

Alberta's tar sands

James Leaton

The world's latest oil boom is an ecological holocaust happening now in the wilds of Canada. The oil lying beneath Alberta's ancient forests was once thought too expensive and difficult to extract. Now the oil giants are tearing up the land and helping put paid to Canada's green reputation.

Expensive and inefficient

Alberta's oil or tar sands cover an area of 140,000 square kilometres, the result of millions of years of evolution since the time an ancient ocean covered the area. Buried under primordial boreal forest, the oil is a mixture of bitumen and sand that has to be dug up and processed.. Turning it into petrol is expensive, inefficient and very big business, with \$100 billion of investment outlined by 2020.

Oil sands only became economically viable to extract after recent oil price increases. The potential is vast: known reserves of 174 billion barrels are exceeded only by Saudi Arabia. Canada is a politically stable country and a convenient neighbour to its biggest customer, the USA – proud owner of the world's thirstiest vehicle fleet.

The environmental cost is colossal, and WWF is calling for a moratorium on further developments. Oil sands production generates three times as much greenhouse gas as conventional production. It is Canada's fastest growing source of emissions and will be responsible for Canada failing to meet its Kyoto targets. It uses enormous quantities of water and destroys boreal forest - the most important ecosystem for storing carbon and home to the native caribou. Yet the Albertan government is issuing leases to oil companies at an alarming rate.

Toxic tailings

Two tonnes of sand produce one barrel of oil. To access it, forest is cleared, rivers diverted and wetland drained. For surface deposits, 60 ft tall excavators gouge out topsoil and dump 100 tonne loads of sands into huge trucks day and night 365 days a year. The resulting lunar-like mines are 100 metres deep and kilometres wide – some can be seen from space. For deeper deposits, steam is injected to separate the residue and move it for processing.

Between two and five barrels of water are needed to produce a barrel of oil. The oil companies extract water from the nearby Athabasca River. The wastewater is then sent to tailings ponds, huge lakes of toxic liquid left for decades to settle. Vancouver city could fit into the largest pond. Until China completes its Three Gorges, Canadian company Syncrude's tailings dam will remain the world's largest dam in volume, holding 540 million cubic metres of waste. The tailings are so toxic that propane-powered cannons are used to deter migratory birds from landing on the surface.

The Athabasca River passes only metres from the tailings ponds and flows northwards into the Peace-Athabasca freshwater delta. The river provides fish for First Nations Aboriginal communities who now report unprecedentedly low river levels and plummeting water quality. Though Canada holds a third of the world's available freshwater, locals in downstream community Fort Chipewyan are afraid to use the water. High rates of rare cancers have been documented, and fishermen report tumour-ridden fish. The community and their doctor want government investigations into whether carcinogenic pollutants are leaching from the tailings ponds into the river.

As yet there are no baseline data. No independent scientific tests have been carried out and published. There is monitoring of pollutants – by the oil industry.

Hydrocarbon future?

Mitigating climate change is a key issue for business. Although the oil industry has become adept at climate change rhetoric, the focus remains on a hydrocarbon future. All the biggest oil companies have made multibillion-dollar investments in oil sands. BP entered in late 2007, partnering with Husky Oil. Statoil acquired North American Oil Sands Corporation earlier in 2007. Shell aims to raise production from 100,000 barrels of oil per day from the sands to 500,000.

On current showing, while Shell talks about the problem of climate change in the UK, it is not part of the solution. Shell believes technology is the key to sustainability and that it is the Canadian government's responsibility to deal with greenhouse gas emissions. But the technology to capture emissions from oil sands is ten years away. The Intergovernmental Panel on Climate Change says we only have ten years to avert catastrophe.

Shell will pursue its expansion programme as long as it is economic to do so. This includes a new runway at its Albian Jackpine plant capable of handling Boeing 737s to fly in workers from Newfoundland. The company promises to reclaim the forest but admits this will take time, and no land has so far been officially certified as 'reclaimed'. As Robert Grandjambe, a representative of the Mikisew Cree First Nations, says: 'You can't replace an ecosystem that has taken millions of years to evolve.'

The WWF Network is combining resources to challenge the oil sands industry: WWF-Canada is working with local communities to develop water monitoring programmes. WWF-UK and WWF-International are in dialogue with Shell.

Regulation is emerging in the European Union and North America to prevent these dirty fuels entering markets. California and Ontario have agreed a Low Carbon Fuel Standard restricting well-to-wheel emissions. The EU is considering similar measures. The planet cannot afford to continue feeding North American oil addiction or blindly meeting rising demand. Instead, urgent work is needed to improve vehicle efficiency, reduce demand and develop alternatives.

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Note

More information on this issue is available at
<http://www.wwf.org.uk/researcher/programmethemes/oilgasandmining/0000000293.asp>.