Asking the wrong question about Keystone XL

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Summary

The Draft Supplemental Environmental Impact Statement of the US State Department assumes that denying the Keystone XL pipeline will not appreciably slow development of the Alberta oil sands and the carbon pollution it produces. There is considerable evidence that contradicts this finding. Notably, the lowest cost and highest volume method of transporting oil sands product is via pipelines, yet the other two major proposed pipelines from the oil sands – both of them crossing British Columbia – are unlikely to be approved. Denial of Keystone XL and both of these two pipelines will definitely slow development of the oil sands.

This is an important step in addressing increasing carbon pollution in our atmosphere, but it must be combined with many such acts in North America and the rest of the world. Decisions about projects like Keystone XL are of little use unless they are leveraged to greater effect. In this case, the US government should note that it cannot support oil sands expansion while the Canadian government is not making the effort necessary to achieve its 2020 emission reduction target – a target that the US is on course to achieve.

Scientists calculate the global carbon budget that would prevent global temperatures from rising more than 2 °C above pre-industrial levels, and from this energy analysts estimate the economic viability of fossil fuel resources, like the oil sands. In 2012, researchers at the MIT Joint Program on Science and Policy of Global Change published a paper showing the oil sands as non-viable if global emissions fall enough to prevent a 2 °C increase, the very target to which President Obama and other world leaders are committed. Disallowing Keystone XL is an important first step in keeping our promises to ourselves and our children.

Will Keystone denial reduce oil sands development?

The Draft Supplemental Environmental Impact Statement of the US State Department assumes that denying the Keystone XL pipeline will not appreciably slow development of the Alberta oil sands and the carbon pollution it produces. There is considerable evidence that contradicts this assumption, and its importance is noted by industry analysts, Canadian politicians and even the oil sands producers themselves.

Quite simply, in the absence of Keystone XL, oil sands producers will find it more difficult to profitably get their product to market. Over the next two decades, the oil sands industry is considering plans to triple its production. To move forward, these projects require a significant expansion of low cost transportation infrastructure. They have potential alternatives to Keystone XL, but these are more costly and more difficult to scale-up to the capacity of Keystone XL, and each faces significant impediments.

Because of their large capacity and low cost, pipelines are preferred. Thus far, the two major pipeline proposals that might compensate for the denial of Keystone XL would ship Alberta bitumen through British Columbia (BC) and then by oil tanker to refineries in Asia and elsewhere. One is the Northern Gateway pipeline proposal of Enbridge, which would be a new pipeline from the oil sands straight west to the north BC coast. The other is the proposal of Kinder Morgan, which would significantly expand the existing Trans Mountain pipeline from Edmonton to Vancouver. Both of these would involve a dramatic increase in oil tanker traffic on the BC coast, in the latter case through the port of Vancouver.

The Northern Gateway pipeline proposal is opposed by aboriginal bands along its route and on the coast, and their land rights in BC have a strong standing in the courts (most have not signed treaties that extinguished their land claims). Just as important, BC will have a provincial election in May. The main political opposition has a significant lead in opinion polls (almost 20 points for the past several months) and has promised to do everything it can to stop Northern Gateway should it be elected, and should the project be approved by the Canadian federal government. As

a new government, it could launch its own environmental assessment, and afterwards impose stringent conditions that would effectively render the project infeasible.

The Trans Mountain pipeline expansion proposal is opposed by key municipal governments in the Vancouver metropolitan region, including the city of Vancouver. These municipal political leaders reflect the strong concerns of a significant percentage of their voters about the risks of pipeline ruptures and oil tanker accidents. Since governments at the provincial and federal level are dependent on voter support in the region, political enthusiasm for the project is unlikely. Again, aboriginal bands along the route and on the coast oppose the project and vow to fight it in the courts. Thus far, most opposition to bitumen transport through BC has focused on the Northern Gateway. If the project is cancelled, this opposition would shift its focus to the Trans Mountain expansion proposal.

Industry analysts have noted that these pipelines through BC have less than a 50% chance of being built. If they and Keystone are not built, industry watchers agree that oil sands output will be reduced from what it otherwise would have been.

This is not to say, however, that oil sands producers will stop pursuing new means of getting their product to market. Facing significant discounts for their product, some oil sands producers have turned to rail as a temporary solution. However, rail alternatives are more complicated and costly, and extremely difficult to scale-up to the level of throughput that would fully compensate for the absence of Keystone and either of the BC pipelines. Also, efforts to expand the use of rail for transporting bitumen will create its own counter pressure from concerned citizens along rail right-of-ways and trans-shipment hubs.

More recently, TransCanada is exploring the option of transforming its west-to-east mainline from natural gas to bitumen. This proposal would require the conversion of a half century old natural gas pipeline right-of-way to move oil sands bitumen – a plan that will generate more public scrutiny following the rupture of the repurposed Pegasus pipeline in Arkansas. Moreover, TransCanada's plan would require the construction of a pipeline along new right-of-ways through Quebec and New Brunswick. This would not equate to all of the oil sands development

that would have been enabled by Keystone XL and either of the BC pipelines, and it would again trigger a reaction as provincial governments along the way were presented with public concerns similar to those in BC. It must be remembered that opinion polls show that at least 40% of Canadians oppose oil sands expansion. Opposition toward oil sands infrastructure in Quebec, where new pipeline right of ways and construction would be required, is particularly strong.

What should we be asking about Keystone XL?

In the short to medium term, the denial of Keystone XL will help to slow development of the oil sands. As a growing source of carbon emissions, slowing the expansion of oil sands is an important step. But this act alone is not enough to stem the rapid rise of human carbon pollution. It must be combined with many such acts in North America and the rest of the world. And that's why the decision about Keystone XL must be made in consideration of a far broader, far more important question.

The earth's atmosphere is a global commons, and as such it is threatened by the well-known "tragedy of the commons" that humans have faced in many other situations. And what we know about these situations is that a single act is never enough. If you reduced your cod catch on the Grand Banks 30 years ago, and this was not required of everyone, others would still decimate the cod stock – which is exactly what happened. If your factory stopped spewing harmful effluent into a nearby lake, the five neighboring factories would still pollute the lake – in the absence of an effluent restriction or fee. If you alone switched to transit for your commute to work, this would not eliminate urban smog caused by other vehicles. All of these are obvious manifestations of the tragedy of the commons and the solution it requires: we must prevent actions that individually seem modest, but that cumulatively impose significant costs on us and our children.

In the case of the atmosphere, we must soon decrease and ultimately stop its use as a dumping ground for carbon dioxide and other greenhouse gases if we are to avoid locking-in to risky, and certainly costly, levels of global warming. This is an extremely tall task – as three decades of failure show. It's a tall task because this particular tragedy of the commons is global – everyone

on the planet can access the atmosphere for dumping carbon pollution. We have enough challenges dealing effectively with tragedies of the commons within a single political jurisdiction – like reducing urban smog or protecting a local lake from effluent. The difficulty is magnified exponentially when it requires cooperation among the countries of the world – like preventing the decimation of an ocean fish stock.

Because of this broader imperative, the more important question to ask about the Keystone XL decision is not what its incremental effect on emissions might be, but rather what its cumulative effect could be if used as a lever to influence other decisions affecting carbon pollution.

President Obama, Secretary of State Kerry, and other US political and corporate leaders have stressed the urgency of US action as part of a global effort to reduce carbon pollution. On this basis, the president has set a target to reduce US greenhouse gas emissions by 2020 to 17% below their 2005 levels. In 2009, the Canadian government shifted its own 2020 target so that it was identical to that of the US. Canada also adopted US vehicle fuel efficiency standards and like the US is reducing the use of coal to generate electricity, primarily because of policies of the Ontario government.

But the similarities end there. For the US is on pace to achieve its target, while Canada is most definitely not. Last year Canada's Auditor General relied on Environment Canada forecasts to report that total emissions in 2020 were likely to be 7% above rather than 17% below 2005 levels.[1] The main reason for the inability of Canada to meets its common target with the US is the rapidly rising emissions from its increasing oil sands production, emissions that would continue to increase if new pipelines allow significant expansion of the oil sands by 2020.

US political leaders know that domestic efforts to reduce carbon pollution are meaningless if they are not realized in concert with efforts by other countries. The focus on Keystone XL has illustrated the problems with Canada's currently weak climate policies. The US government can and should express its concern that Canada, its biggest trading partner, is not keeping its promise

[1] Auditor General of Canada, Commissioner of the Environment and Sustainable Development, 2012, *Report to the House of Commons*.

to reduce emissions on pace with the US, especially considering how Canada is its largest source of foreign imported oil. Until there is a credible federal climate policy in Canada, and a strong likelihood that such a policy would lead to comparable emission reductions in Canada, the U.S. administration should deny approval of the Keystone XL pipeline.

What is the future of the oil sands and associated infrastructure with a 2 °C constraint

A US government decision to reject Keystone XL would be a start at tackling the global challenge of our atmospheric tragedy of the commons. But much more is needed.

Climate scientists, economists focused on sustainable energy like me, and many others rightfully concerned about global warming know that we cannot be building long-lived infrastructure that causes carbon pollution and still hope to prevent dangerous levels of global warming. And this is why we must ask what should happen to the oil sands, and associated infrastructure like Keystone XL, in a world in which the international community acts to prevent a 2 °C increase of the average global temperature from pre-industrial levels – a threshold that scientists find significantly increases the likelihood of catastrophic climate change in this century. Fortunately, many leading independent researchers are doing these calculations – repeatedly.

Several recent research papers in the journals Science and Nature have calculated the carbon budget for not exceeding a 2 ° C increase. One example is the 2013 paper by Rogelj et al.[2] Like other papers, it shows that global greenhouse gas emissions, of which carbon dioxide is by far the most important, should be falling by 2020, and declining rapidly to mid-century so that global emissions in 2050 are 50-75% lower than today.

The connection between this global carbon budget and the economic viability of fossil fuel resources like the oil sands has also been studied. A 2010 report by the International Energy Agency includes scenarios that estimate how global carbon emission constraints would affect the

[2] Rogelj, McCollum, O'Neill and Riahi, 2013, "2020 emission levels required to limit warming to below 2°C," *Nature Climate Change*, V.3, April, 405-412.

output from various conventional and unconventional oil resources.[3] Since unconventional oil resources have higher production costs, they are most vulnerable to a declining global demand for oil as we reduce carbon pollution. In other words, investments to significantly increase the total oil production from a combination of US shale oil, Canadian oil sands and Venezuelan heavy oil are inconsistent with the 2°C limit. This does not mean shutting down production of shale oil and oil sands today. But it clearly means not expanding production facilities and not building major new pipelines to support this expansion.

In some cases, independent researchers have even assessed the economic prospects for individual fossil fuel developments under carbon constraints. In the case of the Alberta oil sands, researchers at the MIT Joint Program on the Science and Policy of Global Change published a paper in 2012 by Chen et al. in the journal Energy Policy.[4] While that study did not test a scenario in which global emissions fell enough to prevent a 2°C increase, it did test a less-constraining scenario in which emissions fell about 30% by 2050. In other words, this is closer to a 4°C increase scenario – one that many climate scientists describe as catastrophic. Yet even in this less-constraining scenario for carbon pollution, the oil sands are found to be non-viable and production ceases by mid-century. If we act to prevent dangerous climate change – to which President Obama says he is committed – there is definitely no need for new pipelines to the oil sands, and even existing ones may be in peril over the coming decades as production stagnates.

Acting on the right question

If countries had started to reduce carbon pollution when this necessity was first acknowledged by a group of world leaders in 1988, when each G7 country committed to a reduction target, and if these countries had succeeded in the coming decade in globalizing their effort – again, probably by a combination of financial support to developing countries and the threat of trade measures to prevent free-riders (carrots and sticks) – the transition away from a carbon polluting path would have been much easier. Initially low carbon pollution levies in the range of $5-$10 per ton of CO_2 pollution from fossil fuels would have risen in modest increments of say $5 per year to a

[3] International Energy Agency, 2010, *World Energy Outlook*.
[4] Chan, Reilly, Paltsev and Chen, 2012, "The Canadian oil sands industry under carbon constraints," *Energy Journal,* V.50, 540-550.

level of about $120 per ton today. With this pollution constraint, an economy like China might not have grown at 10% per year, but energy-economy models predict that its growth would still have been well above 5% per year, while avoiding the dramatic increase in its carbon pollution to its current leading level in the world. And the effect over a long-time period on the growth rate of OECD economies would have been negligible, while their carbon pollution would have fallen substantially.

Unfortunately, we have procrastinated – badly. And this leaves us in a situation in which instead of allowing private companies and individuals to decide what investments to make in a world that has a rising price on carbon pollution (and in which that pollution is declining), we have to responsibly rule out investments that they would not be making had we not procrastinated. Under the circumstances, that is the only responsible way to act. If corporations won't rule out carbon polluting investments of their own accord (in spite of their marketing claims of being "sustainable" and adhering to principles of "corporate social responsibility), we must ask governments to prevent such investments. In the specific case of the oil sands, we must ask governments not to allow investments that make it easier to increase their contribution to carbon pollution, whether in North America or elsewhere. This means denying Keystone XL.