significant land. Essentially, they take a complex eco-

system, destroy it to obtain the valuable resources coated underneath, and then attempt to recreate this complex eco-system. This process of land reclamation is monitored by the Province of Alberta through their Mine Reclamation Policy.

This policy enforces operators working in the oil sands to pay a financial security deposit upfront based on the following years' estimated land disturbance, which is returned to them when the land is reclaimed (Gemmell, 2011). The insurance policy was put in place in the event that an operator is unable or unwilling to pay for environmental clean-up costs. Oil sand companies budget the costs of these expensive reclamations into their balance sheets. Approximately \$820 million was collected by the Government of Alberta for its securities program for nearly 70 000 acres of disturbed land from oil sand companies (Lemphers, 2011b). However, studies from the Pembina Institute have shown estimates pertaining to an actual value of anywhere between \$10 – 15 billion (Lemphers, 2011b).

Even if we take the best of the worst case scenario, the government then only collected less than 10 % of the actual disturbed land costs in expectation that the organizations will pay the remaining over time. What's at stake with this scenario? What if these companies are simply incapable of replaying the costs of the disrupted land, who becomes responsible to cover the remaining costs? The answer is simple: The land proprietor – The Government of Alberta, will essentially be accountable. This would of course would drift and then reflect onto the citizens of Alberta. This study by The Pembina Institute showcased that Alberta taxpayers could be exposed to a liability risk of anywhere between \$4300 and \$6300 each, for the clean-up costs (Lemphers, 2011b). Over the past few years, Alberta took some heat over this policy due to its liability risk, as well as lack of other measures such as transparency.

In early March of 2011, after much criticism of this policy, the Alberta Government introduced the “Mine Financial Security Program” (MFSP), a new policy to act as an adjustment from the old one. The new program takes an asset-to-liability approach, that is, it recognizes the value of the resources as assets in terms of a cash flow basis. A base security is paid at the early stages of the mine and then the remaining security is collected near the end of the life of the project. Though some credit is due for improvement on the previous policy, a further detailed analysis shows the new policy actually puts Albertans at a greater risk for liability costs.

4.2 Positive Impacts in Policy

Though compared to the old policy, which lacked transparency and raised other critical concerns, the new MFSP had some positives to take from it. First, the policy introduces consistent reporting requirements for the oil sands industry. A new consistent method for reporting updates, progress, and data of the reclamation lands that industry had to comply with is just what the province needed. The next major improvement to take note of is the audit liability estimates. With the new policy, the province now requires financial officers and accounting professionals to sign off and audit liability estimates. To address the issue of transparency, the policy includes a mandatory online information portal where industry is required to post information, available for public consumption. Overall these improvements can be credited to the new policy, however they are overshadowed by a strong shift in the way Alberta manages their oil sands liability.

4.3 The Drawbacks (Four Factors of Flaw)

The fact of the matter is that this new policy was not an improvement; simply put, it was taking a step back in liability, and putting the province at a higher risk to be

accountable for the clean-up costs it could potentially face. In the *Guide to Mine Financial Security Program*, the Government of Alberta states that the “MFSP provides a responsible balance between protecting the people of Alberta from the costs associated with the liability of coal and oil sands development in the event an Approval Holder cannot meet their obligations, and maximizing the opportunities for responsible and sustainable resource development” (Alberta Environment, 2011). Nathan Lemphers study on this new policy alternative shows that this isn’t really the case. A senior oil sands policy analyst for The Pembina Institute, Lemphers’ study expressed through a blog, showcases four major flaws found in the MFSP: Optimism, Commodity Risks, Regulatory Risks, and Environmental/Industrial Disaster (Lemphers, 2011). The following is a brief analysis of these four factors Lemphers has presented and why the new policy could potentially hurt the people of Alberta rather than protecting them.

4.3.1 Optimism

If you’re not new to the oil and gas industry, you would know that the industry has a large tendency to be overly optimistic about their assets. In return, they are not shy about undervaluing their reclamation liabilities. Released in December of 2010, the Royal Society of Canada’s Report on oil sands stated that many of the oil sands corporations have often chronically underestimated their reclamation obligations (Gosselin et al, 2010). Put two and two together, and you can see how easily twist situations to their advantage. As a result, this asset-to-liability approach would be inadequate as the government’s calculation to assess clean-up costs from the mine can be easily skewed, and very inaccurate.

4.3.2 Fixed Cost versus Variable Commodity

The second flaw that the new policy doesn't account is the difference in nature of the cost of reclamation compared to that of the assets from the mine. The clean-up liability costs are fixed costs, whereas the oil assets from the mine fluctuate in value. Taking a look at Figure 10, we can see the pattern of crude oil prices the 1970's to modern era. As the figure displays, oil prices are not stable; they have never been, and history tells us they likely never will be. There are simply just too many factors affecting crude oil prices, along with the many unforeseeable events.

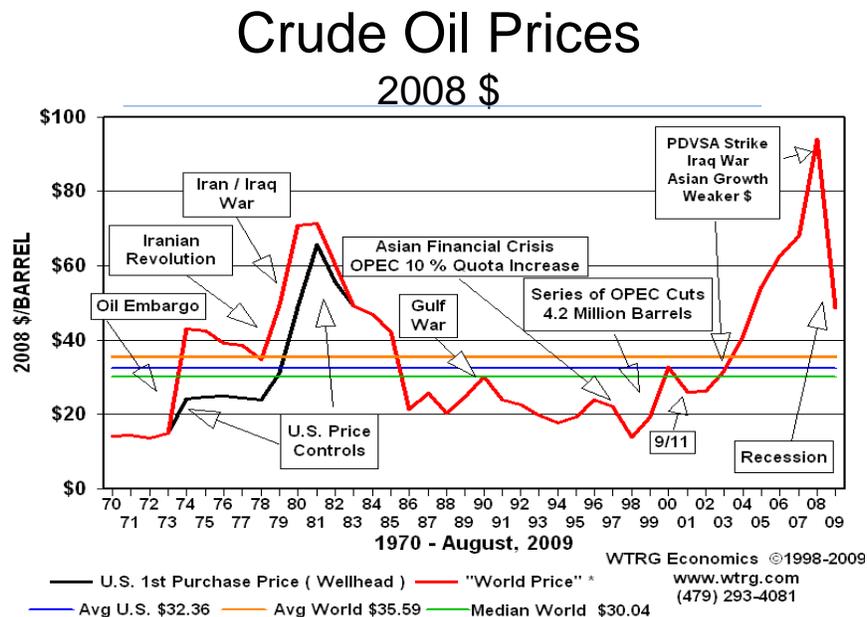


Figure 10: History of Crude Oil Prices (WTRG Economics, 2010)

So while the same liability will exist regardless of the value of the oil sands, the oil price is not stable. Oil Sands oil represents approximately 1.4% of the global oil production, and because oil is traded as a global commodity, this puts the province in a position to become a price-taker of oil; making them defenseless against the often unanticipated price shocks in the oil industry. In addition, the current tailings lakes still need to be reclaimed, regardless of the market performance. This commodity risk was ignored in designing Alberta's new policy on oil sands reclamation.

4.3.3 Regulatory Risks

It's no surprise that oil sands bitumen is energy intensive to extract and refine into petroleum products. This makes oil from the oil sands very expensive compared to conventional sources. So by deferring the security payments for clean-up, the Government of Alberta is taking a regulatory risk. With capital and operating costs for some oil sands operations as high as \$80 per barrel (see Figure 3), petroleum products from the oil sands are some of the most expensive oil in the world. Therefore the oil sands represent the marginal barrel of oil and as a result, the entire industry is exposed to this risk, as the financial viability of a project can drastically change with additional costs from regulations.

The failure of setting clear regulatory signals from the federal and provincial government only harms this risk further. While the Canadian Government has struggled on defining a clear plan greenhouse gas regulation from the oil sands, the Alberta Government has been inconsistent with its regulation of the tailings ponds. In addition, "it is unknown how upcoming regional plans, reclamation regulations and wetland policies will affect the bottom line of this price-sensitive industry" (Lemphers, 2011b).

4.3.4 Environmental/Industrial Disaster

The question of occurrence of rare, inevitable events is countered by the industry's proclamation of the unlikelihood of such disaster. The fact of the matter is that environmental and industrial disasters do happen. Take for example the BP Gulf oil spill in 2010 which had significant financial and regulatory ramifications for the entire offshore drilling industry. The calamity was the largest accidental marine oil spill in the history of the petroleum industry (Robertson et al, 2010). Of course the disasters are

nothing new to the nuclear industry. The events Chernobyl and Three Mile Island have vastly shifted the economic and regulatory schemes of the industry.

With not setting aside money as liability is created, Alberta could potentially be digging itself into a big whole. The possibility of an environmental or industrial disaster in the oil sands could render the entire industry uneconomic, and thus, the province could be responsible for an expensive cleanup bill with very little bank to cover for it.

4.4 Summary

These four major flaws summarize the potential liabilities the province could face as a result of this basic approach of the Mine Financial Security Program. In a response to an official from the Government of Alberta, Professor Andrew Leach of the University of Alberta commented on the new policy: “We are effectively under-writing the liability on behalf of the project proponent” (Leach, 2011). The distinguished business professor adds “the likelihood that the deferral of letters of credit has a meaningful effect on investment is small, so by collecting security commensurate with incurred liability, the risk of a future shortfall is eliminated at little cost” (Leach, 2011). Going back to Lemphers’ blog, Nathan summarizes Professor Leach’s comments with the argument that “the economic costs from collecting security as liabilities are created are slight and the potential to reduce the risks borne by the provincial treasury – and ultimately Alberta taxpayers – is significant” (Lemphers, 2011b).

In summary, the new policy collects less in the short to medium term, as most of the security is collected towards the end of the mine’s life. This results in a large time span where very little land will actually be reclaimed. So while the Government of

Alberta continues to argue that “over the long term, the total security amount collected will be considerably higher than with the previous approach” (Gemmell, 2011); this statement is actually misleading. If any of the aforementioned factors came into the playing field in the twenty-plus year time frame, the tax payers of Alberta could be at great risk in lieu of the Alberta Government’s responsibility. This is just an example of a critical policy in the oil sands in which the Government of Alberta did not take the right steps and measures for its future. It’s unfortunate that the government lost a major opportunity to shift the paradigm on reclamation security policy and reduce the risk of Albertans.

5.0 Alternative Policy Options

Now that we have studied our policy issue and some previous policy mistakes of the Alberta government, let’s focus on policy alternatives that could help change this scenario around and turn crisis into opportunity. Dr. Andre Plourde, a former University of Alberta economics professor and now Dean of Carleton University’s Faculty of Public Affairs, emphasizes how the oil sands are a world class resource, yet we seem to neglect this fact and decide to treat it as any other natural resource (Alberta Oil, 2011).

5.1 Limit Oil Sands Development

By slowing down the rapid pace of development in the oil sands, the Government of Alberta can allow the local refining industry to catch up with the excess amounts of extracted bitumen which would essentially be sent down the pipelines. Currently, Canada is allowing the oil sands industry to run the petroleum economy and if this is to continue, these markets would essentially take over Canada. The downstream market is adding pressure on the industry and the governments to continually improve extraction

methods and efficiencies. By placing set limits on oil sands bitumen extraction, the industry as a whole would gently self-stabilize, allowing majority of the bitumen to continue to be processed in Alberta. Though this doesn't necessarily create more jobs, it creates job security for the value added industrial sector of the oil sands. And as Lemphers mentioned many times previously, the inadequacy of the environmental management system is also a result of the record pace and scale of oil sands development while the provincial budget is based off an incomplete balance sheet (Lemphers, 2011a). Environmental management policies could potentially catch up with the accelerating industry if its development was limited.

Public revenue from the oil sands will also benefit as a result. According to the honorable Don Rigney, Mayor of Sturgeon County, the taxes and royalties collected by shipping 1.5 mbd of raw bitumen to the U.S. is between \$3-\$4 million, whereas this take in would jump to \$10 million if the same amount is to be upgraded domestically (AFL, 2009).

Though this movement would be resisted by the industry, the government would have to create incentive base conditions for the industry, in particular those companies that have refining capacity in Alberta. An example of this would be potentially subsidizing royalties or taxes from increased refining and upgrading within the province, which would allow more of the bitumen to stay within the province and upgrade. Another condition that should be involved in this policy process would be to "open the Loughheed playbook" as McGowan likes to say it, by using the governments' legislative authority and their financial strength to produce conditional leases for oil sands development (AFL Lost Down the Pipeline, 2009). This would restrict energy companies

from developing oil sands leases without the commitment of creating jobs in the province.

5.2 Defend a Differential Price for Bitumen

Over the course of the last few years, the mining and extraction companies, as well as industry associations (i.e. CAPP) have presented the “market price” of raw bitumen. The Government of Alberta needs internal policy to castoff this argument and reject the market price argument. By encouraging the export of raw bitumen, Alberta is slowly transforming it into a more tradable commodity with one price, inadvertently undermining the province’s only real competitive advantage when it comes to upgrading and refining (AFL, 2009). Essentially we’re just giving our neighbors a large competitive advantage with accessible, low-priced feedstock. The province needs to take action and stop the exporting of raw bitumen. Though one could argue this would be considered as turning our backs against trade – all it means is that the province is choosing to sell high-value petroleum products to their trading partners rather than low-value commodities. The bottom line is that the U.S.A is our biggest trading partner, and what they want is energy; so let’s give them refined products on the best possible relations for Alberta and its people (AFL, 2009).

5.3 National Energy Strategy

Some argue that the lack of a national energy policy in Canada makes the oil sands more vulnerable to trade market. As this paper has shown, value added petroleum developments don’t just occur over night, they get built as governments decide they need to be built. These decisions need to be in a context of a comprehensive design strategy designed to promote the public interest over the long term (AFL, 2009). However, Canada is the only major petroleum producing nation without a national energy policy.

This lack of a formal public vision was the major contributor to a hardly regulated oil sands development turmoil, which has had Canadians concerned over the last few years (AFL, 2009). This lack of a formal plan is also responsible for some of the many trends we see in the oil sands today – such as the shipping of raw bitumen and jobs in the value added sector to the U.S. One of the only ways we can move to a model for developing oil sands and other energy sources in ways that fit the needs and aspirations of Canadians is if the Alberta government sat down with the federal government and other energy producing provinces to create a national plan (AFL, 2009).

5.4 Renegotiating NAFTA's Energy Section

When addressing policy to ensure value added jobs will stay in the province, Alberta will need to seek national consultation into the North American Free Trade Agreement (NAFTA). The energy provisions of NAFTA, especially proportionality sharing, make sense to re-regulate energy exports by imposing a Canadian needs test and regaining the ability to impose export tax (Eaton, 2008). The AFL also agrees that Canadian policy makers can tie their hands potentially in the Energy section of NAFTA, if they move to introduce policies aimed at keeping refining and upgrading jobs in province and country (AFL, 2009).

It was back in 2009 when U.S. President Barack Obama visited Canada for the first time since taking office, where he hinted on the renegotiation of NAFTA. At the time, the Canadian government had no interest, claiming that “any attempt to renegotiate part of the deal could see the whole thing unravel” (MacAskill, 2009). However, given the path that the oil sands are taking right now, it is strongly encouraged that the Alberta government calls upon the Canadian Federal government to take up Obama's suggestion for renegotiation of the NAFTA. Canada would need to take a similar approach to

Mexico and demand a similar type of blanket exemption for its energy sector; this would give the Canadian government the legal flexibility they need to defend the public interest.

5.1.1 Gains for the U.S.A.

Overall, this would benefit the U.S.A as well as a more advanced, strategic NAFTA, focusing on the trade of refined oil sands petroleum would eliminate the thought of energy scarcity. High oil prices in a time of vital change in North Africa and the Middle East in a combination with rising demand for emerging markets are raising concerns for the United States about the future price trends and the availability of oil (Burkhard et al, 2011). In the realm of US Energy Security, the Canadian oil sands could play a steadily growing long-term role in supplying the US energy market for years to come (Burkhard et al, 2011). That being said, it does belong to Canada, and therefore, for the greater common good, should be developed in Canada, and then provided as a quality Canadian energy source to our neighbors.

6.0 Conclusion & Further Research Study

The U.S. State Departments' announcement earlier in November of 2011 that the decision on Keystone XL will not be made until after the 2012 election leaves Alberta policy makers and those who strongly support the Keystone XL on standby. It would come to no one's surprise to see the Alberta government making a strong case for the Northern Gateway now that the Keystone XL talks have slowed down. Now that a new Premier has come into the scene in Alberta, it will be interesting to see how things change with Honorable Allison Redford's leadership after the retirement of Ed Stelmach. Ms. Redford has shown interest in pushing for a national energy strategy that would pull together Alberta's oil sands with the hydro power of B.C., offshore oil of the Atlantic,

and Mr. McGuinty's Green Energy agenda (Howlett and Wingrove, 2011).

Controverting to this is her continued support over the Keystone XL pipeline. In a trip to Washington D.C., Redford spoke to the power brokers of America including various State Department officials and House speaker John Boehner about confidence she has in the pipeline and its proclaimed importance to the U.S.A. (Goodman, 2011).

Further study can be conducted once the Keystone XL decision has been made, but until this time gap has elapsed, it will be interesting to see if policy makers in Alberta would realize the potential of value added opportunities in Alberta and what the bitumen pipelines would be doing to Alberta. For now, it seems the Alberta Clipper and the original Keystone pipelines will ship a significant portion of the extracted bitumen and thereby taking many jobs away from Albertans and Canadians. The AFL along with other labour boards will continue their lobbying for some strong recommendations for Alberta policy makers to keep these value added jobs in Alberta. But until the province realizes its potential job creation through strengthening the value added industry locally, all we'll be left with is a giant hole in the ground and the cost of cleanup which could end up as a burden for Alberta tax payers, while all the value goes down south (AFL, 2009).

References

1. *AFL Lost Down The Pipeline*. 2009. Video. YouTube, Edmonton. Web. 19 Dec 2011. <<http://www.youtube.com/watch?v=LJYo1wM9AP0>>.
2. "Alberta Clipper." *Enbridge*. n.d. Web. 18 Aug 2011. <<http://www.enbridge-expansion.com/expansion/main.aspx?id=1218>>.
3. "Alberta Clipper Pipeline Project." *U.S. Department of State*. Cardno ENTRIX, n.d. Web. 18 Aug 2011. <<http://albertaclipper.state.gov/clientsite/clipper.nsf?Open>>.
4. Alberta Environment, 2011. *Guide to the Mine Financial Security Program*. Alberta Environment, Edmonton, Alberta. pp. 5. Web. 10 Sep 2011. <http://www.environment.alberta.ca/documents/MFSP_Guide_-_2011_03_30.pdf>
5. "Analysis: Oil sands royalty fix proves elusive." *Alberta Oil*. Venture Publishing Inc., 10 Oct 2011. Web. 23 Nov 2011. <<http://www.albertaoilmagazine.com/2011/10/policy-failed-regime>>.
6. "Approval of second massive bitumen highway to the U.S. proves Ed Stelmach is misleading Albertans when he promises to keep oil sands jobs in Alberta." *AFL*. 22 Feb 2008. Web. 18 Aug 2011. <<http://www.afl.org/index.php/Press-Release/approvalofsecondmassivebit.html>>.
7. Audette, Trish. "Houston-Area Refineries Are Re-tooling to Process Bitumen from Alberta's Oil Sands." *The Financial Post*. 04 Feb 2009. Web. 15 Nov 2011. <<http://www.talkstock.com/tm.asp?m=409969>>.
8. Burkhard, James, Jackie Forrest, and Jason Beck. "The Role of the Canadian Oils Sands in the US Market." *IHS CERA*. 2011. Web. 22 Nov 2011. <<http://a1024.g.akamai.net/f/1024/13859/1d/ihsgroup.download.akamai.com/13859/ihs/cera/The-Role-of-the-Canadian-Oils-Sands-in-the-US-Market.pdf>>.
9. "Commercial Information." *TransCanada*. TransCanada Pipelines Limited, 25 May 2011. Web. 16 Aug 2011. <<http://www.transcanada.com/5732.html>>.
10. "Facts and Statistics." *Government of Alberta: Energy*. Government of Alberta, 11 Aug 2008. Web. 15 Aug 2011. <<http://www.energy.alberta.ca/OilSands/791.asp>>.
11. Eaton, Janet. "NAFTA Growing Resistance & Calls for Renegotiation and Oversight." *Sierra Club*. 06 Jun 2008. Web. 25 Nov 2011. <http://ontario.sierraclub.ca/sites/sierraclub.ca/files/nafta_growing_resistance_final_final_june_6_edit_for_stopthehogs_renegotiate.pdf>
12. "Enbridge Northern Gateway Pipeline Brochure." *Enbridge Northern Gateway Pipelines*. Blanchette Press, 26 Oct 2011. Web. 5 Nov 2011. <http://www.northerngateway.ca/files/ENB_NGP_BrochureOct26.pdf>.
13. Gemmell, Trevor. Government of Alberta. Communications. *Province Advances Land Reclamation Programs*. Edmonton, Alberta. March 17 2011. Web. <<http://www.alberta.ca/acn/201103/30079C433FD78-A16A-B3F8-76EA527E7353E6C5.html>>.
14. Gillis, Damien. "Cancer, Oil, and Bicycles: An Unwholesome Alliance." *The Pacific Free Press*. Common Sense Journalism, 03 Nov 2011. Web. 5 Nov. 2011. <<http://pacificfreepress.com/news/1/10092-cancer-oil-and-bicycles-an-unwholesome-alliance.html>>.

15. Goodman, Lee-Anne. "Alberta Premier has no Regrets, Confident Keystone XL will Win U.S. Approval." *Canadian Business*. The Canadian Press, 15 Nov 2011. Web. 19 Dec 2011. <<http://www.canadianbusiness.com/article/56983--alberta-premier-has-no-regrets-confident-keystone-xl-will-win-u-s-approval>>.
16. Gosselin, Pierre, Steve Hruddy, M. Anne Naeth, Rene Therrien, Glen Van Der Kraak, and Zhenghe Xu. *The Royal Society of Canada Expert Panel: Environmental and Health Impacts of Canada's Oil Sands Industry*. The Royal Society of Canada, Dec 2010. pp. 311. Web. 17 July 2011. <http://www.rsc.ca/documents/expert/RSC_report_complete_secured_9Mb.pdf>
17. Hovey, Art. "TransCanada Proposes Second Oil Pipeline." *Downstream Today*. Lincoln Journal-Star, 12 Jun 2008. Web. 16 Aug 2011. <http://www.downstreamtoday.com/news/article.aspx?a_id=11336>.
18. Howlett, Karen, and Josh Wingrove. "Alberta Premier, Cozying up to Central Canada, Pushes Energy Strategy." *The Globe and Mail*. The Canadian Press, 18 Nov 2011. Web. 20 Dec 2011. <<http://m.theglobeandmail.com/news/politics/alberta-premier-cozying-up-to-central-canada-pushes-energy-strategy/article2238252/?service=mobile>>.
19. Kleiss, Karen. "Alberta Oil Jobs Flowing Away as Bitumen Processed Out-of-Country." *Calgary Herald* 19 Jul 2011. Web. 13 Nov. 2011. <http://www.calgaryherald.com/business/Alberta+jobs+flowing+away+bitumen+processed+country/5122167/story.html?cid=megadrop_story>.
20. Koenig, Brian. "Obama Pressured to Approve Canada-U.S. Oil Pipeline." *New American* 09 Aug 2011: Web. 16 Aug 2011. <<http://www.thenewamerican.com/tech-mainmenu-30/environment/8537-obama-pressured-to-approve-canada-us-oil-pipeline>>.
21. Leach, Andrew. "New Reclamation Guidelines (wonkish)." *Rescuing the Frog*. Mar 17 2011. Web. 05 Apr 2011. <<http://andrewleach.ca/oilsands/new-reclamation-guidelines-wonkish/#more-212>>.
22. Lemphers, Nathan. E-mail Interview. 16 Dec 2011a.
23. Lemphers, Nathan. "New oilsands reclamation program more transparent, but still financially risky." *The Pembina Institute*. The Pembina Institute, 24 Mar 2011b. Web. 5 Apr 2011. <<http://www.pembina.org/blog/513>>.
24. Lewis, Jeff. "Stelmach goes to bat for Keystone XL." *Alberta Oil* 08 Jul 2010: Web. 16 Aug 2011. <<http://www.albertaoilmagazine.com/2010/07/stelmach-goes-to-bat-for-keystone-xl/>>.
25. "Lost Down the Pipeline." *AFL*. March 2009. Web. 28 Jun 2011. <<http://www.afl.org/index.php/View-document/116-Lost-Down-the-Pipeline-April-2009.html>>.
26. MacAskill, Ewen. "Obama raises Nafta renegotiation during first official visit to Canada." *Guardian* [London, England] 19 Feb 2009. Web. 24 Nov. 2011. <<http://www.guardian.co.uk/world/2009/feb/19/barack-obama-stephen-harper-canada-visit>>.

27. Masliyah, Jacob. "Understanding Water-Based Bitumen Extraction from Athabasca Oil Sands." *Canadian Journal of Chemical Engineering* 82.4 (2008): Web. 16 Aug 2011. <<http://onlinelibrary.wiley.com/doi/10.1002/cjce.5450820403/pdf>>.
28. "National Energy Board Approves Keystone XL Pipeline Project." *National Energy Board*. 28 Apr 2011. Web. 16 Aug 2011. <<http://www.neb.gc.ca/clf-nsi/rthnb/nwsrls/2010/nwsrls06-eng.html>>.
29. Robertson, Campbell, and Krauss, Clifford. "Gulf Spill Is the Largest of Its Kind, Scientists Say." *New York Times* 02 Aug 2010. Web. 12 Nov. 2011. <http://www.nytimes.com/2010/08/03/us/03spill.html?_r=1&fta=y>.
30. "Statoil Hydro Scraps C\$16 Bln Tar Sands Upgrader Downstream." *Oil Sands Truth*. Calgary Herald, 05 Dec 2008. Web. 10 Dec 2011. <<http://oilsandstruth.org/statoilhydro-scraps-c16-bln-tar-sands-upgrader-downstream>>
31. Steward, Gillian. "Canadian Jobs Lost Down the Pipeline." *Toronto Star* 01 Aug 2011. Web. 13 Nov. 2011. <<http://www.thestar.com/opinion/editorialopinion/article/1032499--steward-canadian-jobs-lost-down-the-pipeline>>.
32. Swift, Anthony, Susan Casey-Lefkowitz, and Elizabeth Shope. "Tare Sands Pipeline Safety Risks." Feb. 2011: 5. Web. 16 Aug 2011. <<http://www.pstrust.org/TarSandsPipelineSafetyRisksFINALFINAL.pdf.pdf>>.
33. "The Impact of Developing the Keystone XL Pipeline Project on Business Activity in the US: An Analysis Including State-by-State Construction Effects and an Assessment of the Potential Benefits of a More Stable Source of Domestic Supply." *TransCanada*. The Perryman Group, Jun 2010. Web. 16 Aug 2011. <http://www.transcanada.com/docs/Key_Projects/TransCanada_US_Report_06-10-10.pdf>.
34. "What is Oil Sands?" *Government of Alberta: Energy*. Government of Alberta, 11 Aug 2011. Web. 15 Aug 2011. <<http://www.energy.alberta.ca/OilSands/793.asp>>.