

IN THE PIPELINE

RISKS FOR FUNDERS OF TAR SANDS PIPELINES



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EXECUTIVE SUMMARY

The tar sands in Northern Alberta are located a long distance from major crude oil markets. In order to proceed with a new project, companies need to feel confident that they will have affordable access to these markets. Assuming other conditions are right, and in the absence of oil prices consistently over \$90, building new pipeline infrastructure is the only way that future tar sands expansion projects would achieve rates of return high enough to get a green light from investors.¹

Three major new tar sands pipeline projects are proposed: in Canada, Kinder Morgan's Trans Mountain Expansion project running west to the British Columbia (BC) coast. TransCanada's Keystone XL is intended to run from the Canadian town of Hardisty, Alberta to Steele City, Nebraska in the United States, passing through Saskatchewan and the states of Montana and South Dakota.² In parallel with these efforts to build new pipelines, Enbridge has pursued incremental expansions to its existing Mainline system. Enbridge's proposed Line 3 Replacement Program (the Line 3 expansion) will run from Alberta to Wisconsin and cross through Minnesota.

These projects carry many of the same potential risks for banks and investors as arose with the Dakota Access Pipeline (DAPL) including a lack of and/or inadequate process around Free, Prior, and Informed Consent (FPIC) from all Indigenous Nations and Tribes along or impacted by the proposed pipeline routes and the risk of contamination of drinking water in the event of a spill. However, the willingness of many banks to arrange or provide financing for tar sands pipelines suggest that they have failed to learn from the media, investor and consumer criticism arising from DAPL and appear to be relying on outdated or inadequate risk assessment and mitigation frameworks.

This report is written for banks, their institutional shareholders, and for those financial institutions considering financing or arranging finance – whether through

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credit facilities or securities – for the construction and operation of any of the proposed tar sands pipelines. It provides information on the current status of the regulatory approval process for each of the proposed pipelines, outlines the extent of the opposition from First Nations and Tribes and local communities, and details the potential climate and local environmental risks associated with these projects. It also examines the prospects for future growth in tar sands production in light of shifting market dynamics and the impacts of a lack of expanded production on the financial viability of the proposed pipelines.

The report makes a number of recommendations for potential pipeline financiers and proposes questions institutional investors might ask in order to assess the measures taken by banks to identify risks and the ways in which these risks might be mitigated and managed.

THE PIPELINES (Section 1)

Each of the proposed pipeline projects is now facing growing public opposition. Much of this opposition is driven both by concern for the climate and environmental impacts of tar sands expansion and concern for the direct

impacts on communities on the frontlines of development. The Trans Mountain Expansion project, Keystone XL and the Line 3 expansion already face legal challenges.

APPROVAL PROCESS: STATE OF PLAY

Trans Mountain Expansion Project

The Canadian federal government granted its approval for the Kinder Morgan Trans Mountain Expansion project on 30 November 2016, subject to Kinder Morgan meeting or exceeding all 157 of the binding conditions set out by the National Energy Board (NEB). These conditions address potential impacts on Indigenous communities, the protection of local wildlife and the offset of greenhouse gas emissions during construction.³

On 10 August 2017 the provincial government of British Columbia announced it had secured external legal counsel to advise the government in legal action related to Trans Mountain Expansion project. The provincial government has also indicated that it does not believe that the Province has fulfilled its duty of meaningful consultation with Indigenous people concerning this project. The BC government argues that duty must be fulfilled as consultation relates to environmental assessment certificate requirements, and

that until these consultations are completed in a way that meets the Province's legal obligations, work on the project on public lands cannot proceed.⁴ In the interim, Kinder Morgan can proceed with preparatory work that does not require any provincial permits and takes place on private lands but cannot undertake significant construction activity outside of its Westridge terminal.

In September 2017, following a company blog post⁵ stating that company representatives were undertaking certain works, the regulator – the NEB – ordered the company to cease such works as they were not authorised.⁶ Kinder Morgan has asked for a waiver on the grounds that being unable to undertake the works might delay completion of the Trans Mountain Expansion project.⁷

There are 17 current separate legal proceedings against Kinder Morgan's Trans Mountain Expansion project.⁸ These cases include 10 individual First Nations challenges as well as cases from NGOs and the cities of Vancouver and Burnaby.

Keystone XL

TransCanada, after being denied the necessary cross-border federal permit by President Obama in 2015,⁹ received the relevant permit from the US Department of State in March 2017¹⁰ following a presidential executive order signed in January.

TransCanada still requires a Nebraska state permit from the Nebraska Public Service Commission (PSC). The PSC expects to make a decision on or before 23 November 2017.

The decision, regardless of outcome, will likely be appealed – if approved, the permit will be appealed by environmental and social advocacy groups opposing the pipeline construction through Nebraska. If denied, TransCanada could appeal.

If the company receives the necessary approval and decides to proceed, it will likely be required to file eminent domain petitions in Nebraska, a lengthy and contentious process for the company which resulted in multiple lawsuits during the first proposed Keystone project from 2012 to 2015.¹¹

TransCanada will make a final investment decision on Keystone XL sometime later in the year.¹²

A lawsuit has been filed by the Natural Resources Defense Council, the Sierra Club and others challenging the State Department's approval.¹³ Dakota Rural Action, the Intertribal Council on Utility Policy, and the Yankton Sioux Tribe have filed an appeal with the South Dakota Supreme Court challenging that state's permit for the pipeline.¹⁴

Line 3 Expansion

Enbridge has applied to the Minnesota Public Utilities Commission (PUC) for a Certificate of Need and a pipeline Routing Permit for their proposed Line 3 expansion.¹⁵ These two permit requirements are a necessary step before Enbridge can commence construction in Minnesota.¹⁶ Construction of the pipeline has already begun in Canada and Wisconsin. The PUC is expected to make their final decision in April 2018. The Minnesota Commerce Department has issued a statement opposing the Line 3 expansion on the grounds that "serious environmental and socioeconomic risks and effects outweigh limited benefits."¹⁷ In Canada where construction has already commenced, the Assembly of Manitoba Chiefs has filed a legal challenge to the approval of the Line 3 expansion.

FUNDING THE PIPELINES

In June 2017, a syndicate of banks signed a credit agreement with Kinder Morgan which included a CDN \$4bn pipeline construction loan. In addition Kinder Morgan raised £1.7bn via an IPO of shares in its pipeline subsidiary.¹⁸ TransCanada (Keystone XL) and Enbridge Inc. (Line 3 expansion) have yet to finalise funding arrangements. The use of existing credit facilities, the issue of bonds and the placement of shares are potential funding mechanisms.

INDIGENOUS AND COMMUNITY OPPOSITION (Section 2)

The proposed tar sands pipeline projects face opposition from First Nations and Tribes, local communities and landowners, and environmental groups.

The proposed tar sands pipeline projects do not have the Free, Prior, and Informed Consent (FPIC) of all Indigenous Nations and Tribes along or impacted by the proposed pipeline routes as called for in the United Nations Declaration on the Rights of Indigenous Peoples.¹⁹ Over 150 First Nations and Tribes across Canada and the US have signed the Treaty Alliance Against Tar Sands Expansion.²⁰ The Treaty is an expression of Indigenous Law and opposes the use of the signatories' Indigenous territories and coasts for new or expanded pipeline infrastructure projects that would facilitate the expansion of the tar sands.

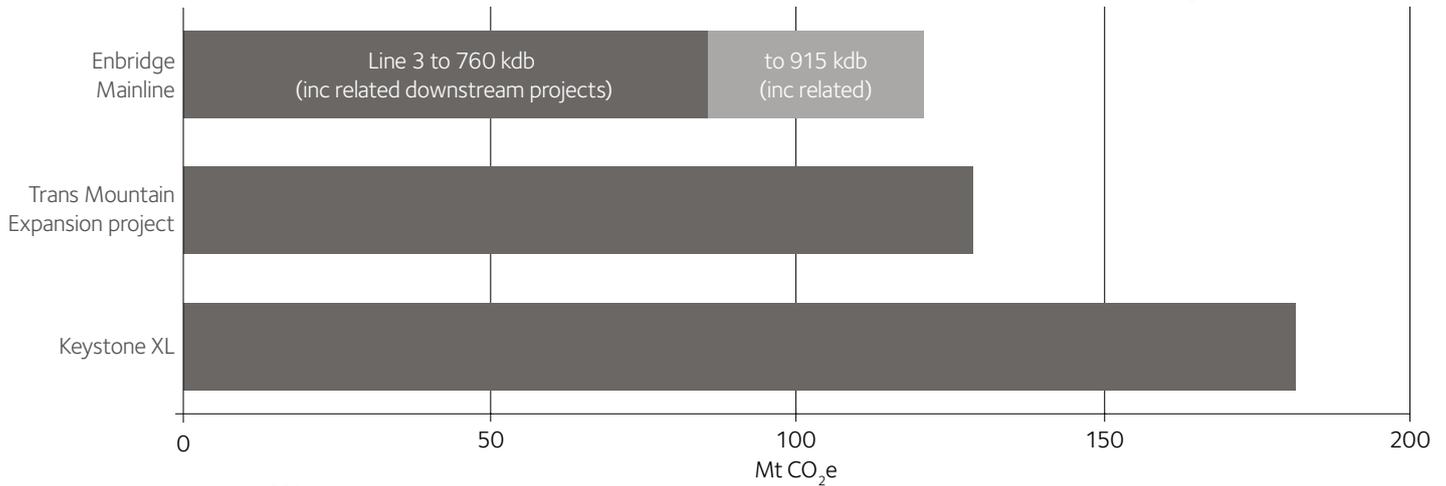
130 First Nations and their allies have signed the Save the Fraser Declaration²¹ outlining their opposition to the (now abandoned) Northern Gateway pipeline and to other similar tar sands projects crossing their lands, territories and waterways – which would include Kinder Morgan's Trans Mountain Expansion project,²² also currently the subject of 10 legal challenges from First Nations in Canada alleging infringements of their rights.²³

A recent Nebraska poll released by the Sierra Club and conducted by Public Policy Polling found that 58% of Nebraska voters believe clean energy like wind and solar will benefit the state more than investing in fossil fuel projects such as the proposed Keystone XL pipeline.²⁴

Active on-the-ground resistance to the pipelines has already begun. Actions already ongoing against the Line 3 expansion include multiple, permanent, Indigenous-led spirit camps and resistance camps²⁵ as well as direct action protest in Wisconsin, where construction of the pipeline has already begun.²⁶ On 5 September, members of the Secwepemc Nation constructed the first of 10 tiny houses along the proposed pipeline route for the Trans Mountain Expansion project.²⁷

Approximately 100 landowners in Nebraska continue to resist Keystone XL and refuse to agree to the company's right-of-way for the proposed route.²⁸ They have consistently voiced their opposition to the company building the pipeline through their property.²⁹ Several landowners have built large solar installations on their property in the direct path of the proposed Keystone XL pipeline.³⁰

Figure 1: Estimated additional greenhouse gas emissions per year resulting from proposed tar sands pipelines (MT CO₂e)*



* Assumes all pipelines carry 100% diluted bitumen (dilbit).

CLIMATE RISK: PIPELINES ARE KEY TO THE EXPANSION OF THE TAR SANDS (Section 3)

An analysis of 27 of the tar sands projects cancelled since 2010, found that 14 – including BP’s Sunrise and Shell’s Carmon Creek – were rendered uneconomic by the combination of 2015 oil price expectations and the additional cost of rail. The lack of pipeline access pushed them over the edge, as the additional cost of rail saw these projects become unprofitable. These 14 projects are associated with over 60% of the reserves held in all 27 projects.³¹ If no new pipelines are built there will be no pipeline space available for tar sands production growth beyond that which arises from some of the projects already under construction.

Noting the role of pipelines in unlocking new expansions in tar sands production, we can estimate the cumulative emissions impact of each pipeline.³²

ECONOMIC VIABILITY OF THE TAR SANDS PIPELINES (Section 4)

The success of the proposed new tar sands pipelines which rely on producers committing to multi-year contracts for pipeline capacity will depend on the continued confidence of producers in the expansion of the tar sands themselves. Growth in the tar sands is in turn dependent on market conditions (in addition to market access infrastructure and a lack of climate policy), including the global demand for oil in the context of alternative supplies at lower prices. At current oil prices of around \$50, new tar sands production will not expand regardless of whether pipelines are built.

However, at oil prices in the range of \$65–70/bbl new pipelines can be a determinative factor in unlocking new tar sands production.³³ A number of factors impacting those market conditions means that growth in the tar sands is far from guaranteed.

Since late 2014 oil prices have fallen dramatically and currently remain well below the break-even price required for new tar sands projects to go forward (see Figure 6 on page 19). As a result, the Canadian oil industry has not sanctioned construction of any major new projects that would significantly increase the overall supply of crude oil available for export from Canada, since 2014.³⁴ The high prices of 2013 led to a level of optimism in the industry which has rapidly eroded. Only one small project was approved in 2015 and two in 2016. Medium term price outlook does not provide confidence that new projects will get a green light.

Many industry analysts^{35,36} believe this is a structural market shift driven in part by the flexibility of US shale oil production and slowing global demand growth, with Shell CEO Ben van Beurden suggesting that the industry is now operating in a “lower forever” oil price era.³⁷

A flattening in demand (both globally and from key markets) would limit production growth in the tar sands, which in turn will necessarily limit demand for crude oil transportation services. In September, China’s vice minister of industry and information technology announced that China would set a deadline for automakers to end sales of fossil-fuel-

powered vehicles.³⁸ This announcement raises questions for Kinder Morgan which has pitched its Trans Mountain Expansion project as a way to reach the rapidly growing Chinese market. Kinder Morgan has publicly stated that without a growing demand for oil in key markets, its pipeline could suffer from a reduced supply of crude oil and other products.³⁹

The exodus of international oil companies from the tar sands supports arguments questioning the province’s long-term prospects.

Expert evidence⁴⁰ submitted to the State of Minnesota Public Utilities Commission regarding the Line 3 expansion argues that there is no need to construct the project, because crude oil supply from western Canada is unlikely to expand in volume in the future. Similar arguments have been made in relation to Keystone XL in addition to issues around an over-supplied refining market in the Gulf of Mexico area.⁴¹ TransCanada recently extended the bidding period for Keystone XL capacity which suggests that for whatever reasons they have not yet secured sufficient numbers of commitments.⁴²

Political unpredictability in the US around crucial issues such as the North American Free Trade Agreement and fears of a border tax adjustment all provide reasons for bankers and investors to closely scrutinise the financial viability of the tar sands pipelines and the wider corporate financial impact of their commercial failure or underperformance.



LOCAL ENVIRONMENTAL RISK (Section 5)

SPILL RISK

The proposed tar sands pipeline projects carry a risk of negative environmental impacts including the contamination of drinking water from leaks. Analysis of public data from the Pipeline and Hazardous Materials Safety Administration (PHMSA) for the period from 2010 to date⁴³ shows that the three companies proposing to build three tar sands pipelines – TransCanada, Kinder Morgan, Enbridge, and their subsidiaries – have seen 373 hazardous liquid spills from their US pipeline networks from 2010 to present. These spills released a total of 63,221 barrels of hazardous liquids during that time period – including Enbridge’s 20,082 barrel diluted bitumen (tar sands-derived product) spill into the Kalamazoo River in 2010.

Over the past 10 years, the US crude oil pipeline system as a whole has averaged an annual total of one significant incident and 570 barrels released per 1,000 miles of pipe. Assuming these rates, the Keystone XL pipeline could see 59 significant spills over

a 50-year lifetime. TransCanada reported a much a lower estimate of 11 significant spills⁴⁴ but an independent scientific assessment concluded that they relied upon overly-optimistic assumptions.⁴⁵ Similarly, the Line 3 expansion could see 51 significant spills over a 50-year lifetime. An incident is considered “significant” by PHMSA if it involved a fatality, a hospitalized injury, \$50,000 or more in costs, more than 50 barrels of oil or >5 barrels of highly volatile liquids (HVL) spilled, or resulted in an unintentional fire or explosion.

In Canada since 1961, the existing Trans Mountain pipeline has reported 82 spills to Canada’s National Energy Board, including spills of greater than 500 barrels in 2005, 2007, 2009 and 2012.⁴⁶

CLEAN-UP COMPLICATIONS

Cleaning up oil spills in water is an inherently difficult task. In typical situations only a fraction of the spilled oil can be recovered by deploying booms and skimmers, or by other methods. Diluted bitumen (dilbit) spills pose an especially difficult clean-up challenge due to the properties of the oil. Laboratory tests and

real-world pipeline spills have shown that the ultra-heavy bitumen separates from its lighter diluents and can sink to the bottom of waterways.⁴⁷

A number of reports have criticized existing federal standards for pipeline safety and oil spill response, both for their general inadequacy⁴⁸ and the need for special precautions related to dilbit.⁴⁹ The US National Academies report on dilbit highlighted the inadequacies of existing regulations, calling on the Pipeline and Hazardous Materials Safety Administration and Environmental Protection Agency (EPA) to implement improvements, stating: “Broadly, regulations and agency practices do not take the unique properties of diluted bitumen into account, nor do they encourage effective planning for spills of diluted bitumen.”⁵⁰

DRINKING WATER

Safe, clean drinking water is fundamental to public health. When an oil spill occurs, communities may have to shut down existing water supplies. In July 2016, for example, a pipeline operated by Husky split 90,000 litres

(566 barrels) of heavy crude and diluent into the North Saskatchewan River, jeopardizing drinking water supplies for thousands of people downstream. The spill forced the communities of North Battleford, Prince Albert and Melfort to shut their intakes from the river and find other water sources for almost two months.⁵¹

Proposed pipelines could threaten the water supplies of many communities.

Trans Mountain Expansion Project

The proposed Trans Mountain Expansion project has a total of 246 potential watercourse crossings along the proposed route in Alberta and 1,109 potential watercourse crossings in British Columbia, of which 354 are fish-bearing.⁵² It crosses over aquifers which provide drinking water to the communities of Abbotsford, Coldwater⁵³ and the city of Chilliwack.⁵⁴

Keystone XL

The proposed route of the Keystone XL pipeline would cross 1,073 surface bodies of water, including 56 perennial streams.⁵⁵ One expert noted the Platte Valley and the Platte River crossing as a particular “weak link” for Keystone XL due to a high water table and a shallow pipe depth.⁵⁶ The Final Supplemental Environmental Impact Statement (FSEIS) also identifies a number of tribal and municipal water resources downstream from Keystone XL water crossings.⁵⁷

In addition to threats to surface water, much discussion has focused on Keystone XL’s potential impacts to groundwater, particularly the Ogallala (or High Plains) aquifer, which is found under much of Nebraska and extends southward to Texas. The Northern High Plains aquifer provides 78% of the water supply and 83% of irrigation water in Nebraska. Overall the aquifer holds 3.25bn acre-feet of water and supplies water to 170,000 wells.⁵⁸

Experts have pointed out that claims that a pipeline spill would contaminate the “entire” aquifer are overblown, although concerns about significant local impacts to the aquifer and wells are reasonable.⁵⁹

The Stansbury assessment⁶⁰ found that a worst-case discharge of 189,000 barrels could lead to an underground plume of carcinogenic dilbit components such as benzene, with the potential to contaminate billions of gallons of water.⁶¹ Risks to the local aquifer would vary depending on the local geology and the height of the water table in the region impacted by the spill. TransCanada has already re-routed the pipeline once to avoid the Sand Hills region in western Nebraska, an ecologically sensitive area whose characteristics (high water table and sand dune formations) make it particularly risky for spills.⁶²

Line 3 Expansion

The proposed Line 3 expansion would deviate from the existing Line 3 route for one section in Minnesota, and would use the existing route for the rest of its length. The proposed route would require 227 surface water crossings, including 46 waters designated for either state use or as sensitive surface waters, and seven navigable river crossings.⁶³

In Minnesota, the project would cross 25,765 acres of high vulnerability water table aquifers, 26,382 acres of high groundwater contamination susceptibility, 16,299 acres of high pollution sensitivity, and 87 acres of wellhead protection areas. 304 domestic wells lie within the project’s ‘Region of Interest’.⁶⁴

Minnesota’s natural wild rice fields, representing an “important social and cultural component for American Indian tribes and rural Minnesota communities”,⁶⁵ could be threatened by a pipeline spill.

TANKER TRAFFIC

Trans Mountain Expansion Project

The expanded capacity of the Trans Mountain pipeline could lead to as much as 590,000 additional barrels per day arriving at the pipeline terminal in British Columbia. The added oil would be loaded onto an additional 348 tanker ships per year, on top of existing tanker traffic through the Salish Sea. The tankers could head to refineries in Washington, California, or across the Pacific to supply markets in Asia.⁶⁶

FINANCIAL IMPLICATIONS OF ENVIRONMENTAL IMPACTS

As Enbridge’s 2010 Kalamazoo River disaster has shown, a pipeline spill can bring with it significant penalties, clean-up and settlement costs. In 2016, the EPA settled with Enbridge for \$177 million in connection with that spill and another incident near Romeoville, IL.⁶⁷ The total represented \$61 million in Clean Water Act fines, \$110 million in spill prevention safeguards, and \$5.4 million in government costs.

That fine comes on top of at least \$1.2 billion in clean-up costs disclosed by Enbridge in a Securities and Exchange Commission (SEC) filing.⁶⁸ That total included “\$551.6 million spent on response personnel and equipment, \$227 million on environmental consultants and \$429.4 million on professional, regulatory, and other costs.” The company estimated it had an additional \$219 million in costs yet to be paid. Enbridge also spent nearly \$1 billion reviewing the safety of its pipeline network and another \$1.6 billion to replace the entire Line 6B pipeline.⁶⁹

The Kalamazoo River spill is not Enbridge’s only regulatory violation. A database of US federal enforcement actions contains a total of 30 penalty records totalling over \$180 million in fines since 2010. The majority of these (22) were violations of environmental regulations, but the total also includes workplace and other safety violations. One notable example is a \$2.4 million fine from the US Department of Transportation for a 2007 incident where two Enbridge employees lost their lives responding to a pipeline leak.⁷⁰

The same database showed that Kinder Morgan had 55 penalty records since 2010 (of which 27 were environmental violations) totalling \$4.3 million in fines.⁷¹ Kinder Morgan was also fined \$5.3 million for Clean Water Act violations because of three spills in 2004-5 along its Pacific Operations unit in California, and its subsidiary Plantation Pipeline was fined \$725,000 for four spills between 2000-6 in the US Southeast.⁷²

TransCanada had eight environmental violations totalling \$183,000 in fines.⁷³

ALIGNING FUNDING DECISIONS WITH CLIMATE ACTION AND BANK POLICIES (Section 6)

Financial deals supporting tar sands pipelines appear to be at odds with some of the banks' own statements and actions on matters including climate change, human rights and World Heritage sites. Banks and their investors run the risk that their short-term lending decisions – on projects such as tar sands pipelines – will, through the carbon lock-in they enable, undermine their other medium to long term actions on climate. Facilitating the expansion of the tar sands is incompatible with the ambitions of the Paris Agreement and with an orderly transition to a low-carbon economy.

JPMorgan Chase, Royal Bank of Canada, TD, Barclays and Wells Fargo are all signatories to the Equator Principles⁷⁴ which state that projects with adverse impacts on Indigenous peoples require Free, Prior, and Informed Consent in line with the IFC (International Finance Corporation) Performance Standards on Environmental and Social Sustainability. The Equator Principles allow banks to forego this FPIC requirement in countries like the US and Canada (which the principles define as "Designated Countries") assuming that in such countries adequate protections exist under law for rights of Indigenous peoples.

As the Dakota Access Pipeline controversy demonstrated in stark and unacceptable terms, national regulatory review processes in Designated Countries do not provide a failsafe guarantee that a project has obtained the FPIC of communities impacted by a project. Bank risk departments can no longer assume that compliance with the Equator Principles will, in itself, mitigate reputation risks for alleged complicity by banks in potential human rights violations. In line with both the spirit of the Equator Principles and their role in determining and mitigating risk, signatory banks should refuse to fund projects lacking FPIC regardless of the jurisdiction in which they occur. Ten Equator Principles banks have recently called for the IFC FPIC standard to be applied in all countries.⁷⁵

In light of the lack of FPIC from all potentially impacted First Nations and Tribes as set out in Section 2, providing finance to any of the pipelines appears to contradict JPMorgan

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Chase's human rights policy which states: "For transactions where we can identify that the use of proceeds may have the potential to impact Indigenous Peoples, we expect our clients to demonstrate alignment with the objectives and requirements of IFC Performance Standard 7 on Indigenous Peoples, including with respect to circumstances requiring Free, Prior and Informed Consent."⁷⁶ This wording does not draw any distinction based on the location of the proposed project although there is a separate requirement that transactions "that fall under the scope of the Equator Principles must demonstrate compliance with these requirements."⁷⁷ JPMorgan Chase should clarify the interplay between these two statements and whether the bank requires clients to obtain FPIC regardless of the location of the relevant project.

Financing Kinder Morgan's Trans Mountain Expansion project appears to conflict with TD's policy which states that TD does not finance transactions relating to activities within World Heritage sites.⁷⁸ Approximately 80km of the expanded pipeline will run through Jasper National Park – a World Heritage Site – and 'reactivation' activities will possibly be carried out within the park.

RECOMMENDATIONS FOR FINANCIAL INSTITUTIONS (Section 7)

POTENTIAL FUNDERS

We believe, given the range of potential climate, human rights and local environmental impacts associated with tar sands pipelines, that financial institutions should not finance, arrange and/or underwrite the provision of finance for the construction, expansion and/or operation of tar sands pipelines, whether in the form of project-specific lending, general corporate lending (without restrictions on the purpose of facilities), corporate bonds or shares to or in any of Kinder Morgan, TransCanada, and Enbridge and/or their subsidiaries.

EXISTING LENDERS

We believe existing lenders to the Kinder Morgan, TransCanada and Enbridge corporate groups should:

- ☐ sell their existing stake in all or confirm that they will not participate or arrange the renewal of any of the existing credit facilities provided to each of Kinder Morgan, TransCanada, and Enbridge, and/or their subsidiaries, if such facilities may be used, directly or indirectly, to finance the construction, expansion, and/or operation of tar sands pipelines; and
- ☐ confirm that they will neither participate in, arrange, nor underwrite any future credit facilities to, or any issue of securities by, those companies and/or their subsidiaries which may be used, directly or indirectly, to finance the construction, expansion, and/or operation of tar sands pipelines.

BANKS AND POTENTIAL INVESTORS IN TAR SANDS PRODUCERS AND PIPELINE COMPANIES

We believe that banks and other financial institutions should review their overall financial exposure to tar sands companies – including via pipeline companies – and take steps to ensure the compatibility of their lending and investment policies and practices for such companies with:

- i. the prudent mitigation of climate risk and the ambitions of the Paris Agreement; and
- ii. international best practice on human rights.

INVESTORS IN BANKS

We believe that institutional investors in banks should engage with their investee companies to understand whether the various risks associated with financing tar sands pipelines are being adequately assessed, mitigated and managed. In Section 7, we suggest questions that institutional shareholders may wish to ask of banks.

INTRODUCTION

Pipelines give Canadian tar sands producers an affordable, reliable means to get oil to market. While there is ample pipeline capacity for oil from existing and under-construction tar sands projects, there is no room for new expansion – this is why the industry lobbies so hard for new pipelines, and is also an important reason (alongside low oil prices) that no new tar sands projects are being developed.⁷⁹

It is estimated that the Keystone XL pipeline and the Trans Mountain Expansion project could add capacity of 830,000⁸⁰ and 590,000⁸¹ barrels per day respectively. Enbridge's Line 3 would initially increase capacity from 390,000 to 760,000 barrels per day, but in its filing with the Minnesota Public Utility Commission,⁸² Enbridge indicated that total capacity would ultimately be 915,000 barrels per day, resulting in an increase of 525,000 barrels per day. Facilitating the expansion of the tar sands is incompatible with the ambitions of the Paris Agreement and with an orderly transition to a low-carbon economy.⁸³

Each of Kinder Morgan, TransCanada and Enbridge has or will likely seek finance – whether from dedicated project loans, the renewal of general corporate credit facilities, equity or bond issues – for the construction and operation of their respective tar sands pipelines. Lenders and investors will therefore have to determine whether providing finance for such projects presents an appropriate risk/return profile.

In addition to the climate risks associated with the proposed tar sands pipelines, they face intense and organised opposition from local



communities and First Nations and Tribes along the proposed routes. The companies' track record on pipeline spills⁸⁴ give rise to concern in light of the thousands of water systems potentially affected. The decline in the anticipated unchecked growth of the tar sands since 2014 also provides reasons to scrutinise very closely claims regarding the long-term economic viability of the pipelines.

This report is written for banks, their institutional shareholders, and for those financial institutions considering financing or arranging finance – through the purchase

or underwriting of corporate bonds or shares – the construction and operation of any of the proposed tar sands pipelines. It outlines the financial and reputation risks that banks, their investors, and investors in pipeline companies could face in arranging and providing finance for companies intending to build tar sands pipelines. We make a number of recommendations for potential pipeline financiers and we suggest questions for bank investors to ask to understand whether the various risks are being adequately assessed, mitigated, and managed.

In addition to the climate risks associated with the proposed tar sands pipelines, they face intense and organised opposition from local communities and First Nations and Tribes along the proposed routes. The companies' track record on pipeline spills give rise to concern in light of the thousands of water systems potentially affected. The decline in the anticipated unchecked growth of the tar sands since 2014 also provides reasons to scrutinise very closely claims regarding the long-term economic viability of the pipelines.

1. THE PIPELINES

Figure 2: The tar sands pipeline system



Until 2010, pipeline expansions and refinery conversions had marched in lockstep with tar sands production growth. Having met the capacity of the Midwest refineries, the tar sands sector planned to redirect production to the US Gulf Coast, the location of the largest concentration of refining capacity in the world, which Keystone XL was originally designed to reach (via Cushing, OK) by 2012. As well as Keystone XL, three other major new tar sands pipelines were proposed: Kinder Morgan's Trans Mountain Expansion project and Enbridge's Northern Gateway, both running west to the British Columbia coast, and TransCanada's Energy East to New Brunswick on the east coast.

Keystone XL was repeatedly delayed due to opposition from environmentalists, landowners, Indigenous groups and municipalities, and ultimately rejected by President Obama in November 2015. Although President Trump reversed President Obama's rejection of Keystone XL, the pipeline faces strong opposition from a number of stakeholders and doubts have been raised as to its economic viability⁸⁵ (See Section 4).

Just two weeks after Obama's 2015 rejection of Keystone XL, the recently elected Canadian Prime Minister Justin Trudeau announced a plan to ban tanker traffic in northern BC,⁸⁶ effectively ending the prospects of Northern Gateway, which had been looking unlikely in spite of receiving federal approval from the previous Harper government, especially due to First Nations concerns about damage to the economy, culture and rights. The project's demise was confirmed in June 2016 when the Federal Court of Appeal overturned the original approval.⁸⁷ Soon thereafter the Canadian government confirmed that it would not proceed with Northern Gateway.

On 5 October 2017 TransCanada announced the cancellation of Energy East.⁸⁸ It had faced opposition from unions, First Nations and the municipalities across Quebec.

In parallel with these efforts to build new pipelines, Enbridge has pursued incremental expansions to its existing Mainline system. While some expansions have occurred in recent years, new incremental additions such as the proposed Line 3 are now facing growing public opposition, especially in the US Midwest. Much of this opposition is driven by concern for the climate and environmental impacts of tar sands expansion, as well as concern for the direct impacts on communities on the frontlines of development (Section 2).

1.1: APPROVAL PROCESS: STATE OF PLAY

TRANS MOUNTAIN EXPANSION PROJECT

Permitting process

The Canadian federal government granted its approval for the Kinder Morgan Trans Mountain Expansion project on 30 November 2016, subject to Kinder Morgan meeting or exceeding all 157 of the binding conditions set out by the National Energy Board (NEB). These conditions address potential impacts on Indigenous communities, the protection of local wildlife, and the offset of greenhouse gas emissions during construction.⁸⁹

While interprovincial pipelines (such as this project) are within federal jurisdiction, many of the complementary requirements (construction of access roads or transmission lines, for example) lie within provincial jurisdiction. The provincial government can attach conditions related to areas of provincial authority that go beyond those imposed by the federal government in its approval of the project. Furthermore, the provincial government has a constitutional and moral obligation to fulfil its duties to consult and accommodate potentially affected First Nations before issuing provincial approvals and permits required for the Trans Mountain Expansion project, and it cannot authorise an unjustifiable infringement of Aboriginal title or rights.⁹⁰

On 10 August 2017 the provincial government of British Columbia announced it had secured external legal counsel to advise the government in the legal action related to Trans Mountain Expansion project and has indicated that it doesn't believe that the Province has fulfilled its duty of meaningful consultation with Indigenous people concerning this project, including consultations regarding potential impacts to Aboriginal rights and title – a responsibility that has been identified in a number of court cases. In particular, the government argues that duty must be fulfilled as consultation relates to environmental assessment certificate requirements and that until these consultations are completed in a way that meets the Province's legal obligations, work on the project on public lands cannot proceed.⁹¹

The federal government could challenge a refusal of a provincial government to grant permits in court, but this would likely take years to resolve.⁹² In the interim, Kinder Morgan can proceed with preparatory work that does not require provincial permits and takes place on private lands but cannot undertake significant construction activity outside of its Westridge terminal.

Kinder Morgan – acting without authority

In a company blog post dated September 12, 2017, Kinder Morgan stated that its representatives were "temporarily installing snow fencing flat down onto some sections of streambed that are intersected by the pipeline construction right-of-way and sections immediately downstream."⁹³ This came to the attention of the NEB, who two days later issued a letter which "orders the company building the line from Edmonton to Burnaby, B.C., to stop installing the mats until it has obtained all approvals from the board to allow the start of construction in those areas."⁹⁴ According to a statement from the NEB, it "considers this to be an activity within the definition of construction which is set out in the Project Certificate, and the start of construction has not yet been authorized in these areas."⁹⁵ It goes on to confirm that "all field activity associated with the installation of the five remaining deterrents scheduled for fall 2017 has ceased" and that "all applicable condition authorizations are required before construction can commence."⁹⁶

Kinder Morgan Canada has asked NEB to waive the condition, warning that to not do so might delay completion of the project.⁹⁷

Legal challenges

The Trans Mountain Expansion project is opposed by the newly-elected provincial government in British Columbia,⁹⁸ the municipal governments of Vancouver and Burnaby, and the more than 150 First Nations and Tribes across both Canada and the US that have signed the Treaty Alliance Against Tar Sands Expansion, and over 400 landowners along the proposed route that have registered statements of opposition.⁹⁹

There are currently 17 separate legal proceedings against Kinder Morgan's Trans Mountain Expansion project.¹⁰⁰ These cases include 10 individual First Nations challenges as well as cases from NGOs and the cities of Vancouver and Burnaby. In addition, two Indian Tribes based in Washington State have launched a legal challenge against the US Coast Guard related to the impact of tanker traffic on endangered southern resident orcas.¹⁰¹

According to the West Coast Environmental Law Association, legal challenges similar to those filed against the Trans Mountain Expansion project resulted in the cancellation of Federal approval of the Enbridge Northern Gateway project in 2016.¹⁰²

The Federal Court of Appeal ordered the 16 judicial review proceedings against the NEB



and Cabinet decisions to be consolidated; one was withdrawn before hearing and the remaining 15 were heard simultaneously in October 2017 and judgements are awaited. It is important to note that each First Nation's legal challenge is based on unique facts relating to their specific territory, rights and title; this raises an independent duty to consult and accommodate. Success on any one of the First Nation's legal challenges could delay or stop the project.

The legal challenges submitted by First Nations highlight issues of constitutional, administrative, procedural, and statutory law. They allege, among other issues, that a) the government failed to address concerns raised repeatedly by First Nations, constituting a breach of the constitutional duty to consult and accommodate; b) the NEB report was flawed due to breaches of the principles of procedural fairness; c) the government unjustifiably infringed claimed Aboriginal rights and title; d) the government breached its fiduciary duty to the affected First Nations; and e) that the NEB and Cabinet failed to comply with the statutory requirements of the Canadian Environmental Assessment Act 2012.¹⁰³

The cases taken by NGOs – Raincoast and Living Oceans – argue, among other things,

that the NEB and Federal Cabinet failed to uphold the Species at Risk Act with respect to endangered southern resident orca whales.

The Cities of Vancouver and Burnaby argue in their cases, among other things, that the NEB process was deficient and could not be relied upon by Cabinet or the BC government. Finally, the PIPE Up and Democracy Watch case argues that the BC decision was tainted by \$750,000 in political donations by Kinder Morgan and its customers to the BC Liberal Party, whose government issued the approval.¹⁰⁴

KEYSTONE XL

Permitting process

TransCanada, after being denied the necessary cross-border federal permit by President Obama in 2015,¹⁰⁵ received the relevant permit from the US Department of State in March 2017¹⁰⁶ following a presidential executive order signed in January. This change came about after a presidential executive order signed in January invited TransCanada to reapply for the permit, which it did.

TransCanada still requires a Nebraska state permit from the Nebraska Public Service Commission (PSC). This permit would not only approve the route through the state, but

would also give TransCanada the power to exercise eminent domain where landowners are unwilling to grant the company the easements they need for the pipeline's right of way.

The PSC hosted four days of intervenor hearings (where persons granted formal intervenor status give testimony in a trial-like hearing with the presentation of evidence and cross-examination) in early August, in addition to multiple day-long public hearings along the proposed pipeline route, and a public commentary period. People opposing the construction of the pipeline submitted over 450,000 comments during the public commentary period.¹⁰⁷ The Ponca Tribe of Nebraska and the Yankton Sioux Tribe of South Dakota were both granted intervenor status in the Nebraska hearings,¹⁰⁸ along with 93 separate landowners.¹⁰⁹ The testimony before the PSC in some cases was limited to cover only certain topics such as those related to impacts on property values and on cultural resources and social issues, rather than all issues impacting the Tribes and other intervenors. This led the Yankton Sioux Tribe to issue a statement declaring it was "outraged and flabbergasted at the restrictions placed on its sovereign rights..."¹¹⁰ Risks from

potential pipeline spills were not considered by the PSC. The PSC will now review the evidence, intervenor testimony and public comments, and is required to make a decision on or before 23 November 2017.

The decision, regardless of outcome, will likely be appealed. If approved, the permit will likely be appealed by landowners, environmental, and/or social advocacy groups opposing the pipeline construction through Nebraska. If denied or approved with a different route, TransCanada could appeal. It is expected that the appeals process could take multiple years.

If the company receives the necessary approval and decides to proceed, it will likely be required to file eminent domain petitions in Nebraska, a lengthy and contentious process for the company which resulted in multiple lawsuits during the first proposed Keystone XL project from 2012 to 2015.¹¹¹

TransCanada will make a final investment decision on Keystone XL sometime later in the year.¹¹²

Legal challenges

Following the federal cross-border permit approval by the State Department, the Natural Resources Defense Council and the Sierra Club and other allied groups filed a lawsuit in the United States District Court for the District of Montana. The lawsuit claims that the State Department failed to update a 2014 environmental impact review and used outdated and incomplete information that did not adequately analyse the impacts of the proposed pipeline. The permit approval, the lawsuit argues, is therefore in violation of the National Environmental Policy Act and the Administrative Procedure Act.¹¹³ In June, the State Department filed a motion to dismiss the case, followed shortly by a similar motion filed by TransCanada.¹¹⁴ A hearing in relation to the motions to dismiss took place on 11 October, in Great Falls, Montana. It is expected that a decision could be issued within a month of the hearing.

Dakota Rural Action, the Intertribal Council on Utility Policy, and the Yankton Sioux Tribe filed an appeal with the South Dakota Supreme Court in July challenging the state Public Utility Commission permit for Keystone XL.¹¹⁵ The South Dakota permit for the proposed pipeline was previously upheld by the South Dakota Sixth Circuit Judge in June.¹¹⁶

LINE 3 EXPANSION

Permitting process

Enbridge has applied to the Minnesota Public Utilities Commission (PUC) for a Certificate of Need and a pipeline Routing Permit for their proposed Line 3 expansion.¹¹⁷ These two permit requirements are a necessary step before Enbridge can commence construction in Minnesota.¹¹⁸ Construction of the pipeline has already begun in Canada and Wisconsin.

The PUC will consider both public testimony and testimony from people and groups granted formal intervenor status to determine if the replacement is needed and, if so, whether to approve Enbridge's preferred route or an alternative route, which could cause significant delays. Public hearings took place across the state in September and October while a period for public comment closes in November. Moreover, there will also be several days of formal evidentiary hearings held by the administrative law judge in November where the formal intervenors present their case in a trial-like process. The administrative law judge will make a final recommendation to the PUC in February 2018. The PUC is expected to make their final decision on whether to approve or deny the Certificate of Need and Routing permits in April 2018.¹¹⁹ While the PUC is independent, all five commissioners are appointed by Democratic Governor Mark Dayton. The state of Minnesota requires that no more than three commissioners may belong to the same political party.¹²⁰

Youth Climate Intervenors filed a formal petition to legally intervene in the evidentiary hearings.¹²¹ Enbridge filed a complaint against the involvement of most of the intervenors, including the Youth Climate Intervenors, but the Minnesota judge ultimately granted full status to the Youth Climate Intervenors.¹²² In addition to the Youth Climate Intervenors, other intervenors include the White Earth Band of Ojibwe, the Mille Lacs Band of Ojibwe, the Fond du Lac Band of Lake Superior Chippewa, Leech Lake Band of Ojibwe, the Red Lake Band of Ojibwe, Honor the Earth, the Sierra Club, and Friends of the Headwaters.¹²³

In September, the Minnesota Department of Commerce released their testimony and a statement against the Line 3 Certificate of Need to the PUC stating: "Oil market analysis indicates that Enbridge has not established a need for the proposed project; the pipeline would primarily benefit areas outside Minnesota; and serious environmental and socioeconomic risks and effects outweigh

limited benefits."¹²⁴ They added: "In light of the serious risks and effects on the natural and socioeconomic environments of the existing Line 3 and the limited benefit that the existing Line 3 provides to Minnesota refineries, it is reasonable to conclude that Minnesota would be better off if Enbridge proposed to cease operations of the existing Line 3, without any new pipeline being built."¹²⁵

In a separate process, the PUC is also questioning and taking public comments on the adequacy of the Final Environmental Impact Statement (EIS) for the Certificate of Need and Routing permits. The comment deadline concluded 2 October.¹²⁶ An EIS is required for this pipeline project following a successful high-profile legal challenge by Friends of the Headwaters.¹²⁷ Following the public hearings the Final EIS will be considered by the administrative law judge and will inform their report and recommendations to the PUC.¹²⁸ Problems with the adequacy of the EIS could influence the recommendations of the administrative law judge, and potentially subject any approval to legal challenges.

Legal Challenges

No litigation has yet been initiated in the US. However, in Canada, where construction has already commenced, the Assembly of Manitoba Chiefs in January 2017 filed a legal challenge to the Line 3 approval, stating that the Canadian government failed to adequately consult Indigenous leaders as Canada's pipeline regulator, the National Energy Board, did not consult the Great Binding Law before issuing a decision on the permit.¹²⁹ The matter is currently before the Federal Court of Appeal.

1.2 FUNDING THE PIPELINES

In June 2017, a syndicate of banks signed a credit agreement with Kinder Morgan which included a CDN \$4bn pipeline construction loan. In addition Kinder Morgan raised \$1.7bn via an IPO of shares in its pipeline subsidiary.¹³⁰ TransCanada (Keystone XL pipelines) and Enbridge Inc. (Line 3 expansion) have yet to finalise funding arrangements. The renewal and use of existing credit facilities, the issue of bonds and the placement of shares are potential funding mechanisms.

Figure 3 outlines the current status of each of the three major proposed tar sands pipeline projects – Kinder Morgan's Trans Mountain Expansion project, TransCanada's Keystone XL and Enbridge's Line 3 expansion.

Figure 3 – The proposed pipelines

Company ¹³¹	Status	Role in system	Potential funders
<p>Kinder Morgan: Trans Mountain Expansion Project</p>	<p>Facing increasing opposition and legal challenges from First Nations, the public and large municipalities (including the city of Vancouver). Additional opposition driven by concerns related to tanker traffic. The Trudeau government approved the pipeline in December 2016, but in August 2017 the newly-elected provincial government in British Columbia said it would be illegal for Trans Mountain to proceed with construction on public land at this time, it having not yet met existing conditions on its BC environmental assessment certificate related to Indigenous consultation. Multiple First Nations legal challenges could block the project even if formally approved.</p>	<p>A twin pipeline that would add 590,000 barrels per day between the tar sands and the Southern BC coast for Pacific access to international markets.</p>	<p>Credit facilities advanced in June 2017 including a CDN \$4bn facility to finance the construction of the pipeline.¹³²</p> <p>Lead banks: Royal Bank of Canada Canadian Imperial Bank of Commerce Scotiabank Toronto-Dominion Bank</p> <p>Banks named as lenders on the pipeline construction loan: Bank of America Bank of Montreal Barclays JPMorgan Chase Mitsubishi UFJ Financial Group Mizuho Financial Group National Bank of Canada China Construction Bank HSBC Sumitomo Mitsui Financial Group Suntrust Bank Alberta Treasury Branches FIPPGV/PX Caisse centrale Desjardins¹³³ Bank of China Siemens United Overseas Bank Canadian Western Bank Industrial & Commercial Bank of China¹³⁴</p>
<p>Enbridge: Line 3 Expansion</p>	<p>The 18-mile cross-border section is complete but currently in use for the Clipper expansion; the rest of the line's permits are being reviewed by the Minnesota Public Utilities Commission and the US federal government. Opposition centres around the sensitivity of the new route, plans for abandonment of the old Line 3, and the lack of application of climate criteria as per Keystone XL. The National Energy Board approved the replacement/expansion on the Canadian side in April 2016. The project continues to face opposition from First Nations communities and environmentalists.</p>	<p>Initially increase capacity from 390,000 to 760,000 barrels per day, but in its filing with the Minnesota Public Utility Commission, Enbridge indicated that total capacity would ultimately be 915,000 barrels per day Total Enbridge expansions (including Line 3), if completed, would equal some 1.1 million barrels per day of tar sands capacity.</p>	<p>No project specific credit facilities have yet been advanced but the following banks currently provide revolving credit facilities to relevant companies in the Enbridge corporate group and who have not confirmed to Greenpeace that they will not fund tar sands pipelines¹³⁵:</p> <p>Bank of Tokyo Mitsubishi UFJ Mizuho Bank Citibank Export Development Canada Credit Suisse HSBC Bank National Bank of Canada Bank of America/Merrill Lynch Bank of Nova Scotia Royal Bank of Canada Toronto-Dominion Bank Deutsche Bank Barclays Canadian Imperial Bank Sumitomo Mitsui Bank Wells Fargo Bank of Montreal Morgan Stanley</p>

			<p>DNB Capital/ASA JP Morgan Chasey Credit Agricole Caisse centrale Desjardins¹³⁶ Societe Generale Alberta Treasury Branches Bank of China China Construction Bank Corp/Tor Industrial and Commercial Bank of China UBS United Overseas Bank Limited China Merchants Bank Co Ltd/New Huntington National Bank Bank Hapoalim B.M. Branch Banking & Trust Company State Bank of India (Canada)</p>
<p>TransCanada: Keystone XL</p>	<p>President Obama rejected TC's application for a Presidential permit, but President Trump revived the project via Executive Order in his first few weeks in office. The Presidential permit was granted in March 2017. The Trump administration's approval of the permit faces litigation by a coalition of environmental groups. Filed in federal district court in MT, the first hearing has been delayed until mid-October. The pipeline still requires approval from the Nebraska Public Service Commission, which held hearings on the matter in August 2017. A final permit decision is expected in November 2017. If approved, TC has said it will assess the financial viability of the pipeline in November and construction could start six to nine months after that.</p>	<p>Proposed 830,000 barrels per day new pipeline to Cushing OK for access to Gulf Coast & international markets.</p>	<p>No project specific credit facilities have yet been advanced but the following banks currently provide revolving credit facilities to relevant companies in the TransCanada corporate group and who have not confirmed to Greenpeace that they will not fund tar sands pipelines:</p> <p>Bank of Tokyo Mitsubishi UFJ Mizuho Bank Toronto-Dominion Bank JP Morgan Chase Citibank Credit Suisse Deutsche Bank Credit Agricole HSBC Bank National Bank of Canada Bank of America/Merrill Lynch Bank of Nova Scotia Royal Bank of Canada Barclays Canadian Imperial Bank Sumitomo Mitsui Bank Wells Fargo Bank of Montreal Export Development Canada Alberta Treasury Branches Caisse centrale Desjardins¹³⁷</p>

2. INDIGENOUS AND COMMUNITY OPPOSITION

The proposed tar sands pipeline projects face opposition from First Nations and Tribes, local communities and landowners, and environmental groups. This opposition already includes legal action in the case of the Trans Mountain Expansion project, Keystone XL, and the Line 3 expansion (see Section 1).

The proposed tar sands pipeline projects do not have the Free, Prior, and Informed Consent of all Indigenous Nations and Tribes along or impacted by the proposed pipeline routes as called for in the United Nations Declaration on the Rights of Indigenous Peoples. Over 150 First Nations and Tribes across Canada and the US have signed the Treaty Alliance Against Tar Sands Expansion.¹³⁸ The Treaty is an expression of Indigenous Law and opposes the use of the signatories' Indigenous territories and coasts for new or expanded pipeline

infrastructure projects that would facilitate the expansion of the tar sands.

KINDER MORGAN

130 First Nations and their allies have signed the Save the Fraser Declaration¹³⁹ outlining their opposition to the (now abandoned) Northern Gateway pipeline and to other similar tar sands projects crossing their lands, territories and waterways – which would include Kinder Morgan's Trans Mountain Expansion project,¹⁴⁰ also currently the subject of 10 legal challenges from First Nations in Canada alleging infringements of their rights.¹⁴¹

On 5 September 2017, members of the Secwepemc Nation constructed the first of 10 tiny houses along the proposed pipeline route.¹⁴²

KEYSTONE XL

A recent Nebraska poll released by the Sierra Club and conducted by Public Policy Polling found that 58% of Nebraska voters believe clean energy like wind and solar will benefit the state more than investing in fossil fuel projects like the proposed Keystone XL pipeline.¹⁴³ This comes at a critical time when the Nebraska Public Service Commission (PSC) must determine whether or not to approve the necessary state permit for Keystone XL. The PSC is comprised of five elected commissioners.

Approximately 100 landowners in Nebraska continue to resist Keystone XL and refuse to agree to the company's right-of-way for the proposed route.¹⁴⁴ They have consistently voiced their opposition to the company building the pipeline through their property.¹⁴⁵

Wabinoquay Otsuquaykwhan, Activist from the Tiny House Warriors in Canada.





Indigenous women and allies involved in the tiny house build on Secwepemc territory, BC.

Several landowners have built large solar installations on their property in the direct path of the proposed Keystone XL pipeline.¹⁴⁶

The Keystone XL pipeline also faces vocal opposition from First Nations and Tribes across the proposed pipeline route and beyond. Tribes and Nations signed onto the Treaty Alliance Against Tar Sands Expansion include four from Nebraska (the Omaha Tribe, Ponca Tribe, Santee Sioux Nation and Winnebago Tribe). They were joined by seven from North and South Dakota (the Cheyenne River Sioux Tribe, Crow Creek Sioux Tribe, Lower Brule Sioux Tribe, Oglala Sioux Tribe, Rosebud Sioux Tribe, Standing Rock Sioux Tribe, and Yankton Sioux Tribe).¹⁴⁸ Keystone XL would cut through the land of the Rosebud Sioux of South Dakota, whose president Cyril Scott said in 2014: “Authorizing Keystone XL is an act of war against our people.”¹⁴⁹

LINE 3 EXPANSION

Enbridge’s Line 3 continues to face opposition from Tribes, First Nations, local residents and various grassroots and environmental organizations. Its proposed route crosses territories referenced in the 1855 treaty between the Anishinaabe (including the Ojibwe) and the US government. A 1999 Supreme Court decision upheld the rights of the Anishinaabe to hunt, fish and gather in those areas.¹⁵⁰ The Native-led organisation Honor the Earth and the Sierra Club have detailed the treaty violations they believe arise from the proposed pipeline and its numerous potential impacts on the treaty-protected resources and rights of Indigenous people and Tribes in the region.

According to Honor the Earth: “The proposed Line 3 corridor would violate the treaty rights of the Anishinaabeg by endangering primary

areas of hunting, fishing, wild rice, and cultural resources in the 1855 treaty territory.[...] Line 3 threatens the culture, way of life, and physical survival of the Ojibwe people.”¹⁵¹

According to the Sierra Club: “[...] the Anishinaabe have a legitimate stake in Line 3 decisions as it affects their traditional rights to live off the land. Treaty rights are the law of the land. Anishinaabe voices need to have a primary say in pipeline decisions.”¹⁵²

Active on-the-ground resistance to Line 3 has already been established, including multiple, permanent, Indigenous-led spirit camps and resistance camps¹⁵³ as well as direct action protest in Wisconsin, where construction of the pipeline has already begun.¹⁵⁴

“Standing Rock was a dress rehearsal compared to what this will be. We are not going to let an inch of foreign steel touch Nebraska soil.” Jane Kleeb¹⁴⁷

3. CLIMATE RISK: PIPELINES ARE KEY TO THE EXPANSION OF THE TAR SANDS

Pipelines are the keys that open up untapped reserves by giving producers an affordable, reliable means to get oil to market. While there is ample pipeline capacity for oil from existing and some of the under-construction tar sands projects, there is no room for new expansion. Conversely, it is estimated that the Keystone XL pipeline and the Trans Mountain Expansion project could add 830,000¹⁵⁵ and 590,000¹⁵⁶ barrels per day capacity respectively. Enbridge’s Line 3 would initially increase capacity from 390,000 to 760,000 barrels per day, but in its filing with the Minnesota Public Utility Commission¹⁵⁷, Enbridge indicated that total capacity would ultimately be 915,000 barrels per day, resulting in a 525,000 barrels per day increase. Facilitating the expansion of the tar sands is incompatible with the ambitions of the Paris Agreement and with an orderly transition to a low-carbon economy.¹⁵⁸

Noting the role of pipelines in unlocking new expansions in tar sands production, we can estimate the cumulative emissions impact of each pipeline¹⁵⁹ (See Figure 4).

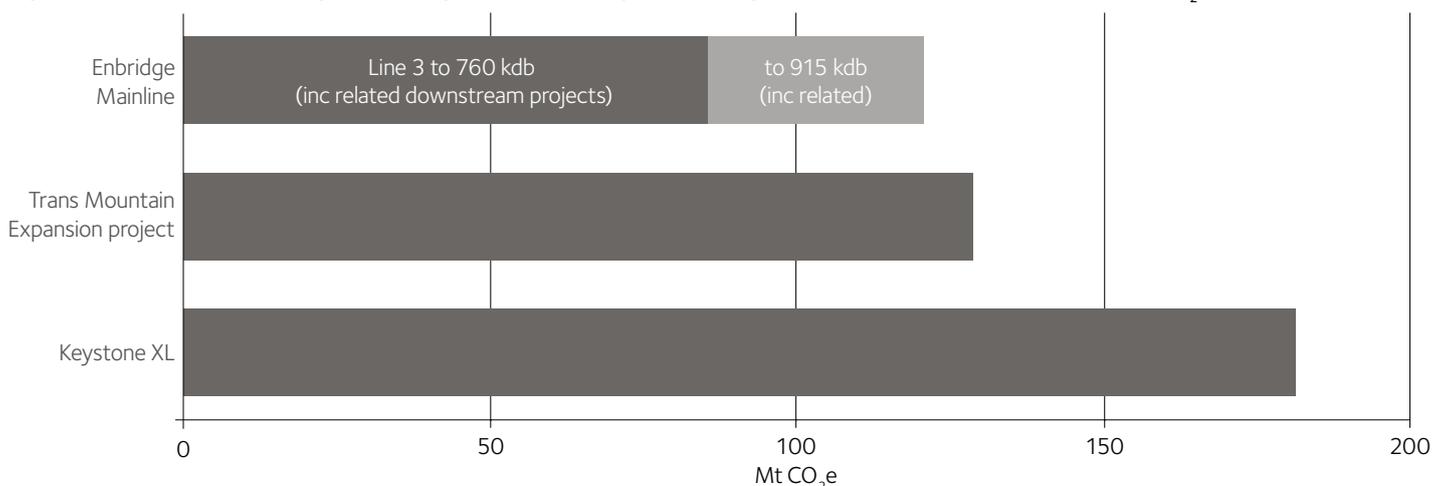
Figure 5 shows how new pipelines would be needed to enable the industry’s expansion plans. Building pipelines therefore is a vital enabling factor in facilitating new tar sands projects (unless oil prices exceed \$90/bbl).

When pipeline capacity becomes tight, sending tar sands crude by rail is an option. But it is not an option that producers can depend on enough to justify multi-billion dollar investments in new tar sands production. While the transport of tar sands by rail has grown in recent years, its potential is severely hampered by high costs, increasing pressure for regulation and unreliable logistics.¹⁶⁰

While the physical infrastructure of rail terminals for loading and unloading is quicker and cheaper to build than pipelines, the per-barrel transport cost is nearly double that of pipelines.

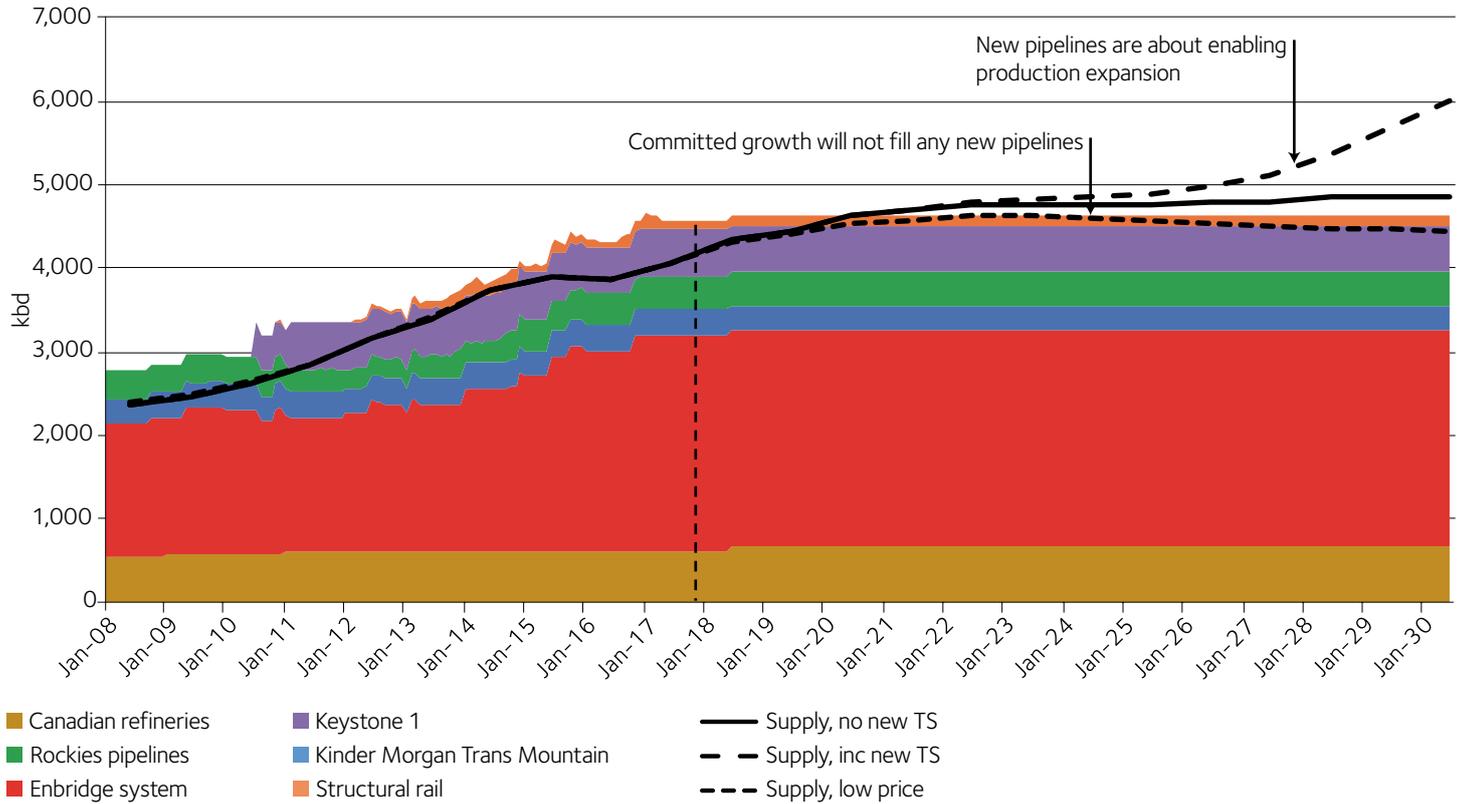
Even those in the business of transporting tar sands crude by rail admit that rail cannot substitute entirely for pipelines, but instead acts as a stop-gap solution for insufficient pipeline capacity. “Crude by rail is not a panacea,” says Stewart Hanlon, President and CEO of Gibson Energy Inc, a tar sands rail terminal operator. “It’s not going to replace pipe.”¹⁶¹ Part of the reason is that rail is less reliable than pipe. Trains are often stopped or delayed when the weather is bad, for example. Crude oil also has to compete with many other commodities for capacity on the rail system – a challenge it does not face with a dedicated pipeline. New safety regulations

Figure 4: Estimated additional greenhouse gas emissions per year resulting from proposed tar sands pipelines (MT CO₂e)*



* Assumes all pipelines carry 100% diluted bitumen (dilbit).

Figure 5: Crude Oil Takeaway Capacity vs Production for Western Canadian Sedimentary Basin



Source: Oil Change International Integrated North American Pipeline Model – INAP, Rystad Energy

aimed at addressing the explosive result of crude oil train derailments are also posing new challenges to the trade. The logistical and market challenges of crude by rail are only likely to lead to volatility and rising costs.

The question is whether producers will invest in new production if rail is the only available transportation option, that is, if pipeline capacity is full and no new pipelines are being built. While there may be a few exceptions, where project costs are very low or where an integrated company can play upstream margins against refining, generally the additional cost of rail eats too far into already tight netbacks.

Lack of pipeline capacity, and the resulting prospect of having to rely on rail, was a key factor behind many of the delayed and cancelled tar sands projects. An analysis of 27 of the tar sands projects cancelled since 2010, found that 14 – including BP’s Sunrise and Shell’s Carmon Creek – were rendered uneconomic by the combination of 2015 oil price expectations and the additional cost of rail. It was lack of pipeline access that pushed them over the edge, as the additional cost of rail rendered these projects uneconomic. These 14 projects are associated with over 60% of the reserves held in all 27 projects.¹⁶²

Assuming other market conditions are right and in the absence of oil prices consistently over \$90, building new pipeline infrastructure is the only way that future tar sands expansion projects would achieve rates of return high enough to get a green light from investors.¹⁶³

Assuming other market conditions are right and in the absence of oil prices consistently over \$90, building new pipeline infrastructure is the only way that future tar sands expansion projects would achieve rates of return high enough to get a green light from investors.



4. ECONOMIC VIABILITY OF THE TAR SANDS PIPELINES

As stated in Section 3, existing pipeline capacity is sufficient to meet the needs of the current conventional oil and tar sands oil extraction in Canada.¹⁶⁴ Accordingly, the success of the proposed new pipelines which rely on producers committing to decade-long contracts for pipeline capacity will depend on the continued confidence of producers in the expansion of the tar sands. Growth in the tar sands is in turn dependent on market conditions (in addition to market access infrastructure and a lack of climate policy) including the global demand for oil in the context of alternative supplies at lower prices. At current oil prices of around \$50, new tar sands production will not expand regardless of whether pipelines are built. However, at oil prices in the range of \$65–70/bbl new pipelines can be a determinative factor in unlocking new tar sands production.¹⁶⁵ A number of factors impacting those market conditions means that growth in the tar sands is far from guaranteed.

4.1 THE PIPELINE BUSINESS MODEL UNDER THREAT

Building a pipeline to transport tar sands-derived product – either syncrude or diluted bitumen (dilbit) – from the tar sands projects

of Alberta to the tidewater coasts of British Columbia, the Gulf of Mexico or the Atlantic coast of Canada faces a variety of challenges. Once built, however the business model for a pipeline is fairly straightforward. Shippers, usually producers, refiners or traders, sign long-term contracts – known as “take-or-pay” or firm transportation agreements – to reserve pipeline capacity ahead of project construction. The contracts are typically for a period of 10–20 years. A pipeline project will go ahead when enough capacity is reserved to guarantee sufficient revenue to project a return on capital invested. The costs to the pipeline company are front loaded in the construction phase of the project, with the revenue spread over the lifetime of the pipeline.

The success of this model is dependent on the shippers fulfilling those contracts. Given that evolving market conditions raise questions about the continued expansion of tar sands production, the risk to the pipeline companies is an oversupply of pipeline capacity. Oversupply of pipeline capacity could return the negotiating leverage to the shippers, with the possible outcome being the renegotiation of the favourable “take or

pay” contracts in favour of the shippers, with reduced prices reducing the revenue of the pipeline companies.

As Figure 5 shows, additional volumes from tar sands projects already under construction might exceed available existing pipeline capacity only by about 250 kpd – well below what is required to profitably fill a new pipeline.

There is convincing analysis that the medium to long-term prospects for growth in the Canadian tar sands and other sources of crude oil in Canada will not require additional pipeline capacity, suggesting that the optimism of the pipeline companies in growth is misplaced. Market fundamentals such as evolving supply and demand dynamics and the resulting medium to long-term prospects for oil prices have already restricted the growth in tar sands and are likely to continue to do so. Potential financiers of the proposed pipelines and of pipeline companies more generally should query their resilience if the companies’ respective pipelines prove uneconomic.



4.2 STALLED AMBITIONS FOR THE TAR SANDS

A LOW PRICE ENVIRONMENT LEADING TO A FLATTENING OF SUPPLY

Since late 2014 oil prices have fallen dramatically. Currently they remain well below the breakeven price required for new tar sands projects to go forward (see Figure 6 below). As a result, the Canadian oil industry has not sanctioned construction of any major new projects that would significantly increase the overall supply of crude oil available for export from Canada, since 2014.¹⁶⁶ The high prices of 2013 led to a level of optimism in the industry which quickly eroded. Only one small project was approved in 2015 and two in 2016 (see Figure 7 below). Medium term price outlook

does not provide confidence that new projects will get a green light.

Many industry analysts^{167,168} believe this a structural market shift driven in part by the flexibility of US shale oil production and slowing global demand growth, with Shell CEO Ben van Beurden suggesting that the industry is now operating in a “lower forever” oil price era.¹⁶⁹

According to the United States Energy Information Agency (USEIA) spot price data, West Texas Intermediate (WTI – the price at which tar sands production trades) has averaged \$51 since the beginning of the 2017.¹⁷¹ At this price, tar sands projects under development now are likely to begin

production making a loss, and even some currently-producing projects are operating at little or no profit.¹⁷² While it is impossible to accurately predict the future of oil prices, in September 2017, WTI Futures for December 2025 were trading within a range of \$40 to \$65, which does not signpost a rapid return to anything like pre-2014 price levels.¹⁷³

FLATTENING DEMAND

Flattening in demand (both globally and from key markets) would limit production growth in the tar sands; in turn this would necessarily limit demand for crude oil transportation services.

Figure 6: 2035 production from new (undeveloped) tar sands projects, by breakeven WTI price (US\$)

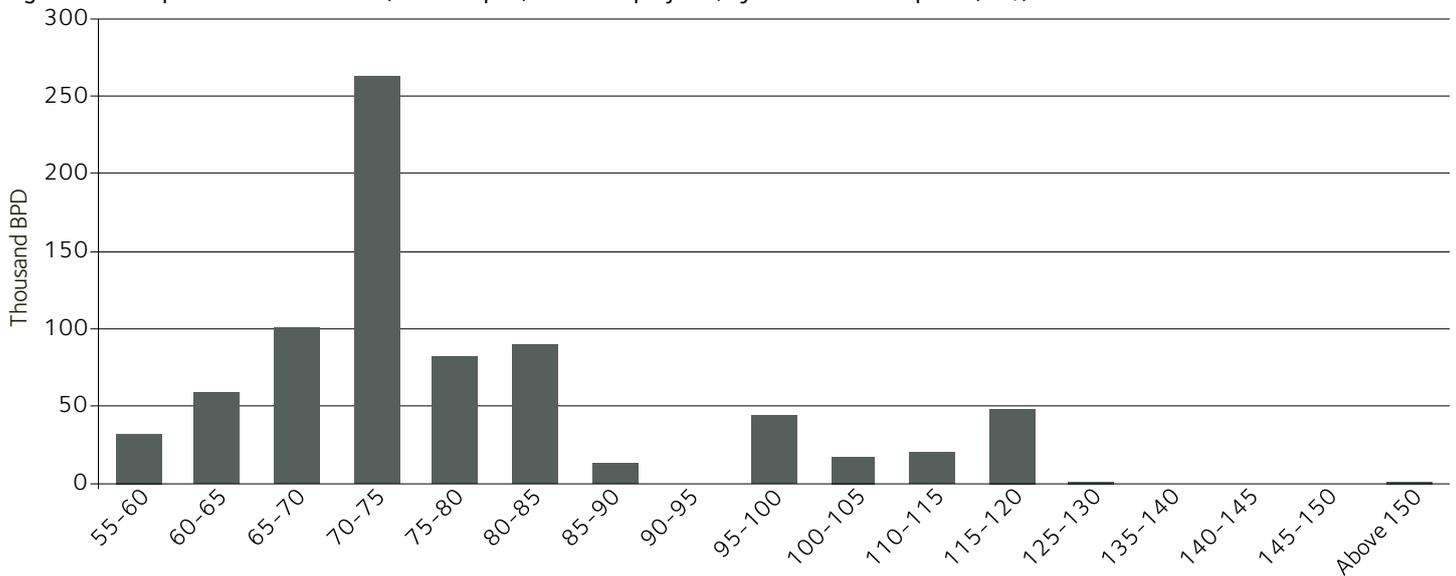
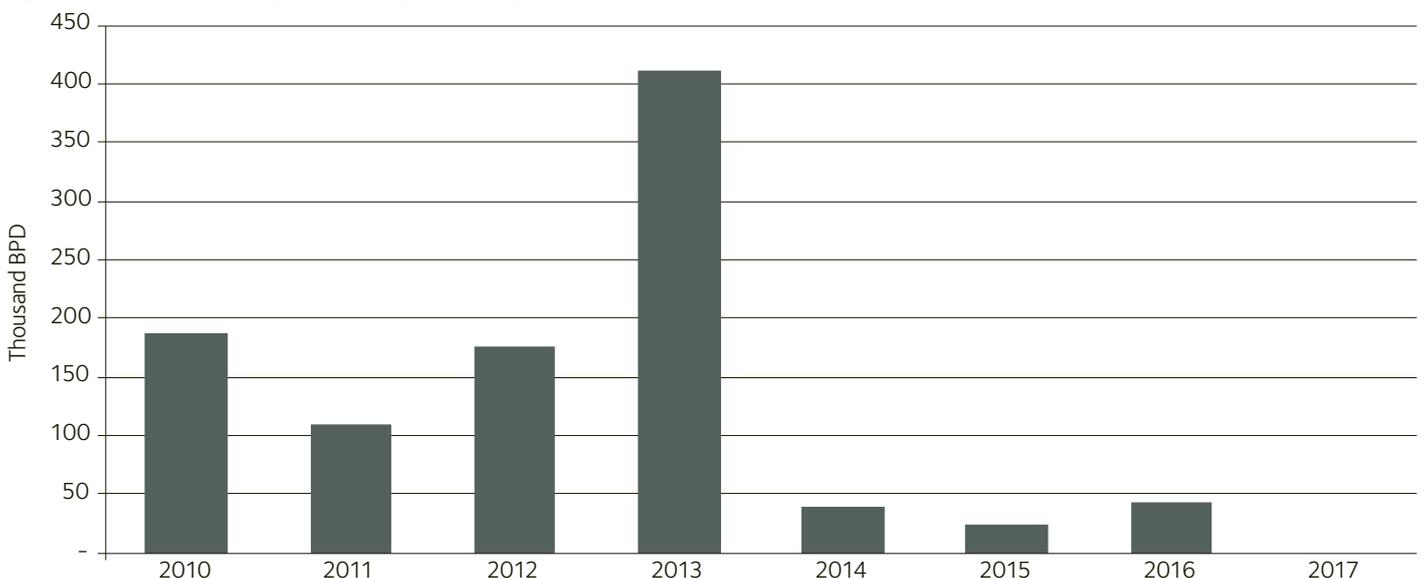


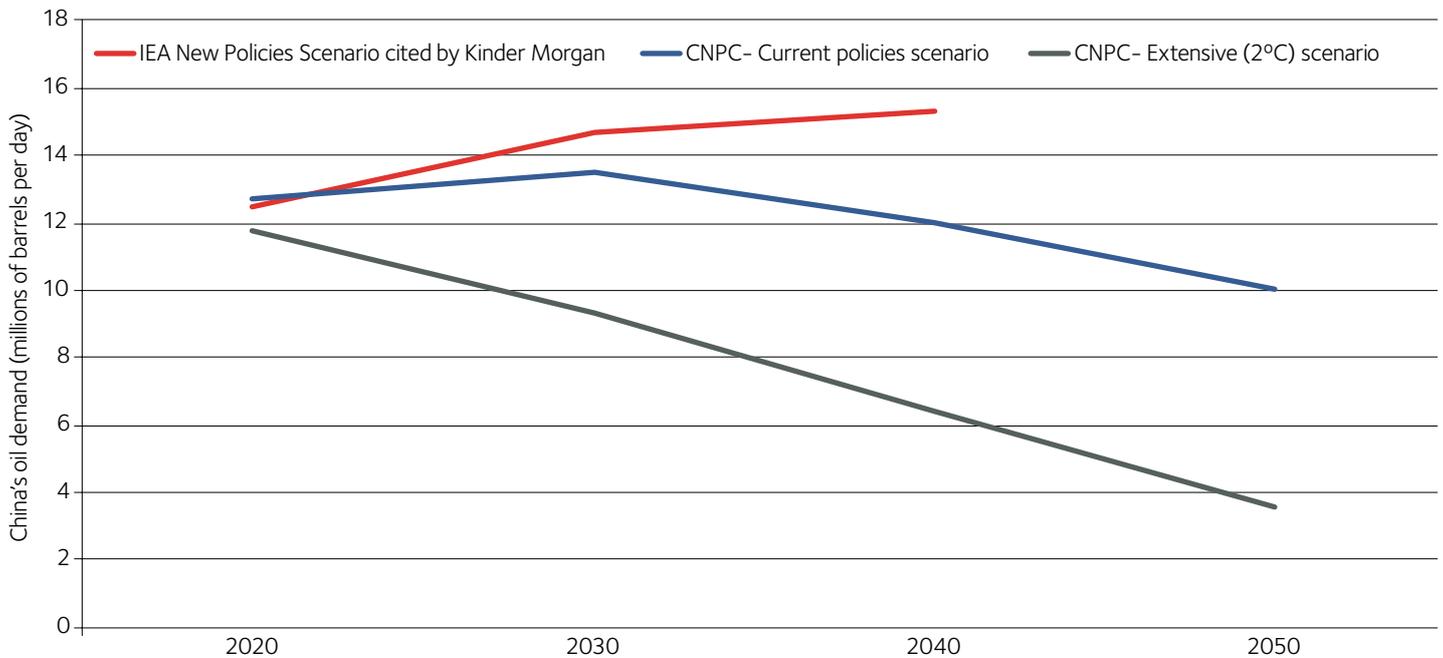
Chart derived from Rystad data by Oil Change International¹⁷⁰

Figure 7: Tar sands capacity additions by approval year



Graph by Oil change International based upon data provided by Rystad Energy, May 2017¹⁷⁴

Figure 8: Three scenarios for Chinese oil demand



Graph devised by GP Canada from IEA World Energy Outlook 2015, New Policies Scenario and 2050 World and China Energy Outlook

In September, China's vice minister of industry and information technology announced that China would set a deadline for automakers to end sales of fossil-fuel-powered vehicles.¹⁷⁵ This announcement raises questions for Kinder Morgan which has pitched its Trans Mountain Expansion project as a way to reach the rapidly growing Chinese market. Kinder Morgan has publicly stated that without a growing demand for oil in key markets, its pipeline could suffer from a reduced supply of crude oil and other products.¹⁷⁶

That admission came in response to Greenpeace Canada's challenge to Kinder Morgan Canada's draft IPO prospectus¹⁷⁷ on the grounds that it contained inadequate disclosure of climate change-related risks and over-estimated the growth in global oil demand, and Chinese demand in particular.

To make the case for rising demand in India and China, the prospectus cited the Canadian Association of Petroleum Producers' (CAPP) 2016 Crude Oil Forecast, Markets and Transportation,¹⁷⁸ which in turn cites the International Energy Agency's (IEA) New Policies Scenario, showing a significant growth in demand for oil in China in the coming two decades.

The figures provided in the CAPP report, however, differ markedly from those issued by the China National Petroleum Corporation Economics & Technology Research Institute (CNPC), the in-house research arm of the state-owned oil company responsible for

informing long-term strategy development. The CNPC's 2016 report 2050 World and China Energy Outlook¹⁷⁹ is the most up-to-date domestic source for projections of oil demand produced in China.

The CNPC's 'current policies' scenario has a much lower forecast for increased oil demand than in the CAPP / IEA forecast (see Figure 8).¹⁸⁰ The current policies scenario assumed that ownership of electric vehicles would account for a modest 1.3% of total vehicle ownership in China in 2030, rising to 4.5% in 2040 and 11% in 2050.

The announcement of the intention to end sales of fossil-fuel-powered vehicles suggests that the Chinese government policy could drive significantly higher rates of electric vehicle adoption. This would not only lower future Chinese oil demand (more in line with the CNPC 2 degree scenario in the

graph above), but could also tilt the global marketplace in favour of electric vehicles, particularly in the context of India looking to move to all-electric sales of new cars by 2030.¹⁸¹

"These factors could not only result in increased costs for producers of hydrocarbons but also an overall decrease in the global demand for hydrocarbons. Each of the foregoing could negatively impact the Business directly as well as the customers of the Business that are shipping through its pipelines or using its terminals, which in turn could negatively impact the prospects of new contracts for transportation or terminalling, renewals of existing contracts or the ability of the Business' customers and shippers to honour their contractual commitments".
Kinder Morgan Canada Limited.¹⁸²

EV REVOLUTION – FOSSIL FUEL VEHICLE BANS ARE PROLIFERATING

- ☒ China is the most recent country to announce a ban on the production and sale of petrol and diesel vehicles.
- ☒ In 2016 the lower house of the Dutch legislature voted to end all petrol and diesel car sales by 2025.¹⁸³
- ☒ India announced that it would end sales of petrol and diesel automobiles by 2030.¹⁸⁴
- ☒ Norway will end sales of new petrol and diesel cars by 2025.¹⁸⁵
- ☒ France will end sales of new petrol and diesel cars by 2040.¹⁸⁶
- ☒ Britain announced an end to the sale of new petrol and diesel cars by 2040.¹⁸⁷
- ☒ Chancellor Angela Merkel suggested that Germany could accelerate the transition to electric vehicles with investment in key infrastructure.¹⁸⁸

4.3 KEYSTONE XL AND LINE 3 VULNERABLE

The flattening of demand in key growth markets along with the corresponding tightening of supply from the tar sands could impact the viability of at least two of the proposed pipelines: TransCanada's Keystone XL and the Enbridge Line 3 expansion.

Expert evidence¹⁸⁹ submitted to the State of Minnesota Public Utilities Commission regarding the Line 3 expansion argues that there is no need to construct the project since crude oil supply from western Canada is likely to decline in volume in the future. The new capacity provided by the Line 3 expansion would only be needed if: (a) additional new Canadian crude oil supply is economically viable and available for export from Canada for a substantial period of time into the future; and (b) other more cost-effective transportation options do not exist.

Expert evidence submitted to the Nebraska Public Service Commission¹⁹⁰ consultation on Keystone XL highlights the conditions limiting growth in the tar sands and thus limiting the potential supply to the pipeline and the potential economic impacts. In addition, there are conditions specific to the Keystone pipeline and the already over-supplied refining market in the Gulf of Mexico area¹⁹¹ which, it is argued, would impact the success of Keystone XL.

It appears TransCanada may not yet have secured sufficient numbers of committed

shippers: the open season, which allows companies interested in shipping or receiving oil on Keystone XL to bid to reserve space, was extended from 28 September to 26 October. TransCanada had previously said that final results likely wouldn't be known until November, a timeline which is also likely to be extended with the new open season schedule.¹⁹² The final investment decision on the project will likely be made in November or December.¹⁹³

4.4 POLITICAL UNCERTAINTY

The project economics of both Keystone XL and Line 3 – which cross the border between Canada and the United States – could face uncertainty from questions regarding international trade and the harmonisation of government policy.

Although stated US priorities include "North American energy security and independence,"¹⁹⁴ President Trump's plan to renegotiate the North American Free Trade Agreement brings with it uncertainty, both due to the different positions brought to the table by the Canadian, Mexican and US governments, and the possibility of resulting significant shifts in trade policies.

President Trump and Congressional Republicans have at times supported a "border tax adjustment" (BTA) as a plank of their tax reform goals. A BTA could have far reaching effects on the the oil and gas sector; while the winners and losers from the implementation

of such a policy remain unclear,¹⁹⁵ oil industry leaders have spoken out against such a policy.¹⁹⁶ Although the BTA has recently been dropped from US tax reform plans, it could return in various forms.¹⁹⁷

4.5 INTERNATIONAL OIL COMPANY EXODUS FROM THE TAR SANDS

Disappointing prospects for tar sands projects have also contributed to the decisions of Conoco-Phillips, Shell, Marathon Oil, Murphy and Statoil all to sell their tar sands assets, with BP¹⁹⁸ and Chevron¹⁹⁹ contemplating shedding their tar sands assets. Even pure play tar sands companies like Suncor are suggesting that they won't be investing to add to reserves.²⁰⁰

Suncor's CEO Steve Williams has been explicit. "Mining investments are coming to an end, not just for Suncor but for the industry, I believe, for a considerable period, probably in excess of 10 years", he has written, adding: "I want to be equally clear: we have no plans to be going ahead with major capital investment in either mining or in situ in the foreseeable future" and "We have nothing of any materiality in the pipeline around mergers and acquisitions."²⁰¹ Suncor subsequently stated that they may not even extract all of their existing assets, preferring to voluntarily strand uneconomic, high carbon projects.²⁰²

SUNCOR SCENARIOS

In April 2017, Suncor reported²⁰³ on how the company assesses climate risk and its plans to build long-term resilience in a low-carbon economy. Published in response to a shareholder resolution passed at Suncor's 2016 Annual General Meeting, the document assessed how the company's business model would change in response to three possible futures.

The lowest-carbon future was called the Autonomy scenario. In this possible future, the

demand for oil drops and oil prices stay low as renewable power generation fuels a largely electrified energy system and breakthrough battery technology supports the rapid deployment of electric vehicles.

Suncor argues that because of their sunk costs, existing tar sands assets would continue to be operated in all three scenarios. But in the low-carbon "Autonomy" scenario, "oil exploration and production slows as investment moves to other sectors" and

"high cost supply falls off fast." As a result, "new oil sand growth projects are challenged and unlikely to proceed" and "no new export pipelines are built out of the Athabasca Oil Sands region."

In a scenario that meets the Paris climate agreement targets, Suncor's strategy is to maintain only the richest parts of their existing tar sands operations and end expansion.

5. LOCAL ENVIRONMENTAL RISKS

5.1 SPILL RISK

The proposed tar sands pipeline projects carry a risk of negative environmental impacts including contamination of drinking water from leaks. When oil spills happen, only a small percentage of the oil released into water can be cleaned up.²⁰⁴ This leaves a lasting legacy of water, soil and sediment pollution that means people and ecosystems are potentially exposed to toxic hydrocarbon chemicals for decades. Acute or chronic exposure to hydrocarbon pollution can significantly impact ecosystems and human health.²⁰⁵

Healthy ecosystems are a necessary precondition for a healthy local economy. A study undertaken by University of British Columbia fisheries experts found that

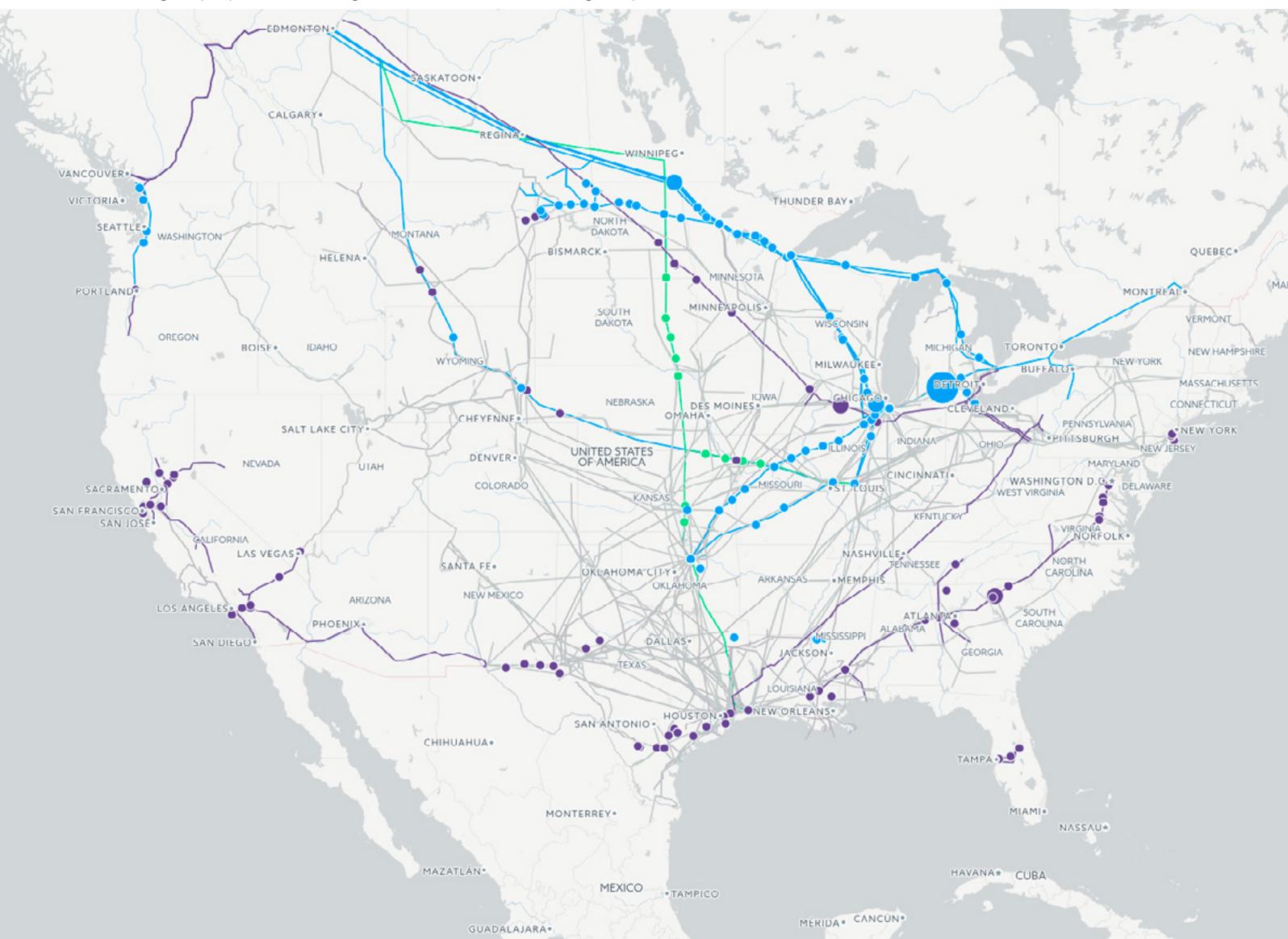
estimated losses from four ocean-based industries (commercial fishing, port activities, ferry transportation and marine tourism) in the event of a high-impact tanker spill could be \$9.6 billion CAD. Those costs do not include the costs for spill response, clean-up or litigation, or the economic value of social, cultural and environmental damages.²⁰⁶

Indigenous peoples “have a cultural, traditional and social connection to the land and many communities continue to rely on traditional food for their socio-cultural, economic, and physical well-being.”²⁰⁷ Contaminating water sources and ecosystems with petroleum products could prevent Indigenous communities from accessing important sources of food, medicine and cultural values.

Analysis of public data from the Pipeline and Hazardous Materials Safety Administration (PHMSA)²⁰⁸ for the period from 2010 to date shows that the three companies proposing to build four tar sands pipelines – TransCanada, Kinder Morgan, Enbridge, and their subsidiaries – have seen 373 hazardous liquid spills from their US pipeline networks.

These spills released a total of 63,221 barrels of hazardous liquids during that time period – including Enbridge’s 20,082 barrel diluted bitumen spill into the Kalamazoo River in 2010. The US crude oil pipeline system as a whole has averaged one significant incident and a total of ~570 barrels released per year per 1,000 miles of pipe, over the past 10 years.

Figure 9: Map of 373 U.S. hazardous liquids pipeline spills from 2010 to present for TransCanada (green), Kinder Morgan (purple) and Enbridge (blue). Available online at greenpeace.carto.com. Data: PHMSA & EIA.



A HISTORY OF SPILLS

Across their US pipeline networks since 2010²¹¹:

- ❑ TransCanada and its subsidiaries had 13 spills totalling 829 barrels of crude oil (mostly from two significant 400 barrel spills in 2011²¹² and 2016).
- ❑ Kinder Morgan and its subsidiaries and joint ventures had 213 spills totalling 21,598 barrels of hazardous liquids. In total, Kinder Morgan saw 22 significant spills during this time.
- ❑ Enbridge and its subsidiaries and joint ventures had 147 spills totalling 40,794 barrels of hazardous liquids. Around half of Enbridge's total comes from a catastrophic 20,082 barrel diluted bitumen spill into Michigan's Kalamazoo River in 2010.²¹³ In total, Enbridge saw 17 significant spills during this time period, all crude oil spills.

In Canada

- ❑ Since 1961, the existing Trans Mountain pipeline has reported 82 spills to Canada's National Energy Board, including spills of greater than 500 barrels in 2005, 2007, 2009, and 2012.²¹⁴

Assuming these rates, the Keystone XL pipeline could see 59 significant spills over a 50-year lifetime. TransCanada reported a much a lower estimate of 11 significant spills²⁰⁹ but an independent scientific assessment concluded that they relied upon overly-optimistic assumptions.²¹⁰ Similarly, the Line 3 expansion could see 51 significant spills over a 50-year lifetime.

An incident is considered "significant" by PHMSA if it involved a fatality, a hospitalized injury, \$50,000 or more in costs, more than 50 barrels (or >5 barrels of highly volatile liquids, or HVL) spilled, or resulted in an unintentional fire or explosion.

5.2 CLEAN-UP COMPLICATIONS

Cleaning up oil spills in water is an inherently difficult task. In typical situations only a fraction of the spilled oil can be recovered by deploying booms and skimmers, or by other methods. Diluted bitumen (dilbit) spills pose an especially difficult clean-up challenge due to the properties of the oil. Laboratory tests and real-world pipeline spills have shown that the ultra-heavy bitumen separates from its lighter diluents and can sink to the bottom of waterways.²¹⁵

A 2015 study conducted by the National Academies of Science²¹⁶ identified unique problems associated with a dilbit spill. The dilbit mixture separates quickly after a spill, with the lighter volatile diluents evaporating and leaving behind the denser bitumen, which will sink in water. This complicates most oil spill response techniques designed to handle oil floating on the surface.²¹⁷ The study concluded that special response strategies and tactics are needed to respond and clean-up diluted bitumen spills; however these have

yet not been developed in Canada or the US. It's open to question whether the pipeline industry, government agencies and first responders are prepared to deal with these additional risks.

A number of reports have criticized existing federal standards for pipeline safety and oil spill response, both for their general inadequacy²¹⁸ and the need for special precautions related to dilbit.²¹⁹ The US National Academies report on dilbit highlighted the inadequacies of existing regulations, stating "Broadly, regulations and agency practices do not take the unique properties of diluted bitumen into account, nor do they encourage effective planning for spills of diluted bitumen" and calling on PHMSA and EPA to implement improvements.²²⁰

In July 2010, Enbridge's Line 6B pipeline ruptured, spilling 20,000 barrels of dilbit into the Kalamazoo River near the town of Marshall, Michigan.²²¹ The spill impacted hundreds of families, polluted 36 miles of river, and only narrowly avoided contaminating Lake Michigan. The spilled bitumen sunk to the bottom of the river triggering a years-long, billion dollar clean-up operation that required dredging the river bottom. It is claimed that it has left the river degraded years later.²²² A National Transportation Safety Board review²²³ of the incident offered a scathing critique of Enbridge's safety culture, and noted that the company knew of problems with its pipeline system but relied on weak regulations to avoid taking effective action to fix them.²²⁴ Enbridge's CEO failed to share accurate information about the oil's properties with either first responders or the media in the aftermath of the spill.²²⁵

5.3 DRINKING WATER

Safe, clean drinking water is fundamental to public health. When an oil spill occurs, communities may have to shut down existing water supplies. In July 2016, for example, a pipeline operated by Husky spilt 90,000 litres (566 barrels) of heavy crude and diluent into the North Saskatchewan River, jeopardizing drinking water supplies for thousands of people downstream. The spill forced the communities of North Battleford, Prince Albert and Melfort to shut their intakes from the river and find other water sources for almost two months.²²⁶ Many communities' water supplies are threatened by proposed pipelines.

TRANS MOUNTAIN EXPANSION PIPELINE

The proposed Kinder Morgan Trans Mountain pipeline has a total of 246 potential watercourse crossings along the proposed route in Alberta and 1109 potential watercourse crossings in British Columbia, of which 354 are fish-bearing.²²⁷ It crosses aquifers which provide drinking water to the communities of Abbotsford and Coldwater,²²⁸ and the city of Chilliwack.²²⁹

KEYSTONE XL

The proposed route of the Keystone XL pipeline would cross 1,073 surface bodies of water, including 56 perennial streams.²³⁰ One expert noted the Platte Valley and the Platte River crossing as a particular "weak link" for Keystone XL due to a high water table and a shallow pipe depth.²³¹ The Final Supplemental Environmental Impact Statement (FSEIS) also identifies a number of tribal and municipal water resources that are downstream from Keystone XL water crossings.²³²

In addition to threats to surface water, much discussion has focused on Keystone XL's potential impacts to groundwater, particularly the Ogallala (or High Plains) aquifer, which is found under much of Nebraska and extends southward to Texas. The Northern High Plains aquifer provides 78 percent of the water supply and 83 percent of irrigation water in Nebraska. Overall the aquifer holds 3.25 billion acre-feet of water and supplies water to 170,000 wells.²³³

Experts have pointed out that claims that a pipeline spill would contaminate the "entire" aquifer are overblown, although concerns about significant local impacts to the aquifer and wells are reasonable. As one expert put it: "Contaminating an entire aquifer over the area of an entire county by a single pipeline that is being maintained properly and the hazards of which are being mitigated correctly ... is very unlikely. However, the possibility of

a contaminant plume affecting wells within a comparatively short distance – hundreds of meters – of an improperly maintained or incorrectly mitigated pipeline is much higher.”²³⁴

The Stansbury assessment found that a worst-case discharge of 189,000 barrels could lead to an underground plume of carcinogenic dilbit components such as benzene, with the potential to contaminate billions of gallons of water.²³⁵ Risks to the local aquifer would vary depending on the local geology and the height of the water table in the region impacted by the spill. TransCanada has already rerouted the pipeline once to avoid the Sand Hills region in western Nebraska, an ecologically sensitive area whose characteristics (high water table and sand dune formations) make it particularly risky for spills.²³⁶

LINE 3 EXPANSION

The proposed Line 3 expansion would deviate from the existing Line 3 route for one section in Minnesota, and would use the existing route for the rest of its length. The proposed route would require 227 surface water crossings, including 46 waters designated either for state use or as sensitive surface waters, and seven navigable river crossings.²³⁷

In Minnesota, the project would cross 25,765 acres of high vulnerability water table aquifers, 26,382 acres of high groundwater contamination susceptibility, 16,299 acres of high pollution sensitivity, and 87 acres of wellhead protection areas. 304 domestic wells lie within the ROI of the project.²³⁸

Minnesota’s natural wild rice fields which represent an “important social and cultural component for American Indian tribes and rural Minnesota communities” could be threatened by a pipeline spill.²³⁹

5.4 WILDLIFE

Oil spills can negatively impact wildlife in a number of ways:²⁴⁰

- ❑ Oil destroys the insulating ability of fur-bearing mammals, such as sea otters, and the water repellency of a bird’s feathers. Without the ability to repel water and insulate themselves from the cold water, birds and mammals will die from hypothermia.
- ❑ Many birds and animals also ingest oil when they try to clean themselves, which can poison them.
- ❑ Fish and shellfish may not be exposed immediately, but can come into contact with oil if it is mixed into the water column. When exposed to oil, adult fish may experience reduced growth, enlarged livers, changes in heart and respiration rates, fin erosion, and impairment in their capacity to reproduce. Oil also adversely affects eggs and the survival of larvae.

JASPER NATIONAL PARK – WORLD HERITAGE SITE

The contiguous national parks of Banff, Jasper, Kootenay and Yoho, and the Mount Robson, Mount Assiniboine and Humber provincial parks, were together designated a World Heritage Site under the title “Canadian Rocky Mountain Parks” in 1984.²⁴¹ Classic illustrations of glacial geological processes — including ice-fields, remnant valley glaciers, canyons and exceptional examples of erosion and deposition — are found throughout the area.²⁴² Extending over 11,000 square kilometres, Jasper National Park is the largest national park in the Canadian Rockies.²⁴³

The Trans Mountain pipeline has been in operation since 1953. Its current capacity is about 300,000 barrels per day. The proposed expansion will create a twinned pipeline increasing the nominal capacity of the system from 300,000 barrels per day to 890,000 barrels per day. The pipeline would carry diluted bitumen from the tar sands through Jasper National Park, into the Lower Mainland of British Columbia, across the Vedder Fan aquifer and the municipality of Chilliwack’s protected groundwater zone, then across the Fraser River and to the Westridge Marine Terminal at Burrard Inlet for export.

Part of the existing Trans Mountain pipeline passes through Jasper National Park. However, in order to complete the expansion project, Kinder Morgan needs to reactivate two deactivated sections of the Trans Mountain pipeline system. It is reported that the



expansion “will, when complete, triple the amount of oil that moves through Alberta’s Jasper National Park.”²⁴⁴

The Jasper reactivation is a 150-kilometre segment from Hinton, Alberta to Hargreaves, British Columbia, and the West Barriere reactivation, a 42-kilometre section from Darfield to Black Pines, BC.²⁴⁵ Approximately 80 km of reactivated pipeline will run through the World Heritage Site. Kinder Morgan has stated that reactivation activities will be carried out over approximately two years.²⁴⁶ These activities – some of which

will potentially be carried out in the World Heritage Site – “typically involves: Mobilizing excavation equipment, pipe, and infrastructure (trailers) to support the work; Excavation to expose existing line, cutting and welding to the existing line; Non-Destructive examination of the work; and Back filling.”²⁴⁷

The Kinder Morgan Trans Mountain pipeline has spilled six times along its 158 kilometre route through Jasper National Park since 1954.²⁴⁸ This includes the second-largest leak in the Trans Mountain’s history.²⁴⁹

5.5 TANKER TRAFFIC

TRANS MOUNTAIN EXPANSION PROJECT

The expanded capacity of the Trans Mountain pipeline could lead to as much as 590,000 additional barrels per day arriving at the pipeline terminal in British Columbia. The added oil would be loaded onto an additional 348 tanker ships per year, on top of existing tanker traffic through the Salish Sea. The tankers could head to refineries in Washington, California, or across the Pacific to supply markets in Asia.²⁵⁰

The propensity of dilbit to sink in water could according to a study “trigger an ecological catastrophe.”²⁵¹ Despite this study, Kinder Morgan’s proposal “assumed that dilbit spilled from a tanker would all float and therefore be completely recoverable.”^{252 253} It’s worth noting that this claim – even if accurate – appears to assume that the spilled bitumen is recovered before it “weathers’ on the surface for too long.”²⁵⁴

If bitumen sinks to the ocean floor it is argued that it would remain “unrecoverable for decades, if not centuries, harming Dungeness crab, rockfish, sand lance, and other bottom-dwellers. It would also seriously threaten migrating salmon and the totemic, endangered Southern resident killer whales, which ultimately depend on these members of the marine food chain, especially Chinook salmon.”²⁵⁵

5.6 RISKS FROM PIPELINE CONSTRUCTION AND OPERATION

All pipelines have environmental effects. Soils can be eroded, compacted and mixed, contaminated, and removed, and they can be acidified by local emissions of chemicals causing acid rain. Possible alterations of geology can cause landslides, along with accompanying risks to safety and environment, such as to fish habitat. Vegetation (including old growth forests and rare communities of plants) can be affected by surface disturbance, changes in water flows, the arrival of alien species and air contamination.²⁵⁶

Risks to wildlife can be caused by the removal, alteration and fragmentation of habitat, as well as by noise, changing access and sightlines for predators, and the creation of barriers to movement.²⁵⁷

Water quality and quantity could be affected by erosion and crossing excavations as well as by herbicides applied to maintain a clearing around the pipeline. Activities related to the pipeline such as the clearing of vegetation, and the grading and placement of structures in water, have the potential to affect the productive capacity of fish habitat, and fish migration, health and mortality. Blasting, grading and tunnel construction could alter both surface and groundwater flow and exposes rock formations, which could potentially leach acid or metals.²⁵⁸

While there is a great deal of information on how to mitigate the standard environmental effects of a pipeline, such as those on fish habitat associated with river crossings, assessing the cumulative impacts of multiple aspects of a pipeline project that may occur in a single ecological unit (such as multiple crossings throughout a river basin) is more difficult. Accordingly, the necessary mitigation efforts are less well understood.²⁵⁹

5.7 FINANCIAL IMPLICATIONS OF ENVIRONMENTAL IMPACTS

As Enbridge’s 2010 Kalamazoo River disaster has shown, a pipeline spill can bring with it significant penalties, clean-up and settlement costs. In 2016, the US Environmental Protection Agency (EPA) settled with Enbridge for \$177 million in connection with that spill and another incident near Romeoville, IL.²⁶⁰ The total represented \$61 million in Clean Water Act fines, \$110 million in spill prevention safeguards, and \$5.4 million in government costs. That fine comes on top of at least \$1.2 billion in clean-up costs disclosed by Enbridge in a Securities and Exchange Commission (SEC) filing.²⁶¹ That total included “\$551.6 million spent on response personnel and equipment, \$227 million on environmental consultants and \$429.4 million on professional, regulatory, and other costs,” but did not include an estimated \$219 million in costs yet to be paid.²⁶² Enbridge also spent nearly \$1 billion reviewing the safety of its

pipeline network and another \$1.6 billion to replace the entire Line 6B pipeline.²⁶³

The Clean Water Act authorizes fines of up to \$4,300 per barrel of oil spilled and gives the EPA discretion to set higher penalties. Although Enbridge’s settlement was the largest Clean Water Act fine for an inland oil spill (second only to BP’s Deepwater Horizon disaster), it is far from the only pipeline to be hit with multi-million dollar fines.²⁶⁴ Colonial Pipeline Company paid \$34 million for a number of incidents in Georgia, Louisiana and Tennessee, while BP paid \$25 million for two pipeline spills on Alaska’s North Slope. ExxonMobil has been fined many times for pipeline spills in Mayflower, Arkansas (\$3.2 million), Valencia, California (\$4.7 million)²⁶⁵ and the Yellowstone River (\$12 million).²⁶⁶

Nor is the Kalamazoo River spill Enbridge’s only regulatory violation. A database of US federal enforcement actions contains 30 penalty records totalling over \$180 million in fines since 2010. The majority of these (22) were violations of environmental regulations, but the total also includes workplace and other safety violations. One notable example is a \$2.4 million fine from the US Department of Transportation for a 2007 incident where two Enbridge employees lost their lives responding to a pipeline leak.²⁶⁷

The same database showed that Kinder Morgan had 55 penalty records (of which 27 were environmental) totalling \$4.3 million in fines.²⁶⁸ Kinder Morgan was also fined \$5.3 million for Clean Water Act violations because of three spills in 2004-5 along its Pacific Operations unit in California, and its subsidiary Plantation Pipeline was fined \$725,000 for four spills between 2000-6 in the US Southeast.²⁶⁹

In the same time period, TransCanada had eight environmental violations totaling \$183,000 in fines.²⁷⁰

Assuming these rates, the Keystone XL pipeline could see 59 significant spills over a 50-year lifetime.

6. ALIGNING FUNDING DECISIONS WITH CLIMATE ACTION AND BANK POLICIES

6.1 INCOMPATIBLE WITH CLIMATE ACTION

Banks and their investors run the risk that their short-term lending decisions – on projects such as tar sands pipelines – will, through the carbon lock-in they enable, undermine their other medium to long-term actions on climate. As detailed in Section 3, if no new pipelines are built there will be no pipeline space available for tar sands production growth beyond that which arises from some of the projects already under construction.

6.2 UNDERMINING BANK POLICIES AND PUBLIC STATEMENTS

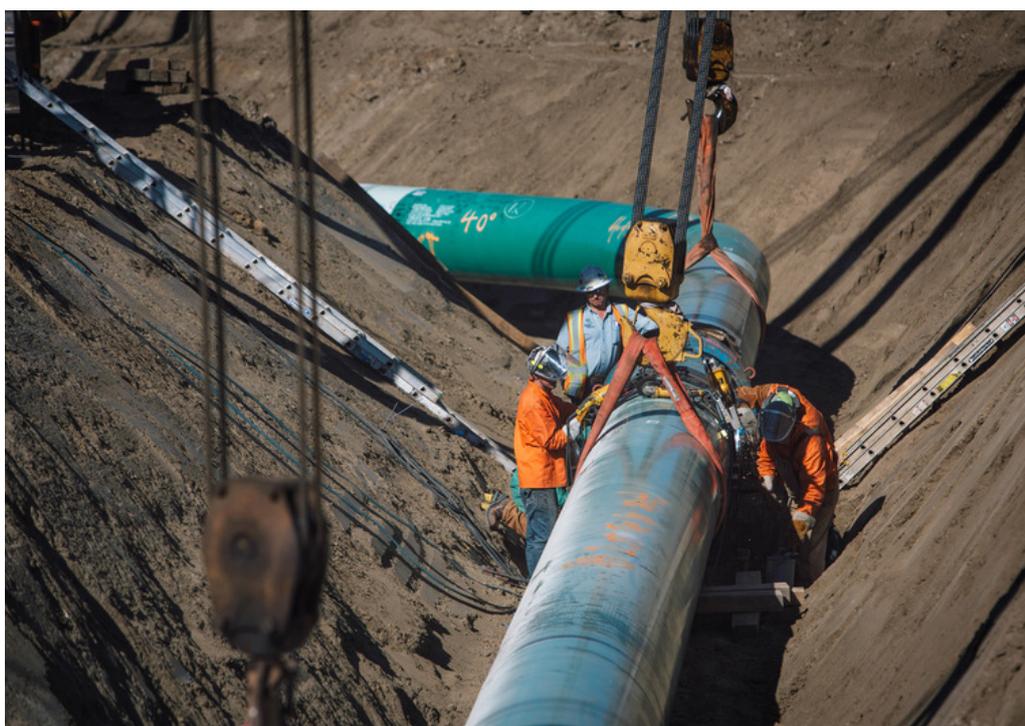
Financial deals supporting tar sands pipelines also appear to be at odds with some of the banks' own policies, statements and actions on matters including climate change, human rights and World Heritage sites.

CLIMATE CHANGE

It is difficult to reconcile Royal Bank of Canada's, TD's and Barclays' decision to fund the Kinder Morgan Trans Mountain Expansion project with their newly-announced work with the United Nations to "develop analytical tools and indicators to strengthen their assessment and disclosure of climate-related risks and opportunities."²⁷¹

Likewise Barclays' lending decision on the Kinder Morgan Trans Mountain Expansion project raises questions about the timing and long-term effectiveness of its plan "to develop a strategic approach that is sustainable in the long-term" for its global energy client portfolio.²⁷²

In its public statements, JPMorgan Chase has acknowledged the responsibility of the financial sector in safeguarding the global climate and protecting human rights. While the bank's Environmental and Social Policy Framework



recognizes the global consensus supporting the goal of the Paris Agreement to pursue efforts to limit global warming to 1.5°C,²⁷³ it previously acted as Lead Agent on two revolving credit facilities provided to subsidiaries of TransCanada, and on a revolving credit facility provided to a subsidiary of Enbridge Inc. It also participated as a lender in seven other relevant credit facilities to TransCanada, Enbridge, and Kinder Morgan. JPMorgan Chase was also a member of the syndicate for the recent construction loan for Kinder Morgan's Trans Mountain Expansion project.

HUMAN RIGHTS

JPMorgan Chase, Royal Bank of Canada, TD, Barclays, and Wells Fargo are all signatories to the Equator Principles²⁷⁴ which state that projects with adverse impacts on Indigenous peoples require Free, Prior, and Informed Consent (FPIC) in line with the International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability. The Equator Principles allow banks to forego this FPIC requirement in countries like the US and Canada (which the principles define as "Designated Countries")

Banks and their investors run the risk that their short-term lending decisions – on projects such as tar sands pipelines – will, through the carbon lock-in they enable, undermine their other medium to long-term actions on climate.

assuming that in such countries adequate protections exist under law for rights of Indigenous peoples.

As the Dakota Access Pipeline (DAPL) controversy demonstrated in stark and unacceptable terms, national regulatory review processes in Designated Countries do not provide a failsafe guarantee that a project has obtained the FPIC of communities impacted by a project. Bank risk departments can no longer assume that compliance with the Equator Principles will, in itself, mitigate reputation risks for alleged complicity by banks in potential human rights violations. In line with both the spirit of the Equator Principles and their role in determining and mitigating risk, signatory banks should refuse to fund projects lacking FPIC regardless of the jurisdiction in which they occur. Ten Equator Principles banks have recently called for the IFC FPIC standard to be applied in all countries.²⁷⁵

JPMORGAN CHASE'S HUMAN RIGHTS POLICY

In light of the lack of FPIC from all potentially impacted First Nations and Tribes as set out in Section 2, providing finance to any of the pipelines appears to contradict JPMorgan Chase's human rights policy which states: "For transactions where we can identify

that the use of proceeds may have the potential to impact Indigenous Peoples, we expect our clients to demonstrate alignment with the objectives and requirements of IFC Performance Standard 7 on Indigenous Peoples, including with respect to circumstances requiring Free, Prior and Informed Consent."²⁷⁶ Although this wording does not draw any distinction based on the location of the proposed project, there is a separate requirement that "Transactions that fall under the scope of the Equator Principles must demonstrate compliance with these requirements."²⁷⁷ JPMorgan Chase should clarify the interplay between these two statements and whether the bank requires clients to obtain FPIC regardless of the location of the relevant project. If the requirement for clients to comply with IFC Performance Standard 7 applies in the case of loans for tar sands pipelines, JPMorgan Chase should explain how it is satisfying itself that this is being adhered to in the case of the Trans Mountain Expansion project and any other relevant projects.

TD BANK GROUP AND WORLD HERITAGE SITES

Financing Kinder Morgan's Trans Mountain Expansion project appears to conflict with TD's policy which states that TD does not finance transactions relating to activities

within World Heritage sites.²⁷⁸ Approximately 80km of the expanded pipeline will run through Jasper National Park, a World Heritage Site, and "reactivation" activities will possibly be carried out within the park.

6.3 CONSUMER BACKLASH

Banks involved in DAPL, a project similarly affected by these issues, faced intense scrutiny from civil society, media, investor, and consumers with the closure of bank accounts with an estimated worth of \$5bn.²⁷⁹ Investors representing \$653 billion in assets under management, including New York City pension funds and the California Public Employees Retirement System, signed an investor statement supporting a rerouting of the pipeline citing a need to "protect the banks' reputation and consumer base and to avoid legal liabilities."²⁸⁰

Any financial institution associated with tar sands pipeline projects should expect to meet similar scrutiny and opposition from civil society around the world. Soon after President Trump approved the federal Keystone XL permit, the Seattle City Council voted unanimously that it would not contract with any banks that finance TransCanada.²⁸¹ In May 2017, Native American leaders and activists occupied a number of Chase bank branches in Seattle, requiring them to close temporarily.²⁸²



7. RECOMMENDATIONS FOR FINANCIAL INSTITUTIONS

POTENTIAL FUNDERS

We believe, given the range of potential climate, human rights and local environmental impacts associated with tar sands pipelines, that financial institutions should not finance, arrange and/or underwrite the provision of finance for the construction, expansion and/or operation of tar sands pipelines, whether in the form of project-specific lending, general corporate lending (without restrictions on the purpose of facilities), corporate bonds or shares to or in any of Kinder Morgan, TransCanada, and Enbridge and/or their subsidiaries.

EXISTING LENDERS

We believe existing lenders to the Kinder Morgan, TransCanada and Enbridge corporate groups should:

- ☒ sell their existing stake in all or confirm that they will not participate or arrange the renewal of any of the existing credit facilities provided to each of Kinder Morgan, TransCanada, and Enbridge, and/or their subsidiaries, if such facilities may be used, directly or indirectly, to finance the construction, expansion, and/or operation of tar sands pipelines; and
- ☒ confirm that they will neither participate in, arrange, nor underwrite any future credit facilities to, or any issue of securities by, those companies and/or their subsidiaries which may be used, directly or indirectly, to finance the construction, expansion, and/or operation of tar sands pipelines.

BANKS AND POTENTIAL INVESTORS IN TAR SANDS PRODUCERS AND PIPELINE COMPANIES

We believe that banks and other financial institutions should review their overall financial exposure to tar sands companies – including via pipeline companies – and take steps to ensure the compatibility of their lending and investment policies and practices for such companies with:

- ☒ the prudent mitigation of climate risk and the ambitions of the Paris Agreement; and
- ☒ international best practice on human rights.



INVESTORS IN BANKS

We believe that institutional investors in banks should engage with their investee companies to understand whether the various risks associated with financing tar sands pipelines are being adequately assessed, mitigated and managed. Below, we suggest questions that institutional shareholders may wish to ask of banks.

QUESTIONS FOR BANKS

- ☒ Does the bank have specific published policies on tar sands finance, FPIC and climate risk mitigation?
- ☒ Does the bank intend to advance credit facilities which might be used directly or indirectly to fund the construction and/or operation of any of the proposed tar sands pipeline projects?
- ☒ What changes has the bank made to its due diligence and risk assessment processes following the criticism suffered by it or its peers following the DAPL controversy?
- ☒ Does the bank require enhanced due diligence to be carried out for tar sands projects including pipelines? If so, what are the additional issues considered in an enhanced due diligence process?
- ☒ If the bank has provided, or intends to provide, finance in connection with a tar sands pipeline project, is the approval by the Lead Banks of a thorough and independent human rights impact assessment of the project in line with the UN Guiding Principles on Business and Human Rights Reporting Framework a condition precedent to financial close?
- ☒ Will the terms of reference of the independent human rights impact assessment be finalised after consultation with other stakeholders and will they be published?
- ☒ Does the bank have plans to engage directly with potentially affected Indigenous Nations and Tribes and local communities along the proposed pipeline routes, independent experts, and with other stakeholders prior to financial close to ensure the bank's decision-making is based on information from a range of sources rather than just those of the borrower?
- ☒ If due diligence identifies the relevant tar sands pipeline project as high risk, what steps will be taken by the bank to mitigate the potential legal, financial, and reputational risks and to ensure that the rights of the people potentially affected by the pipeline project are protected?
- ☒ Does the bank agree with the call by some Equator Principles banks to apply the FPIC standard in all countries?
- ☒ If the bank has provided, or intends to provide, finance in connection with a tar sands pipeline project, is the approval by the Lead Banks of a thorough and independent environmental impact assessment – including the impact of any spills along the route – of the relevant tar sands pipeline project a condition precedent to financial close?
- ☒ Will the terms of reference of the independent environmental impact assessment be finalised after consultation with other stakeholders and will they be published?
- ☒ If the bank has provided, or intends to provide, finance in connection with a tar sands pipeline project, how does the bank reconcile, from the perspective of climate risk mitigation, both its decision to lend and its various statements and initiatives?
- ☒ Given the shifting fortunes of the tar sands (as evidenced by the retreat of oil majors including Shell) and the tar sands' vulnerability from a wasted capital point of view to the impacts of climate policy and disruptive technology on global oil demand, what steps has the bank taken to assess its overall exposure to the sector? Does the bank have plans to reduce that exposure in the short-term?
- ☒ Has the bank assessed the impact of reduced oil demand from key projected growth markets such as China and India on the viability of the proposed pipelines?
- ☒ If the bank has provided or intends to provide finance in connection with a tar sands pipeline project, what steps will it take to mitigate the potential risk to its reputation and consumer backlash?
- ☒ How does TD reconcile its policy on World Heritage sites with its role in financing and arranging finance for Kinder Morgan's Trans Mountain Expansion project?
- ☒ Given the wording of JPMorgan Chase's policy on Indigenous rights, can the bank confirm its position on the need to demonstrate FPIC prior to advancing any funds for the construction of any of the proposed tar sands pipelines?

CONCLUSION

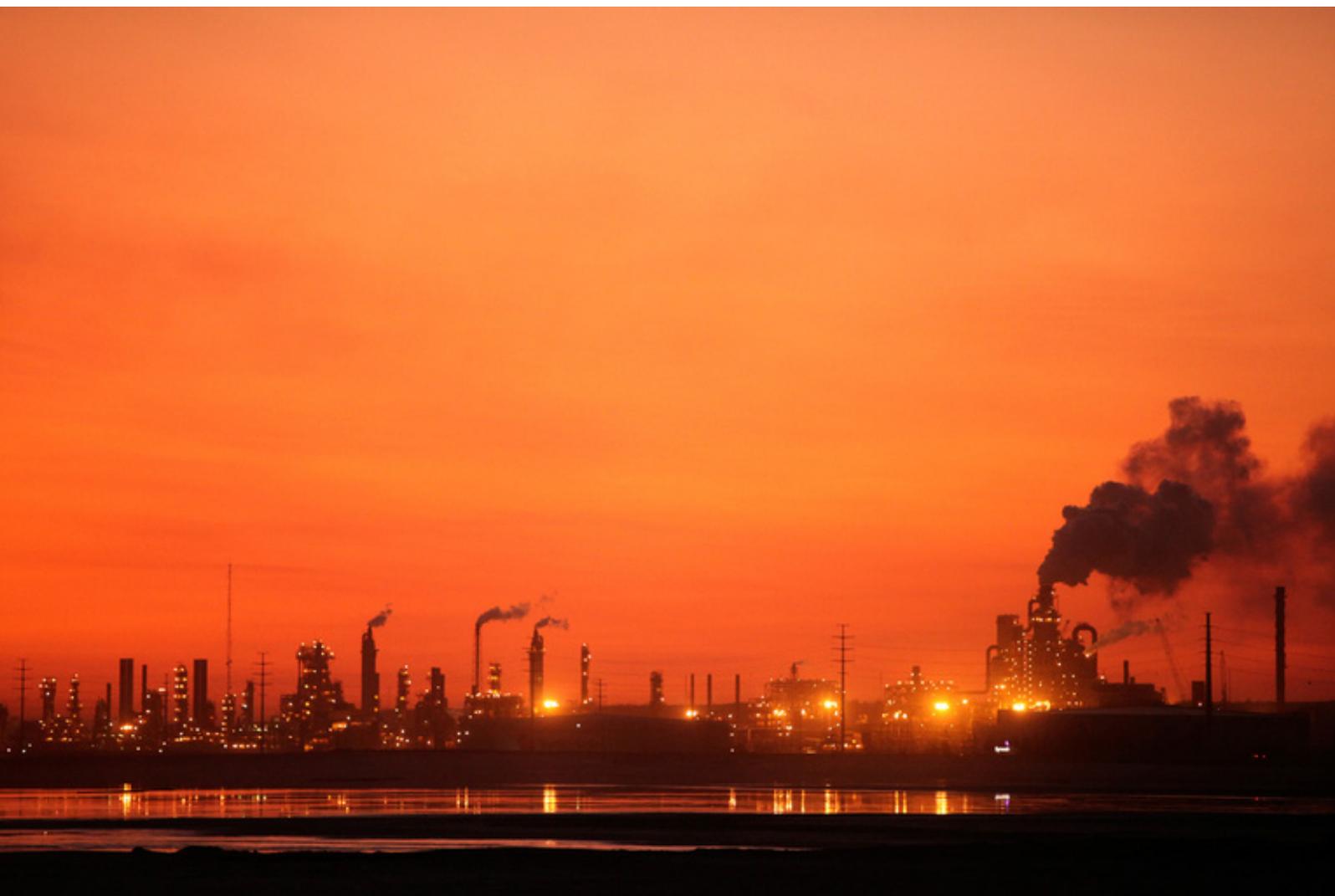
A number of banks, including JPMorgan Chase, Royal Bank of Canada, TD Bank Group, Barclays and Wells Fargo risk opposition from Indigenous communities, pressure from civil society groups, and scrutiny from investors as a result of their actual or potential involvement in climate-damaging and controversial tar sands pipeline projects in Canada and the US.

The expansion of the tar sands is incompatible with achieving the goals of the Paris Agreement. If no new tar sands pipeline projects are completed, there will be no pipeline export capacity for tar sands projects that have yet to break ground. In financing the construction of tar sands pipeline

projects, banks and purchasers of newly issued securities therefore risk exacerbating climate change and climate risk. In addition to the climate risks associated with the proposed tar sands pipelines, the track record of the pipeline companies on spills gives rise to concern in light of the thousands of waterways potentially affected.

Lenders and investors must question whether the pipeline companies are adequately assessing and addressing the full range of risks inherent in these controversial projects and whether their decisions to lend or purchase securities are in their long-term best interests.

This report outlines the financial and reputation risks banks, their investors and investors in pipeline companies could face in arranging and providing finance for companies intending to build tar sands pipelines. We make a number of recommendations for potential pipeline financiers and we suggest questions for bank investors to ask to understand whether the various risks associated with these projects are being adequately assessed, mitigated and managed.



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