FREE REPORT
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Canada's TAR SANDS
what the government doesn't want you to know

Smokestacks spew emissions from tar sands processing (S. Jocz)

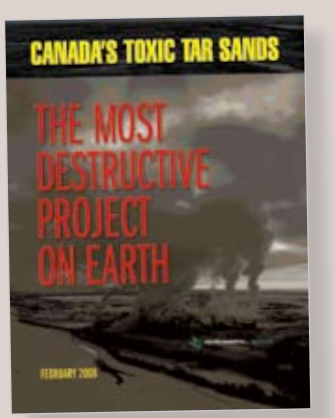
TAR SANDS *fast facts*

TAR SANDS MINING IS licensed to use twice the amount of fresh water that the entire city of Calgary uses in a year.

90% OF THIS FRESH WATER ends up in tailing ponds so toxic that cannons are used to keep ducks from landing in them, although this isn't always effective.

PRODUCING A BARREL OF tar sands oil produces three times more greenhouse gas emissions than a barrel of conventional oil. In a day processing the oil sands uses enough natural gas to heat 3 million homes.

TARSANDS OPERATIONS ARE the fastest growing source of climate-changing emissions in Canada.



This educational newspaper is based on the Environmental Defence report released in February 2008. More at www.environmentaldefence.ca

CANADA's TAR SANDS
dirty energy muddies green promises

Few Canadians know that Canada is home to one of the world's largest dams and it is built to hold toxic waste from just one tar sands operation in northern Alberta. Everything about the tar sands happens on a massive scale. The enormous toxics problems go hand-in-hand with massive global warming pollution and the impending destruction of a boreal forest the size of Florida.

Because of sheer scale, all Canadians are impacted by the tar sands, no matter where they live. If you live downstream, your water is being polluted, and your fish and wildlife may be dangerous to eat. If you live in Saskatchewan you are a victim of acid rain. If you live in BC, "supertankers" may soon be plying your shoreline carrying tar sands oil to Asia. If you live in Ontario, you are exposed to harmful emissions from the refining of tar sands oil. And the impacts do not stop at Canada's border – US refineries are re-tooling to handle the dirty oil from Alberta.

Moreover, no matter where you live in Canada, your desire to tackle global warming is being held hostage to the tar sands. Instead of reducing greenhouse gas emissions, Canada is quickly increasing them, and fully half of that emissions growth is projected to come from the tar sands.[1] Because Canada's elected officials refuse to clamp down on tar sands operators, they also refuse to clamp down on industry across Canada for fear of a double standard.

And it is just beginning. Approvals have already been given that will double the size of existing operations, and our leaders have been talking with the US government to grow the tar sands five-fold in a "short time span."[2] The tar sands are now the biggest capital project anywhere on Earth and the biggest energy undertaking anywhere. Already, Canada is the largest foreign supplier of US oil.

In the service of growing the tar sands, the government gives tax breaks to the worst polluters; it fails to enforce its own environmental laws; and it is even trying to silence whistle-blowers who've tried to speak out on how the tar sands have harmed our health and our environment. With the tar sands, Canada has become the world's dirty energy superpower.

Photos: The Mackenzie River watershed is one of the largest in the world and contains over half of the nation's freshwater flowing north to the Arctic Ocean. Tar sands pollution impacts much of the watershed and now wildlife are at risk from the proposed Mackenzie Valley pipeline bisecting this vast wilderness. (Garth Lenz). The blackburnian warbler is just one of the hundreds of bird species who depend on boreal forests for habitat. (Robert McCaw).

It doesn't need to be this way. Technologies are available to curb the damage, yet the Canadian government so far refuses to force industry to clean up.

All Canadians should join the chorus of leading figures such as Peter Lougheed, the former Premier of Alberta, in calling for a moratorium on new projects and a clean up of the tar sands. Premier Lougheed, originally instrumental in scaling up the tar sands in the late 1970s, now says:

"...it is just a moonscape. It is wrong in my judgment, a major wrong... So it is a major, major federal and provincial issue."

This is Canada's problem. It's time to clean it up or shut it down. Read on to find out more about the tar sands and what you can do, and then take action. There is only one atmosphere but there are many people who can take action to protect it.

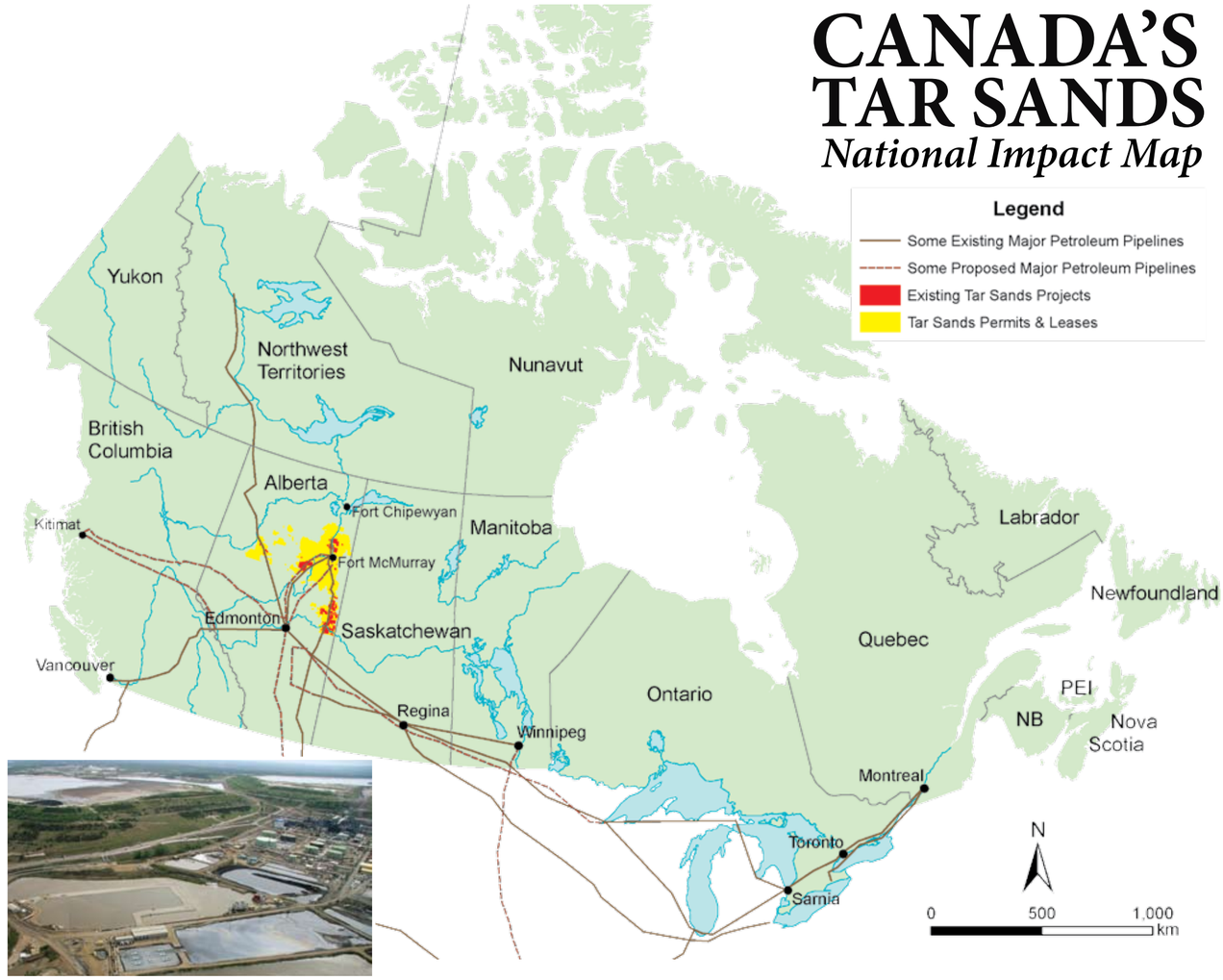
BRITISH COLUMBIA
Tanker Traffic Grows

British Columbia professes to lead Canada on tackling global warming, but it is undermining its own progress by building infrastructure to let tar sands oil be exported from west coast ports.

Tar sands oil already travels through BC in a Kinder Morgan-owned pipeline to Burnaby. The number of tankers loading at the Burnaby Westridge Terminal has gone from none in 2000 to 34 in 2007. Kinder Morgan is in the midst of expanding its pipeline to Burnaby from 260,000 to 300,000 barrels per day.

And, while victims of the Exxon Valdez oil spill continue to fight Exxon in court for damages 20 years after the disaster, a new threat to the coastline is emerging. Enbridge wants to build a pipeline from the tar sands to the northern BC coast in order to serve the Asian market. The pipeline could carry tar sands oil to tankers so big that one is like "a jumbo West Edmonton Mall."[3] The project still faces significant First Nations legal hurdles.

CANADA'S TAR SANDS
National Impact Map



ONTARIO
Chemical Valley

The area around Sarnia is known as Canada's "Chemical Valley" because of its concentration of large polluting industry. Despite being thousands of kilometers from the tar sands, the negative impacts are felt even here.

At 70,000 barrels per day, Suncor Energy's Sarnia refinery that processes tar sands oil is the fourth largest polluter in the region, sending out over 10 million kilograms of toxic air pollutants in 2005.[20] But, the Suncor Energy refinery is ranked number one in the region in terms of the chemicals released that are known or suspected to be reproductive or developmental toxicants.[21]

The Aamjiwnaang First Nation in Chemical Valley is experiencing disturbing impacts from the pollution as twice as many girls are being born as boys. Moore Township, an adjacent non-native community, is also experiencing a lower male birth rate, and scientists have found evidence of "feminized" turtles in the St. Clair River that runs through the area.[22] However, it is not known what exactly is causing these results since many types of heavy industry exist there.

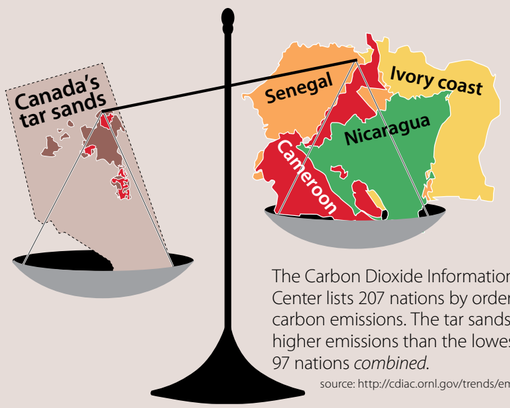
Shell Oil is proposing to build a new refinery for tar sands oil in the Sarnia area that will be two to three times bigger than the Suncor Energy plant, thereby significantly adding to the pollution in the area.

EMISSIONS
exploding

The tar sands are holding Canada hostage in tackling global warming in two ways. First, it is the fastest growing source of new greenhouse gas emissions in Canada. Tar sands emissions — not counting burning the oil later — are estimated at about 40 million tonnes for 2007[4], but if left unchecked this could explode to 142 million tonnes by 2020[5].

The main reason is that extracting the oil from the sand is so energy intensive, from the large machines used for extracting and processing to the natural gas used to melt the bitumen out of the sand. It is estimated that by 2012 the tar sands will use as much gas as is needed to heat all the homes in Canada.[6] To get this gas will require building new pipelines and drilling in wilderness areas like the Mackenzie Valley, and building new facilities to import liquefied natural gas to cover the shortfall since Canada's own gas production is projected to decline starting now.[7]

The second reason the tar sands is ground zero for global warming is the political dynamic they set up for the rest of Canada. Because our political leaders refuse to put real caps on greenhouse gasses for the tar sands, they thereby refuse to put real caps for the rest of industry in Canada. A factory in Ontario therefore faces weak emissions regulations because of the Alberta tar sands.



The Carbon Dioxide Information analysis Center lists 207 nations by order of carbon emissions. The tar sands have higher emissions than the lowest-ranking 97 nations *combined*.

source: http://cdiac.ornl.gov/trends/emis/top2004.tot

ALBERTA *Sacrifice Zone*

Industry wants to build a dozen new "upgraders" that process tar sands material in an area near Edmonton where human health will be sacrificed to increased air pollution. The building boom has earned the area the name "Upgrader Alley."

In 2005, existing facilities in the area already produced 19,000 tonnes of nitrogen oxide and 20,100 tonnes of sulphur dioxide. Independent studies have found the pollution in the area already rivals the most polluted cities in China,[8] and industry's own studies show that provincial pollution guidelines are being exceeded.[9] In case of emergency blow outs, local residents may have to evacuate or 'shelter in place' – staying in a room sealed with duct tape or wet cloths until chemicals in the air dissipate[10].

First Nations Downriver

Toxic pollution from the tar sands has created what amounts to a slow motion oil spill in the region's river systems. First Nations downstream see the impacts first hand: *"There's deformed pickerel in Lake Athabasca... Pushed in faces, bulging eyes, humped back, crooked tails... never used to see that. Great big lumps on them... you poke that, it sprays water."*[11] Fish frying in a pan smell like burning plastic.

Communities living downstream from the tar sands have seen unusual rates of cancer. A recent report for the health authority of one downstream community, Fort Chipewyan, found serious flaws in the monitoring programs and went on to discover dangerous and rising levels of mercury, arsenic and polycyclic aromatic hydrocarbons (PAHs).[12]

For years, Dr. John O'Connor, the family doctor for Fort Chipewyan, has been growing increasingly worried about the number of cases of bile duct cancer, colon cancer, lymphoma, leukemia, autoimmune diseases such as lupus, as well as thyroid cancers, overactive thyroid, and skin rashes. At the request of Health Canada and Alberta Environment, the Alberta College of Physicians launched investigations against Dr. O'Connor to stop him speaking out.

SASKATCHEWAN
Raining Acid

It is well known that Alberta is polluting itself,[13] but what is less known is that this pollution is increasingly exported to other provinces too. Studies have estimated that 70% of the sulphur in Alberta's airshed is transported into Saskatchewan.[14]

The pollutants that cause acid rain can travel hundreds or even thousands of kilometers.[15] Environment Canada estimates that the current rates of acid forming pollution from the tar sands are 158,000 tonnes per year for sulphur oxides and 76,000 tonnes per year for nitrous oxides.[16]

At a Saskatchewan site 200 kilometers downwind of the tar sands, the mean level of acid in precipitation increased in the past 12 years, sliding from pH 5.3 to 4.1. Normal rainfall has a pH of 5.6.[17] In 2005, Saskatchewan Environment ran a network of 10 monitoring stations in the northwest of the province – across from the tar sands – and found a build up of nitrogen from Alberta.[18]

Acid rain affects lakes, rivers, soils, forests, buildings, wildlife and human health. In rivers and lakes, acid deposition exacerbates the conversion of mercury to the more dangerous form of methyl-mercury that can be taken up by fish, and ultimately eaten by humans, animals and other fish.[19]

Photos clockwise from top left: The Syncrude mine from the air. The mining operations strip away boreal forest and mine up to 100 metres into the earth. Copyright © 2005 The Pembina Institute. (Chris Evans, The Pembina Institute); Smokestacks spew emissions from tar sands processing (S. Jocz); An idyllic day by the Bluewater Bridges over the St. Clair River in Sarnia belies the toxic water and air pollution created by oil refineries in Ontario's 'Chemical Valley'; Athabasca River Grand Rapids (David Dodge, CPAWS); Woodland caribou (Terry Parker); The Clearwater River and surrounding boreal forest are threatened by adjacent tar sands developments (Garth Lenz); Suncor processing facilities and tailings ponds along the Athabasca River (David Dodge, The Pembina Institute); Orcas, also known as killer whales, are listed as a threatened species in Canada. Scientists and environmentalists are concerned that increased tanker traffic along the BC coast increases the risk of spills for this already stressed species. (Thomas Kitchin/First Light).

WILDERNESS
boreal @ risk

Tar sands development is having a devastating impact on Alberta's boreal forest, part of the planet's largest terrestrial carbon storehouse and home to woodland caribou, lynx and billions of songbirds. Tar sands mines are destroying forests and wetlands, making them uninhabitable for wildlife. While the impact of *in situ* tar sand extraction on ecosystems is less visible, the network of pipelines, wells and roads involved fragment forests and threaten wildlife.

Woodland caribou, a threatened species that needs large areas of intact forest to survive, are a key indicator of the health of boreal ecosystems.[23] In Alberta, caribou are facing a dire situation as tar sand mines, oil and gas wells, roads and logging continue to fragment forests and destroy their habitat. Caribou have declined by nearly 50% over the past 10 years in the tar sands region, and government and industry studies have predicted that caribou will continue to decline under a business as usual scenario.[24] Without action to protect Boreal Forests from tar sands development, woodland caribou will likely be extirpated from the region entirely.[25]

Birds, marten, lynx and fisher are also being negatively impacted by tar sands. The abundance of certain bird species has already declined by as much as 80% in areas heavily affected by tar sands development.[26] Furthermore, bird species that rely on older forests, such as the black-throated green warbler, are predicted to decline by 60% in the coming years if development continues to proceed at the current pace.[27]

CLEAN IT UP *or shut it down*

While it is a stretch to believe the tar sands can ever be truly sustainable, there is much that can be done to clean them up. A moratorium on new approvals must be put in place until these six things are done by the federal government:

1. Pass a real cap on carbon emissions

The federal government's flawed "intensity" caps — based on the concentration rather than the overall amount of emissions — will ensure that tar sands emissions will at least triple. Hard caps need to be put immediately on tar sands emissions, and compliance with those caps must set a price on carbon that has industry pay at levels that provide a strong incentive to invest in capture and storage technology.

2. Ban toxic tailing ponds

Tar sands waste can be put in a dry form rather than into wet tailings ponds that leach pollution into the groundwater and are a source of air pollution. Dry tailings would also reduce water withdrawals from the Athabasca River. Care must be taken to cap dry tailings to avoid wind erosion, though.

3. Require wildlife offsets

By their very nature, tar sands operations cannot be made friendly to wildlife, so governments must compensate for this loss by creating new protected areas to protect the species in the area.

4. Clean up refineries and upgraders

Facilities should not be so concentrated in an airshed as to pose a danger to human health. Refinery workers and nearby residents must be protected by mandating facilities that capture pollutants at the highest possible level that technology allows.

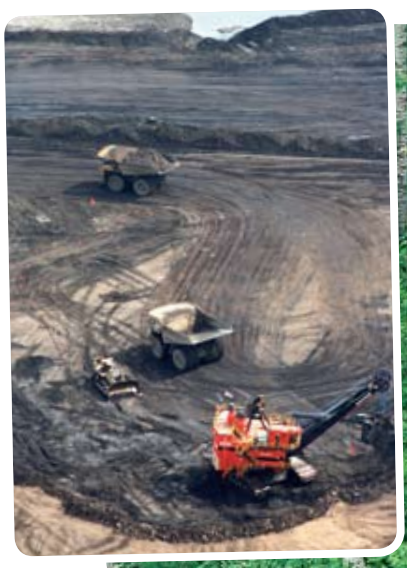
5. Ensure Aboriginal control and benefit

Aboriginal Rights and Title exist in areas affected by the tar sands, both near and far. These legal obligations must be respected through meaningful control by First Nations over tar sands operations from the disposition to the reclamation and monitoring phases.

6. Regulation and independent monitoring.

Science-based limits must be placed by the Canadian government on all environmental aspects of tar sands operations — air, land and water — and aggressive enforcement actions taken against violations of these limits. Monitoring to ensure compliance must be arms-length from industry, run by independent scientists, with results available to the public.

Until these actions are taken, tar sands oil should remain safely underground until such time as humans are willing to develop them responsibly.



Photos: Mining operations at the Syncrude mine-4 (David Dodge, The Pembina Institute); Boreal transition forest in central Saskatchewan (Leslie Degner)

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Take action to *clean up* the tar sands

Environmental Defence, ForestEthics and the Wilderness Committee are calling on the Canadian government to:

- create and enforce clean air, clean water, and forest protection regulations;
- create new protected areas in the region;
- enforce hard caps on tar sands emissions and not 'intensity' targets that will allow overall emissions to continue to rise;
- respect Aboriginal rights and title in the region.

Take a moment to think about the tar sands development and their impacts across the country, then write to Canada's Prime Minister to let him know how you feel!

Contact the Prime Minister of Canada

The Honourable Stephen Harper
313-S Centre Block, Ottawa ON K1A OA6
pm@pm.gc.ca | 1 800 622-6232

Photos: Citizens protest at the 2008 First Minister's meeting; Syncrude processing facility and upgrader-1 (David Dodge, The Pembina Institute)

credits

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