



Alberta's tar sands are already causing unprecedented global and local destruction. This briefing highlights the alarming scope of the unconventional oil in other parts of the world. If even a few of these deposits are opened for commercial production then the planet will be facing a stark future.

Now is the time to prevent this industry from spreading its tentacles across the globe.

UK TAR SANDS
NETWORK



Tar sands

Oily gunk

Buried deep under the Albertan Boreal Forest is 140,000 square kilometres of bituminous sand, known as the 'tar sands', or 'oil sands' by the government and oil industry. Of the total 169.9 billion barrels of proven reserves in Canada, industry currently extracts 1.5 million barrels per day (bpd), the majority (97%) of which is exported to the US. In the next decade, production is expected to double¹.

Compared to regular petroleum, tar sands are much more energy-intensive to extract, and require substantially more refining. Like many 'unconventional' types of oil, tar sands are mined in an incredibly environmentally damaging way. Emitting 3 to 5 times more greenhouse gas, using vast amounts of fresh water² and natural gas, and leaving behind lakes of toxic pollution, the tar sands are the world's largest and dirtiest industrial project. In addition to exacerbating global warming through deforestation and greenhouse gas emissions, tar sands developments cause local communities, often First Nations, to suffer rare forms of cancer³, and destroy vast tracts of forest habitat⁴, threatening wildlife to extinction⁵.



Devastation left by Mining operations in Alberta Canada

Oil demand and energy security

Despite growing worldwide opposition to tar sands, the industry still appears lucrative for multinational oil corporations and governments. Worryingly, we are now seeing tar sands deposits in areas outside of Canada starting to be explored. This expansion of the tar sands industry is driven by a decline in conventional oil resources⁶, a rise in oil prices, and the perception that demand for oil will rise indefinitely⁷. This dangerous prediction wrongly assumes minimal or non-existent government legislation on climate change.

Greenpeace and Platform have calculated that the demand for oil is actually starting to fall as the US introduces fuel-efficiency measures and countries like China begin mass transformations to electrify their vehicles and invest in renewables⁸. Arguably, even if we cannot yet see a dip in oil demand it is clear that by taking a future rise as given, we are only diverting resources away from exploring alternatives of both renewable energy and improved energy efficiency. Friends of the Earth (FoE) point out that unconventional fuel is not guaranteed to ensure energy security as it is alarmingly more expensive to produce than conventional fuel which remains predominantly under the control of national oil companies (especially in OPEC countries)⁶.



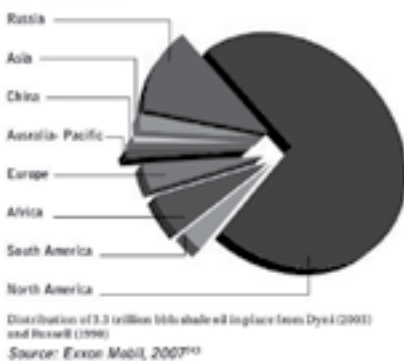
Tar sands-like oil around the world

Worryingly, there seems to be as much unconventional oil in the ground as there was conventional⁹, potentially allowing unconventional oil exploitation to last decades if the industry is not halted in its tracks. While most of these sources are still at investigative stages, once companies begin trial projects they often operate without public consultation, and are able to ramp up their extraction, unnoticed, to an industrial scale.

The largest volumes of tar sands oil outside Canada are in Kazakhstan and Russia, but both also have vast deposits of conventional oil, giving state-owned companies with less incentive to investigate tar sands. Venezuela's Orinoco Basin contains the world's largest deposit of the similar substance extra-heavy oil, and has already been commercially exploited for a number of years.

On the next few pages are summaries of some of the key sites of potential unconventional oil development, most of which are still at exploratory stages.

Figure 21: Global oil shale deposits
Distribution of World oil shale deposits by continent / region



OIL: the terminology explained

Conventional oil: relatively easy to extract, found in many countries around the world.

Heavy oil: slightly more dense oil.

Found in: Congo Brazzaville, Cuba, Ecuador, Egypt, Germany, Iran, Iraq, Kazakhstan, Madagascar, Trinidad and Tobago⁹.

Extra-heavy oil: much denser oil, similar to tar sands, much harder to extract. The largest deposits exist in Venezuela.

Also found in: Azerbaijan, Colombia, Cuba, Ecuador, Egypt, Kyrgyzstan, Iran, Israel, Italy, Poland, Russia, Trinidad & Tobago, United Kingdom (offshore), United States, Uzbekistan⁹.

Tar sands (natural bitumen): a combination of clay, sand, water, and bitumen, a heavy black viscous oil. Very expensive, energy-intensive, and carbon-intensive to extract.

Found in: Angola, Azerbaijan, Colombia, Congo Brazzaville, Democratic Republic of Congo, Georgia, Germany, Indonesia, Israel, Italy, Kazakhstan, Madagascar, Nigeria, Switzerland, Syria, Russia, Tajikistan, Tonga, Trinidad & Tobago, United States, Uzbekistan⁹.

Oil Shale: solid rock that releases petroleum-like liquids when the rock is heated¹⁰, with similarly damaging environmental effects to tar sands⁶

Found in: Australia, Brazil, Canada, China, Democratic Republic of Congo, Egypt, Ethiopia, Estonia, France, Germany, Jordan, India, Indonesia, Israel, Kazakhstan, Mongolia, Morocco, Nigeria, Russia, Serbia, Sweden, Syria, Thailand, Turkey, United States.



Congo Brazzaville - Tar sands, heavy oil

Italian company Eni is planning to extract 500-2,500 million barrels of tar sands oil from the Congo Basin. This would mean destroying massive tracts of rainforest, which acts not only a giant carbon sink but an important livelihood source for local communities. Congo's government lacks transparency and has few environmental and human rights laws, meaning local communities and ecosystems could be even more harshly affected than those in Canada. Eni admitted in 2009 that it had not carried out any public consultation with local communities about their tar sands extraction plans⁶.

Israel - Extra-heavy oil, tar sands, oil shale

Large deposits of oil shale have been discovered in various parts of Israel, with estimates totalling 300 billion tonnes⁹. Dr Harold Vinegar, the former chief scientist of Royal Dutch Shell, is at the centre of an ambitious project to turn Israel into one of the world's leading oil producers¹¹.

Madagascar - Heavy oil, tar sands

Tar sands are believed to lie underneath two thirds of Madagascar's surface. The two most explored fields in the country are Bemolanga (tar sands) and Tsimiroro (heavy oil), which together contain an estimated 26,385 million barrels of oil¹². Madagascar Oil and French oil company Total have been exploring in these areas since 2008. Topically, the Tsimiroro field is situated right by a UNESCO World Heritage site. Madagascar is highly biodiverse, with up to two-thirds of its species found only in this country. The area under consideration is very sparsely populated, meaning local people at risk of displacement have limited ability to defend themselves. In addition, the political situation in Madagascar is unstable, with the current government considered illegitimate and lacking transparency¹³.

Russia - Extra-heavy oil, tar sands, oil shale

Russia holds the largest volumes of tar sands oil outside Canada, estimated to be 260 billion barrels total, with 34 billion barrels recoverable¹³. The largest deposits are present in very remote eastern Siberia, and are not likely to be exploited in the near future. However, smaller deposits in the Tatar Republic have been studied extensively, mainly by Shell and Russian oil company Tatneft. Russia also holds over 80 oil shale deposits, which it began exploiting in the 1930s⁹.

Trinidad and Tobago - Heavy oil, extra-heavy oil, tar sands

Trinidad and Tobago has more than 600 million barrels of tar sands oil in place and already produces between 60 000 to 92 000 barrels per year, most of which is combined with asphalt and exported for use in road construction⁹. In 2009 Petrotrin, Trinidad and Tobago's national oil company, was given a license to explore a further tar sands deposit south of the La Brea Pitch lake. The government is keen to promote tar sands, with the Energy Minister claiming Trinidad and Tobago is "trying to follow the Canadian model of extraction from the Alberta tar sands"¹³. Financing might also follow Canada's model, with the Royal Bank of Canada, the largest investor in Alberta tar sands, recently having bought the Royal Bank of Trinidad and Tobago¹⁴.

United States - Extra-heavy oil, tar sands, oil shale

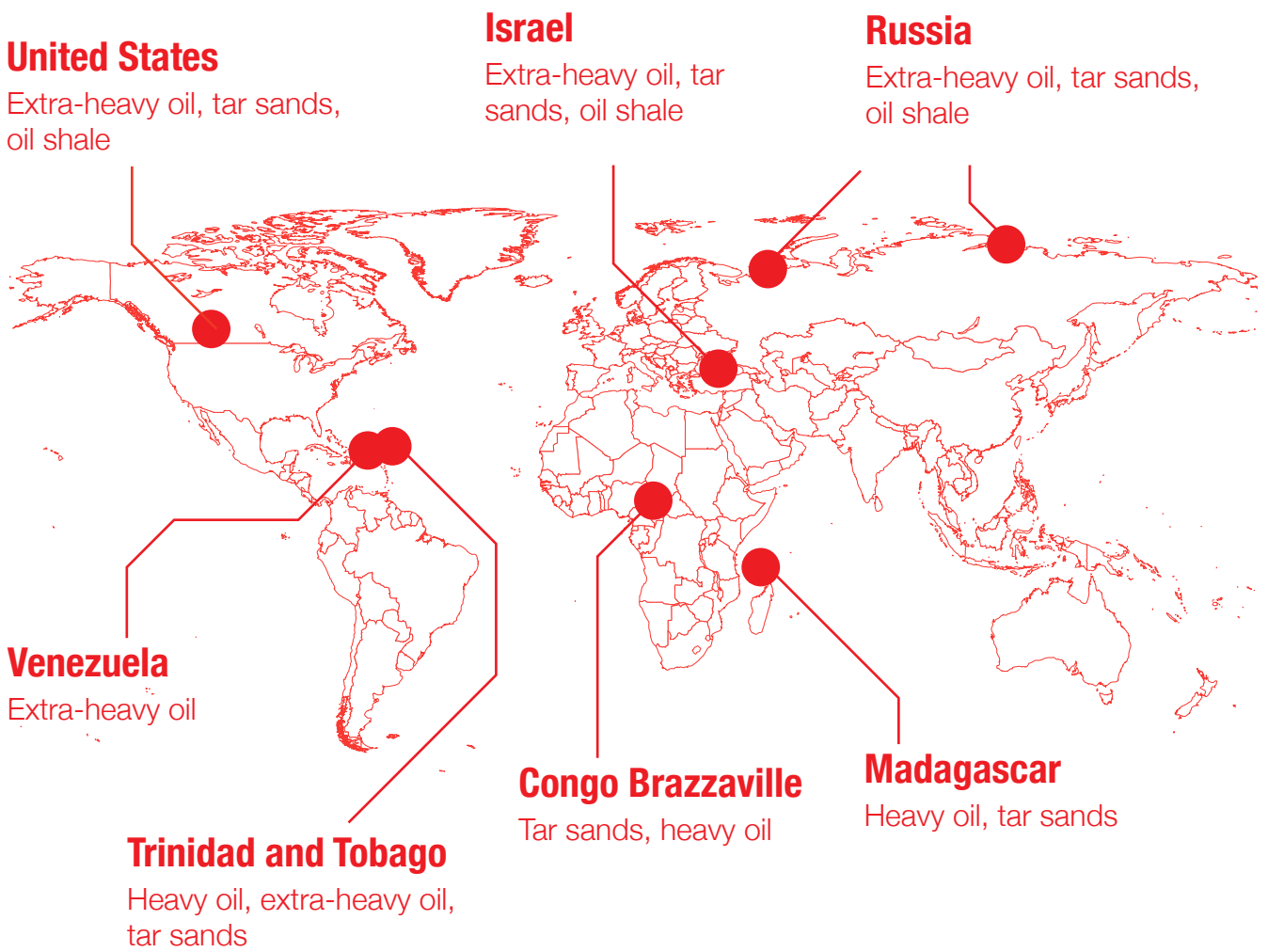
The US holds extensive deposits of tar sands and a massive 74% of the world's recoverable oil shale. The largest tar sands deposits are in Utah, where in the 1980s



several pilot projects were started. These were neglected due to stagnating oil prices, although interest has been revived recently¹³. The largest oil shale deposits are found in the Green River Formation straddling Colorado, Utah and Wyoming. After many years of inactivity, the Government began issuing R&D oil shale leases in 2004. The likelihood of development in the near future remains unclear⁹.

Venezuela - Extra-heavy oil

Venezuela is already producing oil on a mass scale. The size of Venezuela's oil deposits is comparable to Canada's: an estimated 500 billion barrels could be extracted¹⁵. The substance, termed 'extra-heavy oil', is geologically slightly different to tar sands, but the extraction methods required and environmental effects are similar. In 2006 the Chávez government changed the way Venezuela's oil projects are run, giving more control to its state-owned oil company, and causing several international oil companies to pull out¹³. This is not with an eye to slow down development, however; the government intends to expand production from the current 940,000 bpd to 2.09 million bpd by 2015⁶.



Rounding up the *unconventional* suspects:



Shell: Shell has long shown that it is not afraid of unconventional oil; by 2008 it already had 30% of its oil coming from Canadian tar sands⁶. Shell has explored the potential of the Russian Tatarstan reserves, in 2008 starting a joint project with Tatneft aiming to produce 100,000 bpd. Shell has also seized upon Jordan's oil shale deposits, and has negotiated with the government to operate in two blocks via its subsidiary Jordan Oil Shale Company (Josco). It is expected to take between 15 and 20 years before commercial amounts of shale are produced¹³. In this time, Shell might need to think how it will navigate Jordan's chronic lack of water to find the 50-500 million tonnes of water this project will require each year¹². Shell is now exploring US oil shale, and since 1996 has been developing an innovative in situ production method. The future of this project will probably not be decided until the middle of the decade, and if approved, would then take a further decade to reach commercial levels of production. Given the extent of the US oil shale reserves, Shell committing to this project would be devastating¹³.



Total: Since 2004, Total has been focusing increasingly on its unconventional reserves⁶. Total currently produces approximately 27,000 bpd in Canada's tar sands, but plans to ramp up to 627,000 bpd over the next 10 years¹⁶. Total also operates in Venezuela. Despite political challenges from the Chávez government in 2006, Total, in a combined project with Norwegian company Statoil, decided to renegotiate its contract and continue to operate on its projects, which were by then already producing oil. The only European oil company with plans to extract tar sands oil in Madagascar, in 2008 Total paid \$100 million to Madagascar Oil for a 60% interest in the Bemolanga deposit⁹. Another area of Total's exploration is Morocco's oil shale, which the Moroccan government is keen to promote¹³.



Eni: Less known in the UK, Italian giant Eni has an extensive interest in unconventional oil. In Canada it has been contracted by Husky Oil to develop processing facilities for the Sunrise project – the same project in which BP owns a 50% share¹⁷. Last January, Eni took on a joint venture in Venezuela with state-owned PDVSA to develop the lucrative Junin 5 block¹³. Eni's most controversial heavy oil involvement, however, must be in Congo. In 2008, Eni entered an agreement with the Republic of Congo to explore for tar sands in a large area near the oil capital of Pointe-Noire. Eni stated publicly that none of its tar sands development would take place on rainforest or other areas of high biodiversity - but studies by the company reveal that the tar sands zone is up to 70% tropical forest and other highly biodiverse areas! Similarly Eni claimed its developments would not displace any communities, yet is planning to extract oil from directly underneath several small settlements. Eni is also planning to claim carbon credits under the UN Clean Development Mechanism for the new power station it will build to power its tar sands project, claiming that the power station will reduce emissions from its gas flaring at another oil field in Congo. Not only is this a massive case of hypocritical greenwash, it seems unlikely to stand up legally - as gas flaring is already illegal in Congo!¹³



Conclusion

As the world slowly comes to terms with declining conventional oil reserves and the increasing threat of climate change, NASA climate scientist James Hansen has warned that extracting tar sands will tip us over into uncontrollable climate chaos, stating that “we cannot get back to a safe CO₂ level if...unconventional fossil fuels like tar sands are exploited.”¹⁸ Yet, with their focus only ever on short-term profits, it is in the interest of oil companies and oil-thirsty governments to continue to exploit unconventional sources of oil, spending millions developing this technology at the expense of investing in genuine alternatives.

What we must do:

- **Leave the oil in the ground:** every barrel of tar sands oil extracted is doing damage. Rather than letting governments and oil companies make weak promises about how they will improve the environmental footprint of their tar sands extraction, we need a complete moratorium on new tar sands projects, and a commitment to shut down existing ones.
- **Reduce demand for oil:** the introduction of energy efficiency measures, behavioural change, carbon taxes, and government legislation like the Fuel Quality Directive, will have the combined effect of making tar sands extraction more expensive and less attractive for oil companies.
- **Cut off the funding:** a lot of these companies are financed by European banks, the most prominent in the UK being the 83%-taxpayer-owned Royal Bank of Scotland. Additionally banks can be targeted to ensure minimum standards are met, for instance the Royal Bank of Canada has been pressured into adopting an indigenous rights policy, meaning it will not lease money to companies unless Free, Prior and Informed Consent is obtained from communities before projects begin (it is not clear, of course, how well this will play out in practice)
- **Join the resistance:** a lot of the communities in areas near oil developments lack support to fight against large companies, yet often have the most power to stop projects before they take off. We can help by working in solidarity with affected groups around the world, amplifying the relevant voices, and supporting their campaigns, demands and lawsuits.



More information:

International tar sands:

Friends of the Earth Europe, (May 2011) Marginal Oil: What is driving oil companies dirtier and deeper?, Heinrich Böll Foundation, available at: http://www.foeeurope.org/publications/2011/Marginal_Oil_Layout_13.PDF

Friends of the Earth Europe, (May 2010) Tar Sands: Fuelling the climate crisis, undermining EU energy security and damaging development objectives, available at: http://www.foeeurope.org/corporates/pdf/Tar_Sand_Final_May10.pdf

articles in New Internationalist April 2010: <http://www.newint.org/features/2010/04/01/going-global/>

articles collected by Macdonald Stainsby: www.oilsandstruth.org

Platform, (2010) Cashing in on the Tar Sands: RBS, UK Banks, and Canada's 'Blood Oil', available at: <http://platformlondon.org/files/cashinginontarsandsweb.pdf>

Congo Brazzaville

Sarah Wykes, November, 2009, Energy Futures: Eni's investments in tar sands and palm oil in the Congo Basin, Heinrich Böll Foundation, available at: http://www.foeeurope.org/corporates/Extractives/Energy_Futures_eng.pdf


Madagascar

Madagascar Tar Sands Oil: The Bloody Truth, World Development Movement, available at: http://www.wdm.org.uk/sites/default/files/RBS_madagascar_brief.pdf

For more information contact:

UK Tar Sands Network

 Join us on Facebook:
No Tar Sands

 Follow us on Twitter:
@NoTarSands

Send us an email:

info@no-tar-sands.org

Find out how you can get involved at:

www.no-tar-sands.org

1. Pembina Institute (2010) Mining vs. In Situ available at <http://www.pembina.org/pub/2017>
2. Currently, tar sands operations are licensed to divert 652 million cubic meters of fresh water each year, 80% from the Athabasca River. This amounts to 7 times the annual water needs of Edmonton. About 1.8 million cubic metres of this water becomes highly toxic tailings waste each day. Source: Pembina Institute (2010) Oilsands and Water available at: <http://www.pembina.org/pub/1830>
3. In 2006, unexpectedly high rates of rare cancers were reported in the community of Fort Chipewyan. In 2008, Alberta Health confirmed a 30% rise in the number of cancers between 1995 and 2006. However, the study lacks appropriate data and is considered a conservative estimate by many residents. Source: Alberta Cancer Board (2009), Cancer Incidence in Fort Chipewyan, Alberta
4. As of 2009, 686 km² of land had been lost to surface mining. Source: Pembina Institute (2010) Toxic Liability available at <http://www.pembina.org/pub/2076>
5. Caribou populations have been severely impacted by tar sands extraction. By 2025, the total population of the North Alberta Woodland Caribou herd is expected to be under 50 and locally extinct by 2040. Source:

- The Co-operative and Beaver Lake Cree First Nation (2010) Save the Caribou – Stop the Tar Sands available at <http://www.co-operative.coop/savethocaribou>
6. Friends of the Earth Europe, (May 2011) Marginal Oil: What is driving oil companies dirtier and deeper?, Heinrich Böll Foundation, available at: http://www.foeeurope.org/publications/2011/Marginal_Oil_Layout_13.PDF
7. BP, for instance, has been shown to be basing their business plan on a scenario that also predicts a six-degree temperature rise (the IEA 'reference scenario'). Source: <http://www.guardian.co.uk/sustainable-business/bp-wcomplaint-deepwater-annual-reporting>
8. Greenpeace, Platform and Oil Change International, (2009) "Shifting Sands: How a Changing Economy Could Bury the Tar Sands Industry: BP and Shell Rising Risks Update 2" available at <http://www.greenpeace.org.uk/files/pdfs/climate/shifting-sands-bp-shell-rising-risks-update-2.pdf>
9. World Energy Council, (2010) 2010 Survey of Energy Resources, available at http://www.worldenergy.org/documents/ser_2010_report_1.pdf
10. <http://ostseis.anl.gov/guide/oilshale/index.cfm>

11. <http://www.theaustralian.com.au/business/mining-energy/oil-shale-reserves-can-turn-israel-into-major-world-producer/story-e6frg9ef-1226025327281>
12. Platform, (2010), Cashing in on the Tar Sands: RBS, UK Banks, and Canada's 'Blood Oil', available at: <http://platformlondon.org/files/cashinginontarsandsweb.pdf>
13. Friends of the Earth Europe (May 2010) Tar Sands: Fuelling the climate crisis, undermining EU energy security and damaging development objectives, available at: http://www.foeeurope.org/corporates/pdf/Tar_Sand_Final_May10.pdf
14. <http://oilsandstruth.org/tar-sands-development-edging-closer-trinidad-and-tobago>
15. <http://www.newint.org/features/2010/04/01/going-global/>
16. Indigenous Environmental Network (2011) Total Destruction, available at: <http://www.no-tar-sands.org/resources/>
17. Eni Annual Report 2010, available at: http://www.eni.com/en_IT/attachments/publications/reports/reports-2010/Annual-Report-2010.pdf
18. http://www.huffingtonpost.ca/dr-james-hansen/tar-sands_b_871362.html

Written by: Emily Coats

Designed by: Daniel Sliwka, danielsliwka.com

Printed on 100% post-consumer recycled paper with VOC-free ink & renewable energy

