

Summary

U.S. companies should be aware of the increasing market demand for environmental technologies and innovations in Alberta's oil and gas industry. From 2007 to 2008, this industry spent \$39.3 billion on development and exploration and can be credited with employing 275,000 people.¹ Alberta's fossil fuel sector includes conventional crude and crude bitumen; however the latter is the main driving force behind the province's economy and is Canada's largest source of oil.² The difference between the two is that conventional crude can be pumped from the ground without being heated or diluted, where as bitumen crude has to be mined if it's close to the surface; or if it's far underground, brought up using *insitu* methods, (injecting steam into the ground before bringing the oil to the surface).³

Although there are many benefits associated mining the oilsands, there are some very notable drawbacks as well. Many consider their development to be a major environmental hazard and this is not without merit. Both federal and provincial governments are actively enforcing rigorous laws in order to address environmental concerns; this has many oilsands developers re-evaluating their current standards and has opened up many opportunities for U.S. businesses that specialize in areas such as development, sustainability and the natural environment.

Market Data

Water Use and Conservation

Large volumes of water from the Athabasca River are required to extract oil from the oilsands. Studies have shown however, that the river may not be able to sustain this practice for much longer.⁴ Although many companies are recycling water, most of it ends up in tailings ponds. These ponds are one of the by-products of oilsands development and contain clay, sand and hydrocarbons. According to environmental groups, they are considered hazardous to wildlife and toxic to the land.

Companies and research organizations are actively seeking solutions to water use and conservation in the oilsands region; either through developing new methods for oil extraction or widespread water recycling programs. For example, Syncrude which is one of Canada's largest oil producers is currently funding a research project that repels water from the oil before being it's extracted; this eliminates the tailings pond by-product.⁵ Researchers from the University of Alberta on the other hand, are working on a method that uses carbon dioxide rather than water to separate the oil from the sands.⁶

For more information on tailings ponds and government initiatives, please see the Alberta Governments' Tailings Ponds Management oilsands.alberta.ca/documents/Tailings_management.pdf

Air Emissions

Last year, the *National Inventory Report 1990-2006: Greenhouse Gas Sources and Sinks in Canada – The Canadian Government's Submission to the UN Framework Convention on Climate Change, May 2008*, was released identifying oilsands development as a significant contributor of greenhouse gas emissions in Canada.⁷ There has been a great effort placed on trying to reduce these emissions. Recently the Canadian Federal Government has announced new policy initiatives aimed at reducing GHGs and although they will affect every sector across the country, the oilsands in particular will be targeted.⁸ The government has put

together a program called Technology Early Action Measures (TEAM) that is currently funding several projects that may be of interest to U.S. manufacturers and suppliers.

These include:

- Sustainable Development of Coal Bed Methane
- Micro-Turbine/Cogen for Heat & Electricity
- Solid Oxide Fuel Cell Materials
- Biomass Gasifier-based Heat & Power
- Oil sands thermal solvent process
- Thermal Solvent process Phase I Extension
- Paste Technology (Thickened Fine Tailings)
- Advanced Clean Coal Technology for Coal Fired Power Plants

For more information on federal initiatives and TEAM's projects, please see www.team.gc.ca/english/dbprojects/showProjects2.asp?tec=cff

Land Disturbance and Reclamation

The Canadian oilsands are situated in the boreal forest, which consists of wetlands, lakes and peatlands. Since oilsands development began, the boreal forest has decreased significantly. Many companies and agencies in the region have developed ways to restore the land once the oil has been extracted, and major oilsands developments are required to reclaim disturbed lands, including tailings ponds. Programs such as the Orphan Well Association, which is funded by the oil and gas industry, help to clean up abandoned well sites and offer opportunities for companies that specialize in land restoration.⁹ Although programs like this exist, there are still many opportunities available for new methods in land reclamation practices and technologies.

Sulphur By-product

One of the main by-products of oilsands development is the large accumulation of sulphur.¹⁰ Sulphur can be used to make fertilizer, batteries, detergents, fungicides, bleach, food preservatives, matches, gunpowder, fireworks, film developers, laxatives, asphalt, acid, beauty products and many other items. The annual output of sulphur from the oilsands is about 1.2 million tonnes, which is projected to jump to about 12 million tonnes by 2030. Sulphur exports range from \$50 to \$70 US per tonne. This presents opportunities for U.S. companies that looking for a reliable supply of sulphur for manufacturing purposes.

Sources: Alberta Energy and Utilities Board and Alberta Chamber of Resources

For more information on environmental opportunities in the oilsands, please see Canada's Oilsands: Opportunities & Challenges to 2015, pages 37-40
www.neb.gc.ca/clf-nsi/mrgynfmrn/nrgyrprt/lrnd/pprntnsndchllngs20152006/pprntnsndchllngs20152006-eng.pdf

Best Prospects & Services for U.S. Firms

The environmental challenges associated with Alberta's oilsands offer plenty of opportunities for U.S. businesses to take advantage of. In particular, companies which specialize in:

- Environmental technologies and innovations
- Equipment supplies and manufacturing
- Research and development

These opportunities are not just limited to the business sector, but can also be applied to post secondary institutions and agencies that are interested in partnerships or exchange programs with research facilities and companies in Alberta.

For more information on the Alberta oilsands, please see
Canadian Association of Petroleum Producers www.capp.ca/Pages/default.aspx

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Technology Early Action Measures, "TEAM Projects: Cleaner Fossil Fuels." Government of Canada.
www.team.gc.ca/english

Trade Events

GO-EXPO: Gas and Oil Exposition, June 9-11, 2009, Calgary, Alberta, Canada

www.petroleumshow.com/GoExpo

For More Information

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¹ Industry across Canada. "Alberta's Resources." Canadian Association of Petroleum Producers.

www.capp.ca/canadaIndustry/industryAcrossCanada/Pages/Alberta.aspx

² Industry across Canada. "Alberta's Resources." Canadian Association of Petroleum Producers.

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³ Canadian Centre for Energy. 2002. "What are oilsands and heavy oil?"

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⁴ National Energy Board Canada. 2006. "Canada's Oilsands: Opportunities & Challenges to 2015: An Update 2006." Pages 37-40. www.neb.gc.ca/clf-nsi/mrgynfimt/nrgyrprt/lsnd/pprntnsndchllngs20152006/pprntnsndchllngs20152006-eng.pdf

⁵ Jones, Jeffrey. "Syncrude project aims to cure tailings headache." Calgary Herald. February 25, 2009.

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⁶ Cairney, Richard. "New oilsands extraction method could eliminate tailings ponds." ExpressNews. May 2008. University of Alberta.

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⁷ Greenhouse Gas Sources and Sinks. "Canada's 2006 Greenhouse Gas Inventory." Environment Canada.

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⁸ Environment Canada. March 2009. "News Release: Government Delivers Details of Greenhouse Gas Regulatory Framework."

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⁹ Environment & Community. "Land & Reclamation." Canadian Association of Petroleum Producers.

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¹⁰ National Energy Board Canada. 2006. "Canada's Oilsands: Opportunities & Challenges to 2015: An Update 2006." Pages 37-40. www.neb.gc.ca/clf-nsi/mrgynfimt/nrgyrprt/lsnd/pprntnsndchllngs20152006/pprntnsndchllngs20152006-eng.pdf