



TAR SANDS REALITY CHECK

REALITY CHECK:

Climate Change and the Tar Sands



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ACKNOWLEDGEMENTS

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REALITY CHECK: COUNTERING INDUSTRY SPIN IN THE TAR SANDS

Big Oil is spending tens of millions of dollars to greenwash the tar sands, Canada's fastest growing source of greenhouse gas pollution. It's time for a reality check. This is the third in a series of reports that counter Big Oil's claims that the environmental impacts of the tar sands are under control. The reports offer a reality check on the failure of the oil and gas industry to prevent irreversible damage to our climate, water, air, communities, health and wildlife. It's time to look past Big Oil's slick PR spin and focus on the truth about the tar sands. It's time to stand up and demand the clean, safe and renewable energy future we deserve.

Visit tarsandsrealitycheck.com for the truth about the tar sands.



EXECUTIVE SUMMARY

According to the International Energy Agency, we need to keep two thirds of known fossil fuels in the ground to avoid the worst of dangerous climate change.¹ Yet Canada's tar sands industry is focused on rapid expansion. Its business models are based on extracting and burning polluting fuels as fast as possible.

Canada cannot continue to increase tar sands production and act, as promised at the 2009 Copenhagen climate talks, to keep dangerous global warming to less than two degrees Celsius.² Current science predicts disastrous consequences at levels beyond 1.5 degrees warming.³ At that level, science expects major sea-levels to rise as the Greenland ice sheet melts, as well as unprecedented flooding, droughts, more extreme weather events like New York's Hurricane Sandy, not to mention the risk of mass extinction of animals, and starvation or dislocation for millions of humans. Beyond the two degree limit, the likelihood of 'runaway warming' – a feedback loop that accelerates the warming process – becomes increasingly likely.⁴

The only way we can avoid the worst of global climate change is by reducing our dependence on dirty fossil fuels and building a smarter and cleaner economy.

The tar sands are already Canada's fastest growing source of greenhouse gas pollution.⁵ Current plans for tar sands expansion, including new pipelines like Northern Gateway, Keystone XL and Energy East are based on a misguided assumption that the world won't take climate change seriously, and will continue on a catastrophic path towards six degrees of global warming.⁶

It is inconsistent to acknowledge, as our federal government has, that climate change requires urgent action while supporting major new pipelines and tar sands expansion projects that lock us into polluting fossil fuels. Like trying to lose weight while eating five chocolate cakes a day, these are incompatible goals. Meaningful climate action cannot occur in Canada if the tar sands expand. The only way we can avoid the worst of global climate change is by reducing our dependence on dirty fossil fuels and building a smarter and cleaner economy.

As industry continues to tout its expansion plans, long-promised regulations to control tar sands pollution are nowhere to be seen despite being promised by five environment ministers over six years.⁷ Recently, Prime Minister Stephen Harper indicated a further delay when he said he hopes regulations are completed over “the next couple of years.”⁸

Why the delays? Internal documents show that industry is resisting even the weakest of the proposed regulations, claiming it can't afford marginal costs (less than a dollar per barrel) to adhere to new proposed regulations.^{9,10} This claim doesn't ring true when compared with industry's statements that it is willing to ship oil by rail – an act that would add five to 20 dollars per barrel to the cost of production. It's not that industry can't pay to adhere to environmental regulations. It just doesn't want to.

TV and magazine ads claim the tar sands are not significantly more polluting than other fuels. Nothing could be further from the truth.

Recently released documents also show the Canadian Association of Petroleum Producers (CAPP) acknowledging that the tar sands companies do not have the technology to reduce emissions significantly.¹¹ Even with

the technology industry touts, by 2020 the tar sands projected pollution would still double.¹² Furthermore, the technology CAPP publicly trumpets, such as carbon capture and storage, is pricey and unproven on a large scale, and has not been widely implemented.¹³ With industry fighting tooth and nail behind closed doors to continue to pollute recklessly without paying a dime, the government seems to be backing further away from releasing the long awaited regulations.

Meanwhile, both government and industry have spent hundreds of millions of dollars on slick public relations campaigns in attempts to convince Canada's largest trading partners that the environmental challenges of the tar sands are under control. TV and magazine ads plastered across the country as well as in the United States and Europe claim the tar sands are not significantly more polluting than other fuels, and that Canada is taking serious action on climate change. Nothing could be further from the truth. It is time for a much-needed reality check about these false assertions.

Fortunately for our shared climate, Canadians and our trading partners are starting to see through the greenwashing. With growing demands for climate action across the country, the continent and the world, Canada needs to stop clinging to last century's dirty fuels and instead turn its attention to cleaner, smarter energy, which is better for the economy and our climate.¹⁴

THE TAR SANDS

The Canadian tar sands are the largest industrial project on earth. A growing movement of people across the country, the continent and the world are concerned with the tar sands rapid pace of growth and its impacts on our environment, economy, and society. Global warming pollution from the tar sands is soaring. If the tar sands expand as planned, between now and 2020, their pollution alone will cancel out every other effort in the country to reduce emissions, including actions like the end of coal-fired electricity in Ontario.



The Canadian Association of Petroleum Producers (CAPP) acknowledges that the tar sands companies do not have the technology to reduce emissions significantly. Even with the technology industry touts, by 2020 the tar sands projected pollution would still double.



REALITY CHECK: CLIMATE CHANGE AND THE TAR SANDS

Climate change is the greatest threat facing humanity today. From the floods in Calgary and Toronto, to Hurricane Sandy, or even the polar vortex that engulfed much of North America recently, Canadians don't have to look far to see the kind of extreme weather that climate change has in store if we fail to act.¹⁵

Scientists are clear that urgent action is needed if we want to avoid a catastrophic level of global warming.¹⁶ The tar sands are Canada's fastest growing source of greenhouse gas pollution.¹⁷ Industry's expansion plans would double carbon emissions by 2020 and see emissions continue soaring through 2030.¹⁸ The extra energy needed to process tar sands oil, which is trapped in sand, clay and water, is why tar sands' production are much more polluting – up to 80 per cent more polluting – than conventional oils.¹⁹ (For more on the difference between tar sands oil and conventional oil see page 8.)

Reality Check

The tar sands, which are the fastest growing source of greenhouse gas emissions in Canada, are the main reason why Canada is breaking our domestic and international climate promises. The tar sands alone pollute more than over 100 countries.

Any one source of emissions is small when put into a global context.²⁰ But the tar sands

alone pollute more than over 100 countries in the world. And if the industry gets its way with tar sands growth, tar sands emissions will cancel out every other effort across Canada to reduce pollution by 2020.^{21,22}

The tar sands are the biggest reason Canada is not on track to meet our national and international climate commitments.²³ Thanks to the tar sands, Canada is set to miss its 2020 climate target by 122 megatonnes (Mt).²⁴ That is more than the pollution from the entire passenger transportation sector in the country; every plane, train, and automobile carrying people in Canada combined create less greenhouse gas pollution than the tar sands.²⁵

Canada is among the world's 10 largest greenhouse gas producers and the tar sands are a significant contributing factor.²⁶ If Alberta was a country, its per person emissions would be the second highest in the world after Qatar.^{27,28}

At one time, Canada was considered a global leader on climate action and environmental protection. Over the last decade, the tar sands have put Canada near the bottom of the pack.²⁹ Not only has Canada failed to address its own pollution problem, but government and industry have been working overtime abroad, with aggressive lobbying and public relations efforts, to try to undermine and kill clean energy policies in Europe and the United States.³⁰

As Canada clings to last century's dirty fuel, it is trying to prevent other countries around the world from doing the right thing

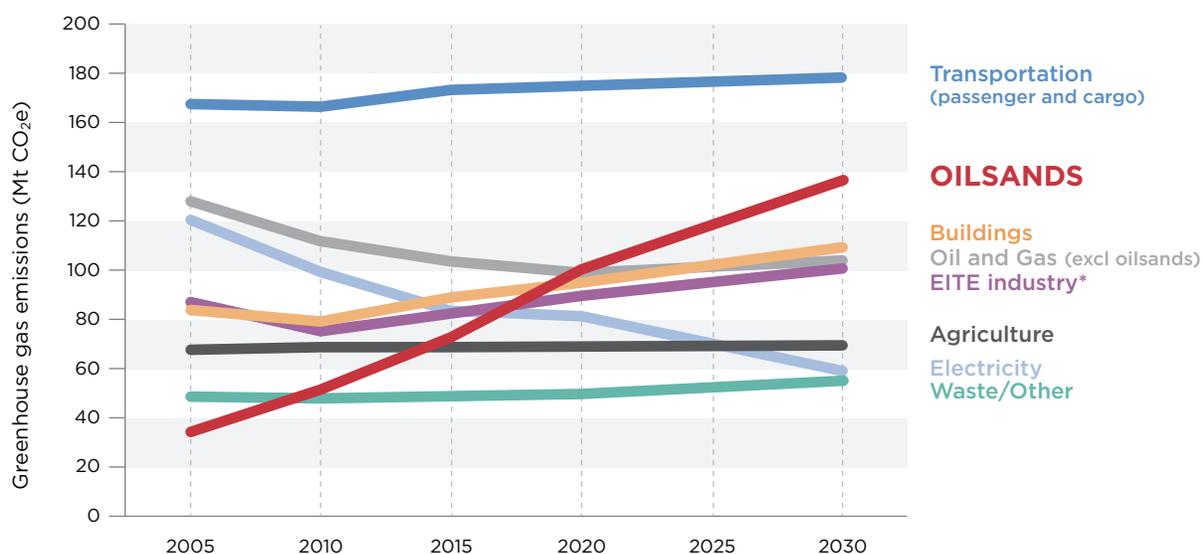


If Alberta was a country, its per person emissions would be the second highest in the world after Qatar.

and taking meaningful actions to prevent the worst of climate change. For example, the Canadian government has lobbied aggressively against clean fuel standards in Europe (the Fuel Quality Directive) and

California (the Low Carbon Fuel Standard) that would require fuel providers to move towards cleaner burning fuels and away from the most carbon intensive and polluting fuels.³¹

Figure 1. Projected greenhouse gas emissions by sector in Canada (The Pembina Institute)³²



* EITE refers to Emissions-Intensive, Trade-Exposed industry, which includes industries like pulp and paper, cement, iron and steel.

CONVENTIONAL OIL VS. UNCONVENTIONAL OIL

Conventional oil is the kind of oil we picture being pumped out of a typical oil well. It is liquid and can be pumped out of a well or through a pipeline without processing or dilution. Unconventional oil includes other types of oil, like tar sands, that tend to be more difficult, energy intensive, and expensive to get out of the ground.

In the case of tar sands oil, the oil is trapped in a mixture of sand and clay and has a similar consistency to tar. As a result, tar sands oil needs significant energy and processing to turn it into something that can be pumped out of the ground or through a pipe.³⁹ From the time that tar sands are extracted out of the ground to the time that they are pumped into a gas tank, tar sands greenhouse gas pollution is 81 per cent higher than average conventional oil.⁴⁰

known as intensity emissions. As explained below, however, this is a flawed measurement. Although the amount of greenhouse gas produced per barrel of oil has decreased, further improvements in per barrel efficiency will be increasingly challenging to achieve as the easiest and most cost-effective solutions have already been applied.³³ Because of the extra steps required to turn the tar-like substance into flowing oil, tar sands oil will always require notably more energy to produce than regular crude oils and will always be more polluting.

From a climate perspective, it doesn't matter if per barrel emissions are slightly lower if you plan on producing more and more oil. The overall impact on our shared climate would get worse, not better. The most important measure of emissions, and the one that really matters, is absolute emissions – the total emissions that are pumped into the atmosphere. Based on projections from the Canadian government, absolute emissions from the tar sands will increase to 102 Mt by 2020 and to 127 Mt by 2030.^{34,35} From today to 2030, the greenhouse gases will climb by over 250 per cent.

The growth in emissions from the tar sands is set to cancel out every other effort across Canada to reduce emissions between now and 2020, including Ontario's coal phase-out, British Columbia's carbon tax, Quebec's ambitious climate targets, and various other energy efficiency measures across provinces.³⁶

As Canadians wake up to the dangers of climate change and demand more action to prevent the worst of climate catastrophes, it is hardly fair to ask provinces and other sectors to pull up their bootstraps and clean up their acts, while letting pollution from a single sector soar. At some point, Canada will need to get serious about reducing emissions, and how the carbon pie is divided between regions will become

Reality Check

Despite industry claims that emissions are dropping, greenhouse gas emissions from the tar sands nearly tripled between 1990 and 2010. By 2020, GHG emissions are projected to be over six times higher than they were in 1990.

While industry often claims that emissions from the tar sands are dropping, greenhouse gas emissions from the tar sands have more than tripled, from 17 Mt in 1990 to 55 Mt in 2011.

Industry's claims about declining emissions are based on pollution per barrel of oil, what's



very important. We can expect regions to speak up loudly if they're asked to do more than their fair share to reduce carbon emissions because the oil industry is being irresponsible.

Reality Check

Industry claims that greenhouse gas pollution from tar sands oil is similar to conventional oil. Yet a barrel of oil from the tar sands produces up to 40 per cent more greenhouse gases in its total lifetime than a barrel of oil from conventional sources.³⁷ Furthermore, if one measures emissions from the time tar sands are extracted to when they are pumped into a gas tank, tar sands greenhouse gas pollution is 81 per cent higher than average conventional oil.³⁸

While industry claims that greenhouse gas pollution from the tar sands is comparable to conventional crude oils, the science says otherwise.⁴¹ If you look at production alone, from the time that the tar sands come out of the ground to when you put gas in your car but before you burn it, tar sands are 81 per cent more carbon intensive than conventional crude oil.⁴²

Lifecycle emissions are measured from the time the tar sands are extracted from the ground to the time it leaves the tailpipe of a car.⁴³ By the time it is pumped into your gas tank, most oil has more or less the same characteristics, meaning tank to tailpipe emissions have a fairly consistent carbon footprint. But because the production of tar sands crude oils are so much more energy intensive, even when you look at lifecycle emissions crude oil from the tar sands produces significantly

While industry claims that greenhouse gas pollution from the tar sands is comparable to conventional crude oils, the science says otherwise. Tar sands are significantly more carbon intensive than conventional crude oil.



Industry and government's plan to triple tar sands production by 2030 will lead to global warming pollution that science says will tip us closer to dangerous climate change.

more greenhouse gas emissions than crude oil from more conventional sources – up to 40 per cent more.⁴⁴

The only way to make tar sands and conventional oil emissions look comparable is to cherry-pick the highest emitting conventional oil and the lowest emitting tar sands oil.⁴⁵ Any comparison done this way is misleading as it compares two unusual samples, rather than the majority of production. It's like saying that two-year-olds weigh the same as six-year olds. There may be a very heavy two-year old and a very light six-year old with a similar weight, but it's misleading to use that example to claim the weights of these age groups are similar overall.

Reality Check

Industry admits that the technology it is using and hopes to use to reduce carbon emissions is not advanced enough to make a big difference. Technology that could improve environmental performance has not been widely implemented.

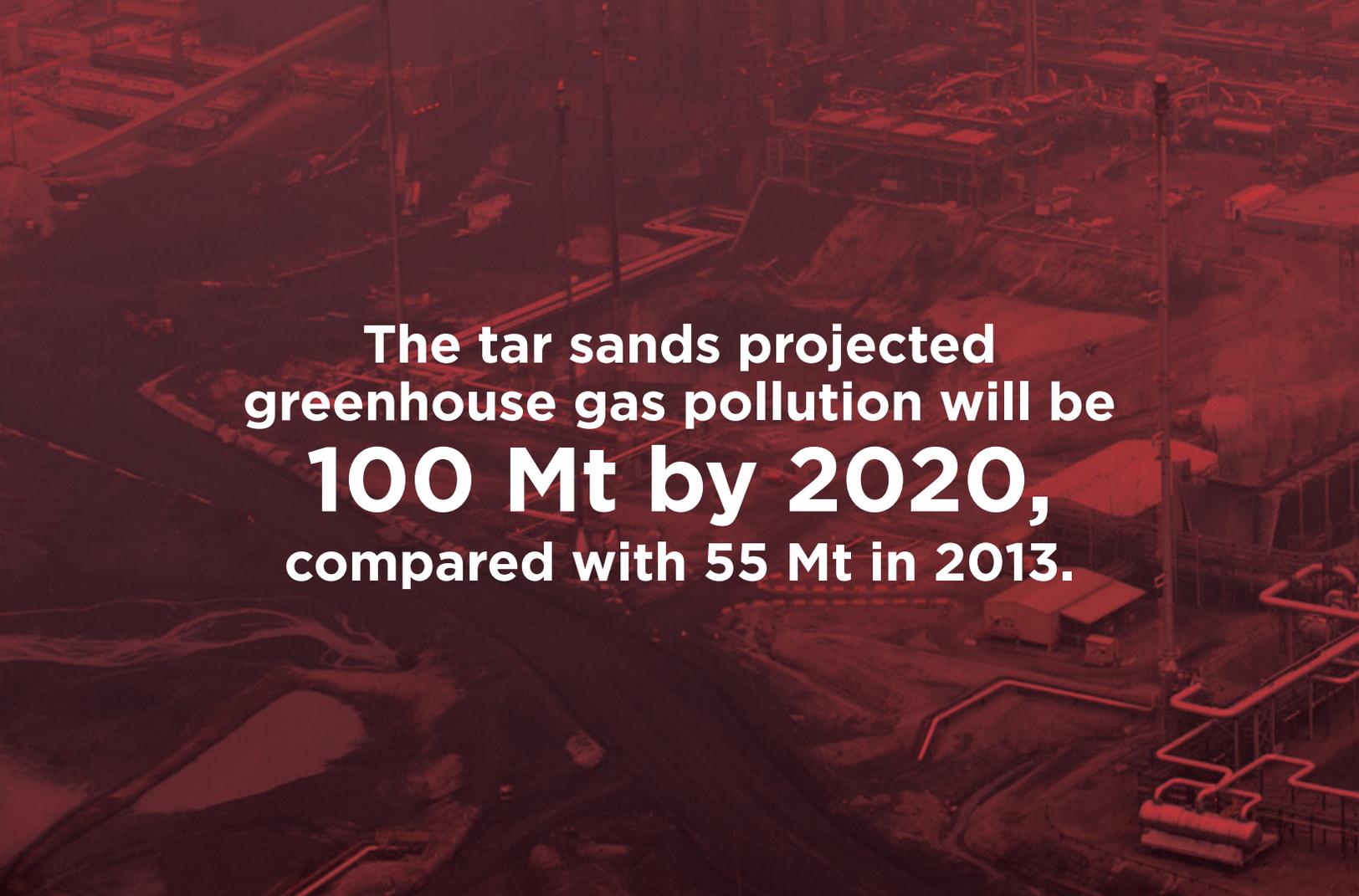
In recently released correspondence to the federal government, the Canadian Association of Petroleum Producers (CAPP) stated that any federal regulations would fail to reduce emissions from the tar sands because “current technology is not yet available for deployment to a significant degree.”⁴⁶ CAPP estimates that the tar sands companies will only be able to reduce their pollution by 2 Mt by 2020. Even with these improvements, the tar sands projected greenhouse gas pollution will be 100 Mt by 2020, compared with 55 Mt in 2013.⁴⁷

While there is technology available to make marginal gains in improving environmental performance, even the cleanest of tar sands production is still significantly more polluting than conventional oil.⁴⁸ CAPP touts various technologies it claims are contributing to cleaner tar sands production and responsible resource management, but its recent correspondence makes clear that the oil industry doesn't expect much from investments in these technologies in the coming years.⁴⁹

Carbon capture and storage (CCS) is a technology that is often lauded by industry and government. Despite promises by the Canadian government that all tar sands projects after 2012 would employ CCS, so far its use has only been proposed for one upgrading facility with a project called Quest.⁵⁰ To keep pollution at current levels, the tar sands would need 41 projects equivalent to Quest to be operational almost immediately. With a price tag of at least \$1.36 billion for one facility, CCS is not the silver bullet industry publicly claims it is.⁵¹

While there is technology available to make marginal gains in improving environmental performance, even the cleanest of tar sands production is still significantly more polluting than conventional oil.

The only meaningful way to limit the soaring greenhouse gas pollution from the tar sands is to slow down the pace and scale of development. Yet industry and government plan to triple production by 2030, which would see Canada's emissions continue growing beyond 2030.⁵²



The tar sands projected greenhouse gas pollution will be **100 Mt by 2020,** compared with 55 Mt in 2013.

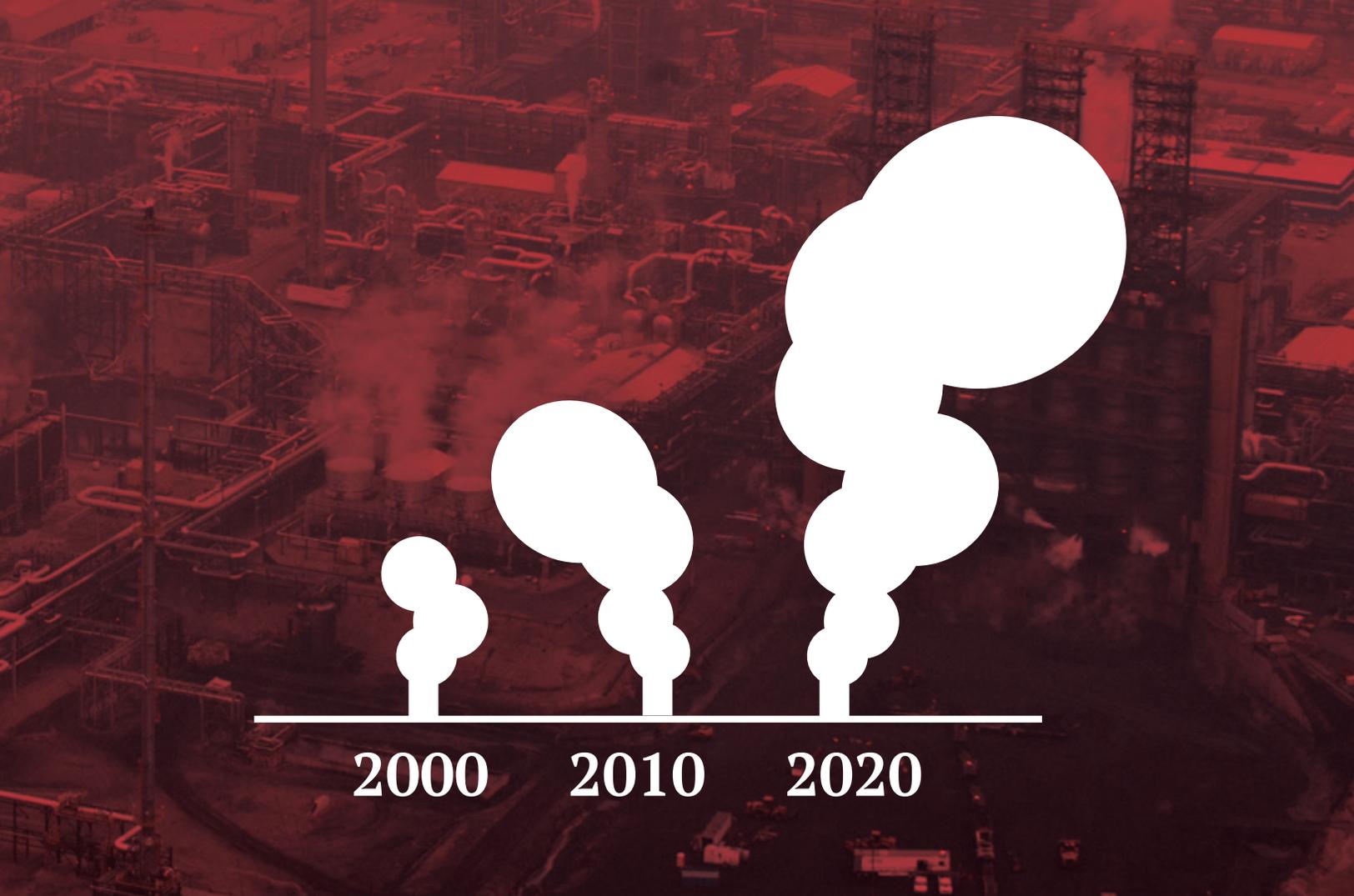
Reality Check

Canada does not have a single federal regulation on emissions from the oil and gas sector. Behind closed doors industry is protesting even the weakest of the proposed climate regulations.

Despite over six years of promises, there is not a single federal regulation on emissions from the oil and gas sector in Canada. Secret documents released in late 2013 showed that the industry association, CAPP, objected to even the weakest of proposed federal government draft regulations to limit oil and gas pollution.⁵³ CAPP claimed that regulations costing less

than one dollar per barrel of oil would tip the industry over the edge, making it no longer profitable.⁵⁴ This is tough to believe, given that tar sands companies are some of the wealthiest companies in the world.

It costs significantly more to squeeze oil out of the tar sands because it requires more energy than conventional fuels. This means tar sands oil is not only more polluting, but also more expensive to produce.⁵⁵ Yet, the companies are willing to pay for that pricier production – just not for the impacts of this production on our climate. And, it is true that small changes in costs and the value of oil can tip the scales on profitability and impact how fast the tar sands can grow. With an estimated cost of less than a dollar per barrel to comply with proposed federal regulations, CAPP claims it will impact its members' ability to grow and



2000

2010

2020

Moving oil by rail rather than pipe is estimated to add an additional five to \$20 per barrel. If CAPP can afford the significant price increase to move oil by rail, how can it not afford \$0.81 per barrel to do the bare minimum to clean up its act?

make money off of this volatile high-carbon fuel.⁵⁶ However, the credibility of this claim weakens when one considers how else industry is willing to spend its money.

While CAPP members can't seem to find a dollar a barrel to meet proposed federal regulations, they can find at least five

times that amount for something else when they want to. In the face of growing public concern about pipelines, CAPP has repeatedly stated that if the oil doesn't flow through pipelines, it will go by rail.⁵⁷ Among the many challenges of shipping oil by rail, one of them is cost.⁵⁸ Moving oil by rail rather than pipe is estimated to add an additional five to \$20 per barrel. If CAPP can afford the significant price increase to move oil by rail, how can it not afford \$0.81 per barrel to do the bare minimum to clean up its act? In other words, industry is willing to spend extra money to turn tar sands into oil, and extra money to ship it by train. It just isn't willing to spend money to pay to clean up its climate pollution.

The bottom line is that industry is fighting hard to continue to use our shared atmosphere as a free dumping ground



Fossil fuel companies must accept that paying for their pollution is inevitable in a carbon-constrained world.

for global warming pollution. The oil companies aim to keep their costs as low as possible and addressing environmental concerns might cut into their profits. But tar sands companies are among the wealthiest in the world and we have been subsidizing them with free waste disposal for years. It's time for a change.

Fossil fuel companies must accept that paying for their pollution is inevitable in a carbon-constrained world. The five largest oil companies in the world are factoring a carbon price into their projections knowing that eventually governments will force them to pay for their pollution.⁵⁹ Here in Canada, it's time for regulations that require tar sands companies to behave more responsibly.

Tar sands companies can afford to clean up their acts. And if it means they grow slower, or must reconsider whether to expand high-carbon fuel projects, then the regulations would be serving their purpose by limiting the carbon being pumped into our atmosphere.

CONCLUSION

Oil companies want you to believe the environmental challenges of the tar sands are under control, that the tar sands are not significantly more polluting than other fuels, and that Canada is taking climate action seriously. But this is not true.

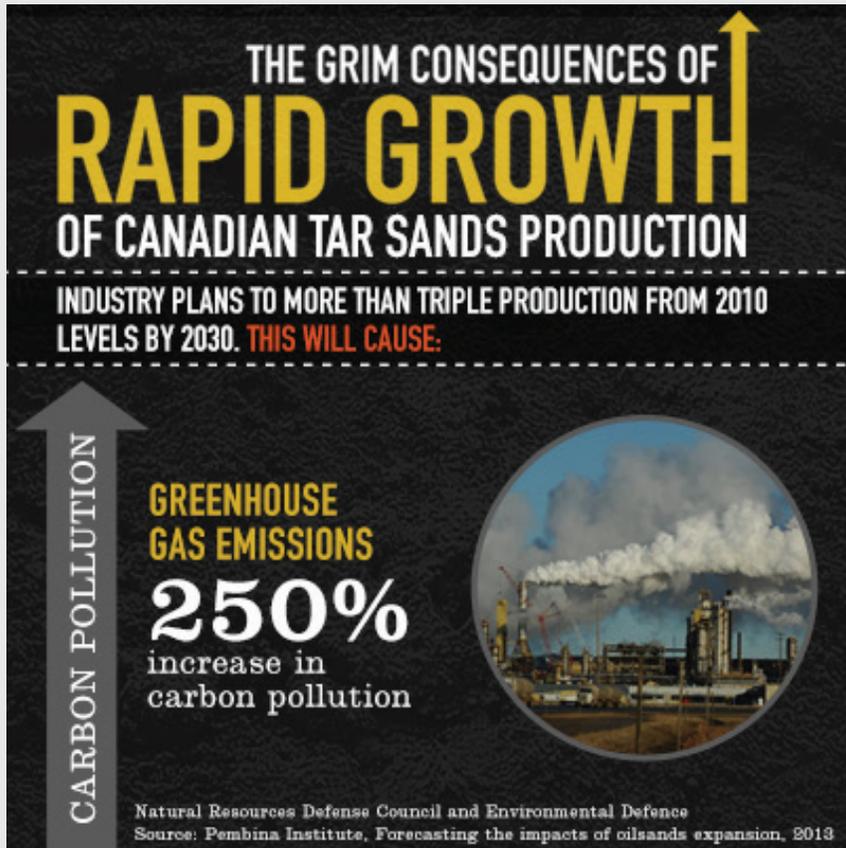
The tar sands are polluting our air, water and atmosphere and damaging the health of surrounding communities. At current production levels, the tar sands are the fastest growing source of greenhouse gas pollution in the country and they are the primary reason that Canada is failing to take meaningful action on climate change. And despite many promises, Canada does not yet have a single regulation on tar sands greenhouse gas emissions.

Industry is misleading the public when it claims tar sands oil is comparable in emissions to conventional oils, and that emissions are dropping. The science clearly shows that tar sands oil is much more polluting than conventional oil, which is not surprising given the higher amount of energy required to process this tar-like substance. Furthermore, the total amount of emissions being pumped into the atmosphere from the tar sands is climbing steadily, not decreasing.

It's time for some important changes. In a world already feeling the impacts of a changing climate, the era of the world's most polluting fossil fuels is coming to an end. We've already seen extreme weather in Canada. In June 2013, large swaths of Alberta were flooded, causing the evacuation of 100,000 people. Soon after, Toronto was drenched when more than an entire month's worth of rain came down in hours, flooding roads, basements, transit corridors and shutting down our electrical grid. Rural communities in Manitoba had their own floods too. And we've read the headlines from around the world about extreme weather, from Hurricane Sandy in the U.S. to the typhoons in the Philippines. As the

climate heats up, we can expect more of this extreme weather and the price tag that comes along with it. Last summer's flood in Calgary, cost the Canadian economy \$4.8 billion, according to recent analysis by the Co-operators, an insurance agency.⁶⁰

Canada needs to transition to a clean, modern economy rather than tying itself to a sinking ship. With a growing demand from the public, governments, insurance industries, and institutions like the World Bank and the International Energy Agency – which says that two thirds of known fossil fuels must stay in the ground to avoid dangerous climate change – the tar sands industry is well aware of the realities of what a changing climate means for its business. To date, this has led to reckless expansion to maximize profit before the industry inevitably must pay for the true cost of its pollution. This approach, which has been facilitated by governments federally and provincially in Canada, is turning the country into the global villain in the international fight to stop dangerous climate change. The tar sands sector makes up only two per cent of Canada's GDP, a fraction of what, for example, the manufacturing sector represents. Canadians deserve policy and



that don't damage our air, water, or climate and are better for our economy and our wallets. It is in Canada's best interest to build a green economy and be on the forefront of a smart, modern clean energy future, but this possibility is being held hostage by Big Oil in the tar sands.

Canada should be harnessing the power of green energy, something countries around the world are already doing to create good jobs and protect the environment. We need to build a strong clean energy future, one that isn't mired in the polluting tar sands that tip us closer to more dangerous climate change.

politics that don't put our economy at risk by letting a relatively small and vulnerable tar sands industry dictate our nation's energy and environmental policy.

The governments of Canada and Alberta must protect their citizens by standing up to industry and putting in place long-promised climate regulations that will see pollution go down, not up. If Canada really wants to be a leader, it must put a meaningful price on carbon so that industry pays to clean up its mess. Canada should no longer let itself be a free dumping ground for carbon polluters.

We need to remember that there are better alternatives to tar sands oil and fossil fuels as a whole for powering our future. We don't need to choose between a healthy economy and a healthy environment. We can have both. Energy conservation and renewable energy can power our homes and businesses. We can have safe, clean affordable energy from renewable sources

First Nations and people across Canada from coast to coast to coast are standing up to the oil industry and demanding more from our governments to prevent the worst of dangerous climate change. Opposition to tar sands expansion and pipelines will continue to grow stronger and louder as the impacts of climate change hit harder and closer to home. With growing concern among the public, investors, and decision-makers about the risks of high-carbon fuels like the tar sands, industry plans for expansion are under increasing scrutiny.

Governments and industry should see the writing on the wall and work ambitiously to transition to the clean, smart energy economy of the 21st century before Canada gets left behind. Our shared climate, air, water and land cannot afford the status quo and reckless plans to triple tar sands production.

**CANADIANS DESERVE BETTER.
SO DOES OUR CLIMATE.**

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