

Disputed Keystone XL Pipeline Project and its Implications on Global Energy Security Scenario

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ABSTRACT

The politics of oil pipelines have become progressively noticeable in American politics in recent years. Especially, energy security, environmental impact and debates about economic benefits have been provoked by the planned Keystone XL pipeline expansion projected to take bitumen from northern Alberta in Canada to refineries on the Gulf Coast in Texas. Drawing on the news that currently occurs regarding keystone-xl pipeline issue, this article asks a series of questions. What are the roles of political aspects (identification of political issue), environmental aspect, economic approaches, and other implication towards the proposed project of keystone-xl pipeline? And what is the ongoing development of the project? We found that there are several reviews on the Keystone XL pipeline and some of the relevant issues and implication of the project are discussed.

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1. Introduction

Keystone XL owned by TransCanada is a pipeline which transports crude oil. [1]. TransCanada Corporation is an energy infrastructure company in North America [2]. It transports natural gas to local dissemination companies, energy generation and individual facilities [3]. Keystone XL transports oil from Alberta, Canada to Nebraska [4]. It is the most economically competent way to meet the demand for petroleum produces [5].

On September 19, 2008, the TransCanada has proposed and submitted the application to the U.S. State Department to build the Keystone XL pipeline, a \$7 billion private infrastructure project that would create thousands of jobs and advance America's energy security. This proposal would give opportunity for the U.S to transport the tar sand oil from Canada. It has become a highly politicized issue with supporters promoting the economic benefits brought to the U.S. by the construction and operation of the pipeline and the political benefit of closer relations with Canada and opponents critical of the pipeline's safety, and the potential for environmental degradation of water, air, and local environments, and also the impact of the pipeline on carbon pollution. The pipeline has made national news in the United States due to the TransCanada's proposal in which

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these proposal is the construction of the Keystone XL as these pipeline would take an alternate route to the mainline passing through Montana and a hub in Baker, Montana[6]. This project could transfer oil from US to Canada and able to transport about 830,00 barrels of bitumen per day with the total length of the pipe line is about 1200 mile.

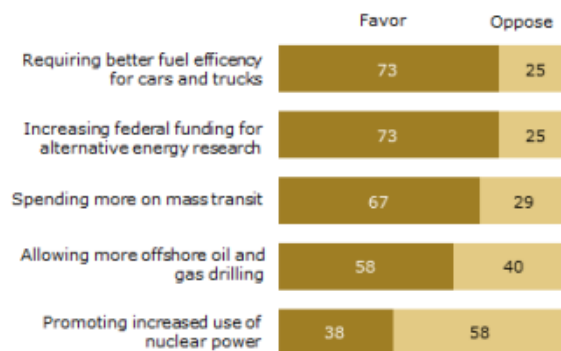


Fig. 1. Proposed Keystone XL pipeline

There are 4 phases of this project. In phase 1 project the pipe line is built from Hardisty, Alberta to end at north of Patoka. This phase construction commissioned in June 2010 with length of 3456 km [7]. For the phase 2 pipe line construction started from Steele City, Nebraska to the Cushing which 468 km long and for the phase 3 the pipeline constructed to the Nederland from Crusing Oklahoma with 784 km long, then second part is constructed from Liberty Country, Texas to the Houston[8]. The last phase still propose stage. Keystone XL pipeline is indeed a big project of oil transportation of United State and Canada. The commission, composed of four Republicans and one Democrat, has with the ruling lifted a key hurdle to the pipeline's construction, which environmental and Native American activists have opposed for years [9]. The activists saw Obama's rejection of it in 3 2015 as a key win, and the first time an energy project was rejected for its impact on global warming [10]. But in March, President Trump helped it along with an executive order to agree with the project. The company will now be required to get easements from landowners (approximately 40 landowners) along the alternative route, according to the Globe and Mail [15-16]. For 10 years, there have been a lot of development happen at the Keystone XL Pipeline. Along with the development of the pipeline there also an ongoing protest happen throughout this year. The protest and postponements happen in 2011 until 2016 and still ongoing until today[11, 12]. Besides, the TransCanada also come with an alternative project in order to cool down the controversy that happen due to the pipeline[14]. Where the Keystone Pipeline also was bought into lawsuit multiple of time from various company and organization seeking for the damage and petition to revise the pipeline[15].

2. Politic Issues

The Keystone XL pipeline extension is the original name for a 1,664-mile project that would transport 830,000 barrels of crude oil a day, most of it from Canada’s oil sands to refineries in Port Arthur, Tex. It is the extension of TransCanada’s existing Keystone pipeline. The Canadian government, oil companies and some unions back the project on the grounds said that it will generate construction jobs and ease the flow of oil from a friendly neighbour to the United States. Many politicians and residents in North Dakota and Montana also support the pipeline, because it will allow them to ship shale oil being extracted from the Bakken Formation in their states to Texas refineries.[6] Moreover, there are six major crude oil pipeline projects are now being considered to transport oil from Alberta's oils and to various ports and refineries across North America also include the refineries on the US Gulf Coast and ports in the province of British Columbia. Gulf Coast refineries are particularly interested in getting heavy crude from Canada, because they’ve already upgraded their facilities to process the oil. Of the six major crude oil pipeline projects that have been proposed, the TransCanada Keystone XL pipeline intended to ship an additional 830,000 barrels of Alberta bitumen per day to refineries on the Gulf Coast.[16] Environmentalists, as well as some ranchers and other landowners along the proposed route oppose the project. They argue it will make it harder for the U.S. to shift away from fossil fuels and will expand production in Canada’s oil sands. However most of the Americans support the pipeline. This is supported by the research conducted by the Pew Research Center poll released found that 66 percent of Americans back the project, as opposed to 23 percent who oppose it. Besides that, a Washington Post poll also found similar results, with 59 percent in favour and 18 percent against (Figure 1). Just 34 percent said the pipeline would do significant harm to the environment, while 83 percent believed it would create a significant amount of jobs. A new State Department assessment found it would create 1,950 jobs for a two-year period, after which it would generate 50 permanent jobs. The U.S. economy, according to State Department estimates. It would contribute \$3.4 billion to the U.S. economy, which would account for 0.02 percent of the nation's gross domestic product.



PEW RESEARCH CENTER Sept. 4-8, 2013. Don't know responses not shown.

Fig. 2. Public support for Keystone Pipeline

Originally when is proposed in 2008, the Keystone XL became an important electoral issue in 2012 (Figure 3). There are two reasons Keystone has become a political lightning rod. The most important factor is what development of the oil sands or tar sands as they’re called by opponents. Extracting bitumen which is a low-grade type of petroleum from the region is more akin to mining than conventional oil drilling, and the process of extracting crude or bitumen from oil sands emits roughly 15 percent more greenhouse gas emissions than the production of the average barrel of

crude oil used in the United States. This could be means for global warming effect as these processes emits the greenhouse gas emissions. NASA climate scientist James E. Hansen, who just retired from his federal job so he could become a full-time climate activist, said if all the oil was extracted from the oil sands it would be “game over” when it came to the effort to stabilize the climate [17,18].

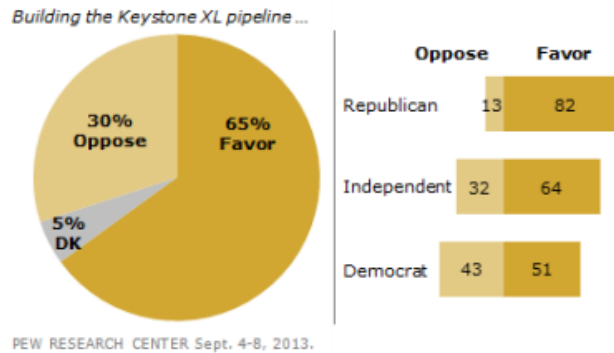


Fig. 3. Broad support for Keystone Pipeline

These arguments have been supported by those who have argued that Keystone XL is good policy from an energy security perspective. They believe that these could act as a stable democracy and US ally and by importing Canadian oil, the government will be able from not to depend on imports from less stable and less friendly governments in Venezuela and the Persian Gulf while the democrats oppose the proposal by aligning themselves with a number of environmental groups who have mobilized around the issue. These includes the No Tar Sands National Wildlife Federation, Oil Coalition, Greenpeace, Sierra Club, and Friends of the Earth. They are the organization that argues the Keystone XL would increase greenhouse gas emissions while placing local communities and aquifers at risk of contamination from pipeline spills. 5 Depending on the distribution and concentration of costs and benefits, issues will take on different political and geographic characteristics. Political issues that promise geographically concentrated benefits to the local work force, for instance, will have different political effects than issues that impose diffuse risks to a broader community. The pipeline also crosses a half dozen states, and people living along the route are concerned that spills from the pipeline could damage ecologically to the sensitive habitat. While the project's sponsor TransCanada says this new pipeline will boast the newest technology. Furthermore, the current Keystone pipeline has 16,000 data points that are refreshed every five seconds. However the recent spills like the breach of the Exxon pipeline in Mayflower, Ark has many people worried [18].

3. Environmental Issues

The construction of the Keystone XL pipeline leaves a big impact for both people and environment and create a lot of controversy. Keystone XL pipeline consist approximately 1380 miles and construct across few countries such as Oklahoma, Texas, South Dakota and other city. The environment concern becomes a main issue regarding construction of this project. TransCanada working with State of Nebraska and its native Nebraskans to ensure this construction does not gives big negative impact in environment fragile Sands Hills Region[19]. There is other environment concern regarding Keystone XL pipeline which is the transport of “tar sands “to the United States. “tar Sands” is crude oil that have thick and gooey appearance and emit tar smell after it was mined[20]. Not only that, across the region of the Alberta, there are about 170 million barrels oil

this crude oil can be mine. This hugely leaves a negative impact to the environment. Meanwhile, the construction that across the national border will cause of the accident happens was inevitable. The source of the energy is outweighed by the many negative effect that are potentially change the naturality of the environment.

3.1 Environment Unjust

The transportation of the crude oil through the Keystone XL pipeline is strongly opposed from various parties because of the dependences of fossil fuel to produce energy in the future will causes negative impact to the environment (Figure 4). The “tar sands” is basically combination of sand, water, clay and bitumen[21]. The way to extracted the mine required huge quantity of water is needed since bitumen in oil cannot be pumped directly from conventional well. The large use water and natural gas to extract the mine put these method on first list of environmental concern. In the process of extraction of “tar sands” huge amount of energy and emission gives negative impact to the environment[17]. After that process, the tar sand is mix with other toxic material to allow the material able to transport through the oil pipeline. In the industry they called “heavy crude”, then transport it to refineries for conversion. But, in the process of converting this material, the bitumen is upgraded into synthetic crude oil causes more greenhouse gas(GHG) emission. The production of the tar sand can increase the additional production of CO₂ from 6% to 22% per barrel more than conventional oil [22].

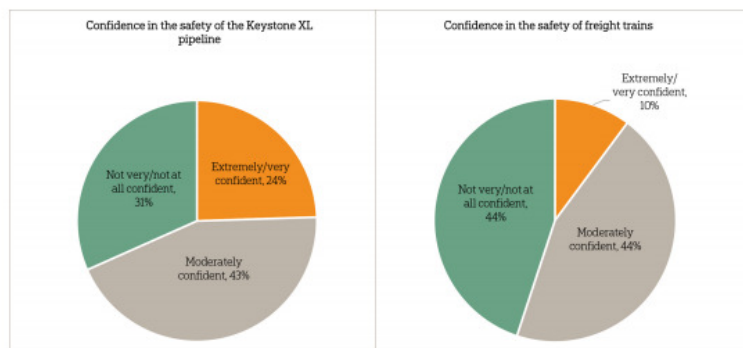


Fig. 4. Public confidence as how safe would be Kestone XL pipeline to transport the heavy oil

The Environment Protection Agency(EPA) notes that the Keystone XL pipeline project able to produce extra 1.15 billion tons of greenhouse gas emission. The effect of the greenhouse gas release should be emphasized for the construction of the Keystone XL pipeline and the oil refineries facilities are not located at the Canada but United States. Cities such as Port Arthur, Texas that already one of the dirties town located close to the Keystone XL refineries is ranked for the worst percent of cancer and non-cancer health risk because of the release of carcinogen and increase of reproductive and development of toxicants[23]. Even though, there are a lot of report have been issues, none of it taken into account for the city like Port Arthur with increasing of exposure to the emissions. City like Port Arthur has low income for group of minorities that live in the shadow of these oil refineries cannot effort to demand medicine from sue oil companies. Furthermore, the oil company cannot be stopped from releasing toxic to the environment even if litigation of that sort were to happen[24]. The Keystone Project essentially spread the pollution to the US citizen to severe level damage without any solution to sustain it.

3.2 The Risks Outweigh the Benefits

Construction of the Keystone XL will affect the environment quality outweigh the benefit of the production. There are always possible for an accident to happens no matter how safe oil pipeline is constructed or operated. TransCanada has make prediction that the only one accident will happen in 7 years of operation[24]. But, in the first year of the operation there are twelve in total accident happens across the Midwest and the worst was occurred in North Dakota. The accident involves of spill of oil about 21000 gallons[25]. This accident proves that the accident of oil spill will happens more in the future of the Keystone XL project. Spill of oil not only will harm individual but also the wildlife and water quality. The spill of oil could affect the daily routine of the landowners and communities that used water for recreation, drinking, or recreation. The area that pipeline near to the water or in remote location is has highest concern of the accident will happens[26]. The risk of spill of oil is primary environmental concern. The effect of spill is by factor of the location for oil to reach surface or groundwater. The sensitive area is usually at wetlands, shallow groundwater areas, flowing streams and rivers, near water intakes, and area with populations of sensitive wildlife or plant species. As results, the construction of Keystone XL will cause oil spoil accident to happens regardless of design ad safety measure.

4. Implication of Keystone XL Pipeline

4.1 Positive Implication(Pros)

Keystone XL pipeline is the foremost questionable venture and given its significance and feelings it makes on both sides of the issue, merits a nittier gritty talk. The primary stage of the project expands from Alberta to the refining and marketing centres in Illinois. The operations begun in the summer of 2010, with an expansion from Nebraska to Oklahoma, getting to be operational in spring of 2011. The pipeline can bring 600,000 barrels a day into Oklahoma [17]. The project alludes to a proposed 1,700 mile pipeline expanding from Alberta to Nebraska, consolidating the Keystone Extension, and proceeding from Oklahoma to Gulf Coast [26]. The name plate capacity of the project is almost 830,000 thousand barrels of oil per day of Canadian and U.S. unrefined oil generation [27]. Based on EPA statistics, the Keystone XL Pipeline could fuel approximately 11.6 million passenger cars or 8.3 light-duty trucks per day (Figure 5).

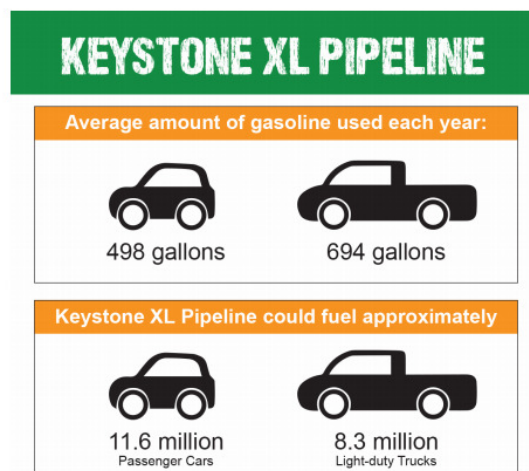


Fig. 5. Based on EPA statistics, the Keystone XL

Pipeline could fuel approximately 11.6 million passenger cars or 8.3 light-duty trucks per day

The Keystone XL pipeline project actually offers a good policy in terms of energy security as it is a means of having stable democracy as well as US ally and Canadian oil is preferable to be imported than relying on those from the lesser stable and lesser friendly governments of Venezuela and Persian Gulf [16]. The Keystone XL could be coordinated with the worldwide market, empowering increasing production that is similar to which the Asian market opted for more cost-effective alternative markets for oil sands [28]. In more than a decade, the nation states have been effectively engaged in the exploration of non-conventional fuel sources and as the technology has been developed over time, these more current sources of hydrocarbon are presently offering re-established hope for expanded energy security [29]. 8 The Keystone pipeline just passed an important milestone (August 5, 2015): last month, TransCanada announced that the pipeline has safely delivered more than one billion barrels of crude oil since construction finished five years ago (Figure 6.) So, what does one billion barrels of oil amount to? To put it in perspective, one billion barrels of oil is about how much lies beneath Oklahoma, where energy production has been a boon to the state's economy. That's one billion barrels of oil that have been safely delivered across thousands of miles, a task that would have taken 1.7 million train cars or 3.3 million trucks. What's more, the Keystone pipeline has generated, to date, close to \$200 million in property taxes and more than 14,000 construction jobs.



Fig. 6. The Keystone pipeline just passed an important milestone: the pipeline has safely delivered more than one billion barrels of crude oil since construction finished five years ago

The tirelessness of the West Texas Intermediate (WTI) and Western Canada Select (WCS) rebates relative to Brent highlights a few of challenges in finding elective modes of transportations such as rail and, more vitally, building pipeline framework to overcome the calculated imperatives. Endeavours to overcome these troubles are exemplified by the Keystone XL proposition that would connect the Canadian heavy oil generation directly to worldwide tidal markets by means of the Gulf Coast [30]. By interfacing Canadian crude oil trades to the Gulf, Keystone XL would be a flight from the import-centric Petroleum Administration for Defense Districts (PADD) pipeline structure and would speak to an exertion to adjust to North America's modern household supply driven crude oil market [31]. Statistics for moving 830,000 barrels a day via means other than Keystone XL pipelines are shown in Figure 7.

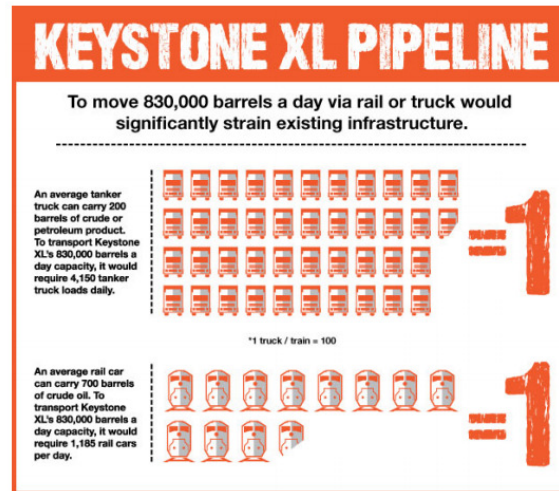


Fig. 7. Statistics for moving 830,000 barrels a day via means other than Keystone XL pipelines

EnSys Energy is a self-regulating consulting company specializing within the petroleum industry “downstream” that comprises of crude and non-crudes supply, refining, crude transports, trade and oil markets [32]. In the case of the Keystone XL pipeline project, it has been discussed on the effects that may arise with or without the presence of the project. EnSys report was designed to understand better whether or not the Keystone XL pipeline will have any potential impacts on the U.S. refining and petroleum imports as well as on worldwide markets to which it concluded with a statement that the Keystone XL will not influence the production levels of oil sands crudes [33]. Statistics for moving 830,000 barrels a day via Keystone XL pipelines and its benefit to the common masses as shown in Figure 8.

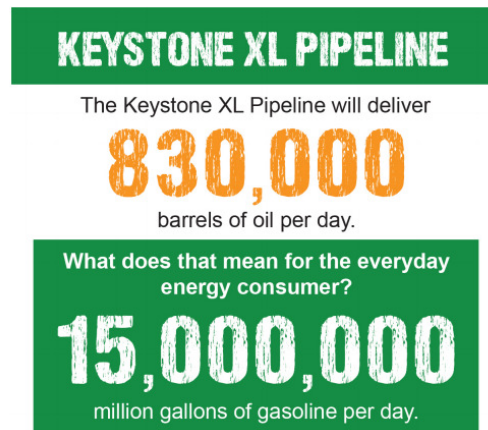


Fig. 8. Statistics for moving 830,000 barrels a day via Keystone XL pipelines and its benefit to the common masses

4.2 Negative Implication(Cons)

When involving pipeline, it is for sure that it there will be leakage (Figure 9). Based on the review made by the State Department’s, it is clear that the project will definitely spill oil. Not may but will. Since the project of Keystone pipeline already being operated in June 2010, the pipeline has already

leaked 14 times, including one leak that dumped thousands of gallons of tar-sands crude [34] (Figure 10) . Keystone XL would carry up a tremendous gallon of oil every day so any outflow has the potential to be enormous. Other than that, the project does not necessarily provide a major job vacancy. The State Department estimates that Keystone XL will result in only 20 permanent, operational jobs in the U.S and 2,500 to 4,650 temporary jobs [35]. After Keystone XL oil constructed in Texas, much of the oil will be exported beyond U.S. borders without paying U.S. taxes which does not benefitting U.S economy or diminish our thirst for oil [36].

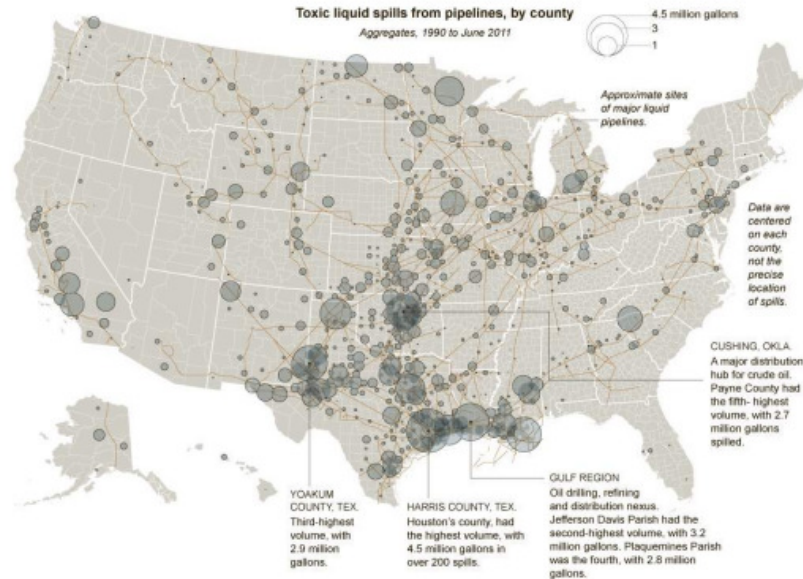


Fig. 9. Toxic liquid spills from pipelines by county



Fig. 10. Keystone Pipeline Spills 210,000 Gallons of Oil

Rivers, wildlife and vast pristine landscape will be threatening due to the project (Figure 11). The project Gold Coast of Texas, including Keystone XL will risk contaminating Ogallala 12 Aquifer which became the drinking water source due to the construction will cross nearly 1,750 water bodies, like stream and rivers[37]. Prime wildlife habitat, involving places for imperilled species will also be risked as the process involve deforestation [37,38]. Besides, it will increase the demolition of Canada’s boreal forests. Producing oil from sand has terrible impacts on the environment and also tar-sand (sand oil) is the dirties oil on Earth. In order to produce a barrel of (tar-sand), three barrels of water are required. This will cause pollution of hundreds millions of gallons of water, including the destruction of tens of thousands of acres of boreal forest [40]. Even after the process of tar-sand is produced, it will cause another bad implication towards environment. Conventional and gas operation will cause greenhouse gas meanwhile, Greenhouse gas emissions from tar-sands development will emit greenhouse gas two to three times higher [41].



Fig. 11. Demonstration of Major Losses for Wildlife with the approval of Keystone XL Approval

This will be reversing our direction on reducing global warming. According to the standard atmospheric level of carbon dioxide made by scientists, 350 parts per million or less is the aim for the future. Today, its 391 ppm, and Keystone XL would certainly drive that up 13 and worsen the devastating effects of global warming from rising oceans to melting glaciers to extreme and dangerous weather events that we’re already seeing around the world [42]. Keystone XL project involve permission from land owners which the acceptance will risk the land damage. Farmers and landowners alike from Texas to Montana have been threatened with land repossession by eminent domain on top of potential damage to crops [43]. The law that says a private company can come in and take part of your property if it can prove to the government that doing so will benefit the general public. Julia Crawford, a Texan landowner, says: “As a landowner, property rights are key to my

livelihood and family legacy [44]. It is claimed that a foreign corporation pumping imported oil simply does not qualify as a main carrier under Texas law [45]. TransCanada does not get to write their own rules. I look forward to the Supreme Court hearing our case and our plea to protect the fundamental rights of property owners.”

5. Ongoing Development of Keystone XL Pipeline

Keystone XL pipeline continue its development to complete the oil pipeline system in Canada and United States which began in 2010 despite the controversies that might hold the project to be far from completed (Figure 12). With its development ongoing there are also protests happening that postpone the project. Besides, TransCanada also works on alternative projects that could help the pipeline to avoid the controversies that arise. Other than that, TransCanada also faced lawsuits from various agencies that sue the company for the damage it has done. This section will cover the ongoing issue of the Keystone XL pipeline.



Fig. 12. The existing Keystone pipeline

5.1 Postponements and Protest toward Keystone XL Pipeline

The earliest protest began in 2011, where environmental activist Bill McKibben took the word from head of NASA's Goddard Institute for Space Studies regarding the pipeline that said "Essentially, it's game over for the planet" [46]. From this, McKibben along with other activists organized opposition that resulted in over 1000 nonviolent arrests near the White House [47]. The protest continued to challenge President Obama from his call in 2008 regarding America to be free from the tyranny of oil when he entered the 2012 election campaign [48]. The protest continued with several environmentalists forming a human chain around the White House in order to convince Barack Obama regarding the Keystone XL [48]. The biggest protest happened during 2013, where approximately 35,000 to 50,000 protestors attended a rally that was held in Washington D.C. that has been described as the biggest climate rally in U.S. history [13,49,50]. The reason for this rally was to call upon President Obama to decline the planned pipeline extension after Secretary of State completed the review on the Keystone XL [51]. In 2015, President Obama rejected the Keystone XL pipeline as the controversial project is not in the country's national security interest [52]. However, the most recent protest occurred in 2017, when President Donald Trump signed an order that aimed for the construction of two pipelines that granted a key for the development of Keystone XL [53,54] (Figure 13).



Fig. 13. One of the protest against Keystone pipeline

5.2 Alternative Projects of Keystone XL Pipeline

The main objective of the Keystone XL pipeline is to transport oil and there are a lot of region it need to go through. Sometime the controversies made the company to come up with another alternative road (Figure 14). The alternative project began back on 2011 when the proposed alternative Wrangler pipeline project from Cushing to Gulf Coast have been replaced with Seaway pipeline that can help the oversupply oil at Cushing can reach Gulf [55,56]. However, the Seaway line might not enough to transport oil to the Gulf alone [57]. On 2012, TransCanada made an announcement that it will shorten the initial path in order to remove the need for federal approval and the work can start in June 2012 but was on hold to late 2013 [58–60]. TransCanada also make a new proposal to create a longer all-Canada pipeline on August 2013 that know as Energy East that would extend to port city of Saint John, New Brunswick that can provide feedstock to refineries in Montreal, Quebec City and Saint John [61,62]. By 2017, Nebraska regulator finally approve the Keystone XL pipeline route through the state but the pipeline route was given was not on the first plan therefore they might require more time to study the changes [63–65]. This alternative route might cost around 200 million U.S dollar to the TransCanada [66].



Fig. 14. Canada's Keystone alternatives

5.3 Lawsuits against Keystone XL Pipeline

Independent refiner CVR filed the first lawsuits to TransCanada for the damage compensation around 250 million U.S dollar or release from transportation agreements in 2009 [67]. The lawsuit was then follow up by three small refineries company in 2010 saying the new pipeline has been beset with cost overruns [68]. In 2009 also a suit was filed that challenge the pipeline on the grounds that its permit was based on a deficient environmental impact statement by Natural Resources Defense Council but the federal judge rule out the case due to the NRDC lacked of authority to bring forward [69]. ISDS claim under NAFTA to be initiated by TransCanada against the United States that seek for 15 billion U.S dollar in damage and calling the denial of permit for Keystone XL in 2016 [70]. The federal judge stated that they won't dismiss the lawsuit against Keystone XL pipeline and allow the lawsuit to move forward [71– 73].

6. Conclusion

In conclusion, the construction of Keystone XL pipeline would be a huge advantage for job seekers and unemployed person as this project will drive job creation in each of the states that it would cross. In addition, it will also empower the North American economy as such will result the economic growth for North America, including more than \$3 billion towards U.S. 16 GDP. In the towns and countries where the pipeline passes through, will receive the significant property tax revenues paid by the project[74]. Besides that, this project will be a critical component strengthening the energy security of America as the connection of U.S and Canadian oil reserve to the existing new markets. Further, it will increase North America's long-term energy security through the delivery of safe, secure and stable crude oil. This is key to ensuring that North America has a reliable source of the energy we need to fuel our lives each day.

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