



# Under-Mining the ENVIRONMENT

JANUARY 2008

FACT SHEET



ENVIRONMENTAL MANAGEMENT • LAND • AIR • WATER • CLIMATE CHANGE

## The Oil Sands Report Card

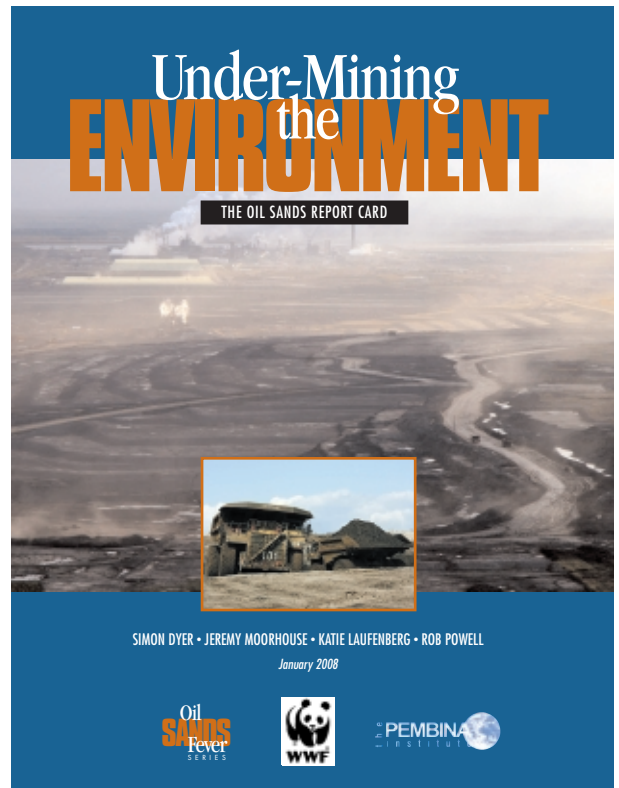
In *Under-Mining the Environment, The Oil Sands Report Card*, nine of Alberta's 10 operating, approved and applied for oil sands mines get a failing environmental grade. The average score among all oil sands projects, surveyed by Pembina Institute and WWF-Canada, was only 33%, demonstrating substantial room for improvement across the sector.

Oil sands mines were ranked on 20 different environmental indicators in five categories: environmental management, land impacts, air pollution, water use, and management of greenhouse gases. Companies were invited to complete the survey questionnaire and provided with two opportunities to comment on their performance.

In total, seven of the 10 operations participated in the survey. Three companies, Total E&P, Syncrude and Canadian Natural declined to participate. The highest score in the survey was the Albian Sands Muskeg River Mine with 56 per cent. The weakest operations were Syncrude and the proposed Synenco Northern Lights Mine both with scores of 18 per cent. "There is growing concern in Alberta, in the rest of Canada and internationally about the environ-

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THE OIL SANDS REPORT CARD



SIMON DYER • JEREMY MOORHOUSE • KATIE LAUFENBERG • ROB POWELL

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mental impacts of oil sands mining," states Simon Dyer of the Pembina Institute. "Despite these concerns we found that oil sands companies are making weak efforts to manage their environmental impacts. We found only one mining operation came close to a passing grade and that substantial improvements in environmental performance were possible for all projects."

Oil  
SANDS  
Fever  
SERIES

*“The poor environmental performance reflects badly on the oil sands mining companies, which include the largest and most profitable major oil companies in the world. These companies have both the expertise and the resources to do much better. Government must establish limits to curb impacts on fresh water, the global atmosphere, wildlife and public health.”*

– **Rob Powell, WWF-Canada**

*“We also believe an opportunity exists for companies to step up and work together to solve these environmental challenges... Let’s get the best engineers available focused on environmental performance.”*

– **Marlo Raynolds, Executive Director, Pembina Institute**



▲ *There are existing technologies available that would enable oil sands companies to substantially reduce greenhouse gas emissions. Only one operation in our survey reported a voluntary greenhouse gas reduction target.*

PHOTO: THE PEMBINA INSTITUTE

# Key findings

**The companies were asked to respond to questions in five categories: general environmental management, land, air, water, and climate. The average score among all oil sands projects was 33%, demonstrating substantial room for improvement across the oil sands mining sector.**

The majority of companies lagged in several key areas. For example,

- While the majority of oil sands operations have comprehensive environmental policies in place, only Albian Sands and Imperial Oil provided evidence of having an independently accredited environmental management system such as ISO 14001.

- With the exception of the existing Albian Muskeg River Mine, no operation has voluntary targets to limit absolute greenhouse gas emissions.

- No project or company has publicly reported water intensity reduction targets.

- Despite over 40 years of oil sands development, not a single hectare of land has been certified as reclaimed under Government of Alberta guidelines.

No project scored well across all areas. Disturbingly, the proposed expansion of the Albian Muskeg mine is set to perform to lower standards than the existing Albian Muskeg operation.

Clearly, there is substantial room for improvement in the environmental performance of oil sands mining operations.

Oil Sands Mine	Percentage Score
<b>Albian Existing</b> (Muskeg River Mine)	56
<b>Total E&amp;P</b>	43
<b>Petro-Canada</b>	37
<b>Shell</b>	37
<b>Suncor</b>	34
<b>Imperial Oil</b>	33
<b>Canadian Natural</b>	31
<b>Albian Expansion</b> (Muskeg River Mine Expansion)	26
<b>Syncrude</b>	18
<b>Synenco</b>	18
<b>AVERAGE SCORE</b>	<b>33</b>

Existing Projects
  Proposed and Approved Projects

▲ *Table 1 Summary of total project scores.*

# The Oil Sands Report Card

## Project Scoring Summary Table

Project	Environmental Management				Land				Air Emissions			Water					Climate Change			Σ	÷	Final Score	
	Policy	Management System	Public Reporting	Regulatory Compliance	Certified Land	Reclamation Liability	Reference Site	Bio Monitoring	Reduction Targets	NO <sub>x</sub>	SO <sub>2</sub>	VOC	Water Intensity	Water Intensity Targets	MFT Intensity	Withdrawal	Water Storage	GHG Absolute Reduction Targets	GHG Intensity Per Barrel	Emission Intensity Targets	Total Company Score	Total Points Possible	%
<b>Albian Sands Energy Inc</b> – MUSKEG EXISTING	1	1	1	1	N/A	0.5	0	1	0	0.5	1	1	0	0	0	0	0	N/A	1	1	10.00	18	56%
<b>Total E&amp;P Canada</b> – JOSLYN NORTH MINE PHASES 1 & 2	1	0	N/A	N/A	N/A	1	0	1	0	0.5	1	0.25	1	0	1	0	0.5	0	0	0	7.25	17	43%
<b>Petro-Canada Oil Sands Inc.</b> – FORT HILLS	1	0	N/A	N/A	N/A	0.5	0	1	0	0.25	0.5	1	1	0	0	0	1	0	0	0	6.25	17	37%
<b>Shell Canada Ltd.</b> – JACKPINE PHASE 1	1	0	N/A	N/A	N/A	1	0	1	0	1	0.25	1	0.25	0	0.5	0	0	0	0.25	0	6.25	17	37%
<b>Imperial Oil Resources Ventures Ltd.</b> – KEARL P1,2 & 3	1	1	N/A	N/A	N/A	0.25	1	0	0	0	0.5	0	1	0	1	0	0	0	0	0	5.75	17	34%
<b>Suncor Energy Inc.</b> – CURRENT OPERATIONS	1	0	1	0.5	0	0	1	1	0	N/A	N/A	N/A	N/A	0	0.5	0	0	N/A	0	5.00	15	33%	
<b>Canadian Natural</b> – HORIZON	0.5	0	N/A	N/A	N/A	0.25	0	0	0	0	1	0	1	0	1	0	0.5	0	1	0	5.25	17	31%
<b>Albian Sands Energy Inc.</b> – MUSKEG EXPANSION	1	1	N/A	N/A	N/A	0.5	0	1	0	0	0	1	0	0	0	0	0	0	0	0	4.50	17	26%
<b>Syncrude</b> – CURRENT OPERATIONS	1	0	1	0	0	0.25	0	0	0.5	N/A	N/A	N/A	N/A	0	0	0	0	0	N/A	0	2.75	15	18%
<b>Synenco Energy Inc.</b> – NORTHERN LIGHTS PHASES 1 & 2	0	0	N/A	N/A	N/A	0.5	0	0	0	0	0.5	0	1	0	1	0	0	0	0	0	3.00	17	18%

▲ Table 2 Detailed project scores

## Comparing environmental performance

Oil sands companies can use the report to compare their environmental performance to that of their peers. The Pembina Institute and WWF-Canada hope this comparison will inspire all companies to achieve what the current leading performers have achieved or have indicated they can achieve based on existing technologies and best practices. Beyond this immediate step, there is a need to improve environmental performance in the oil sands further and develop new strategies to limit cumulative impacts on the environment.

### The immediate performance gap

The results of our survey show a broad range of performance across many indicators. If all oil sands mining operations could match the environmental performance of the current industry leader, there would be substantial ecological benefits. Assuming all mines at full production:

- If all mines had the same greenhouse gas emissions intensity proposed by Canadian Natural Horizon

(23.34 kg CO<sub>2</sub>e per barrel of bitumen produced), Alberta would avoid 6,339,662 tonnes CO<sub>2</sub>e each year – a savings of 66%. This represents almost 3% of Alberta's annual GHG emissions!

- If all mines had the same Volatile Organic Compound emissions proposed by Petro-Canada (86 grams per barrel of bitumen), annual emission rates would be reduced by 47% from 96 kt to 50 kt annually.
- If all mines had the same NO<sub>x</sub> intensity proposed by Shell Jackpine (113 grams per barrel of bitumen), annual emission rates would drop almost 80%, from 75 kt to 15 kt annually.
- If all mines had the same SO<sub>2</sub> intensity as Canadian Natural Horizon (14 grams per barrel of bitumen), annual emission rates would be reduced by 47%, from 15 kt to 8 kt annually.
- If all oil sands mines adopted the dry tailings technologies proposed by

Synenco Northern Lights and Total Joslyn, the environmental hazard of mature fine tailings at the end of a mine's life would be completely eliminated.

- If all mines had the same water intensity proposed by Petro-Canada (0.20 m<sup>3</sup> of water per barrel of bitumen produced), oil sands mines could reduce water consumption by almost 60% annually.<sup>1</sup>

<sup>1</sup> All calculations assume mines at maximum production and do not include data from the Suncor or Syncrude mine operations since they do not report impacts based on barrels of bitumen produced.

Potential annual environmental benefit through oil sands operations meeting performance standards of current industry leaders

**15,000 tonnes of NO<sub>x</sub>**

**8,500 tonnes of SO<sub>2</sub>**

**50,000 tonnes VOCs**

**6,000,000 tonnes GHGs**

**73,500,000 cubic metres of water**



# Summary of recommendations

WWF-Canada and the Pembina Institute make the following recommendations to improve environmental management of oil sands mining operations in Alberta:

## Government

**1** *Government needs to enforce acceptable standards of environmental performance and continuously improve regulations to reflect continuous improvement in companies' abilities to reduce environmental impacts.*

There are substantial, economically viable improvements to oil sands environmental management that could be implemented simply through regulatory approvals mandating best practices. Relying on voluntary implementation of best practices is not resulting in adequate environmental management in the Fort McMurray region.

**2** *Government needs to report on environmental impacts to public lands.*

The Government of Alberta should make company annual environmental submissions readily available to the public through government websites.

**3** *Government must request segregated information to enable comparison of environmental performance.*

The Government of Alberta and the Government of Canada should ensure that data provided to them is based on consistent industry-wide standards and segregated sufficiently to provide for meaningful comparisons.

## Industry

**1** *Companies need to implement best available practices and focus on developing and implementing new technologies and processes that lead to step-wise reductions in environmental impacts.*

A rapid improvement in environmental performance of the industry as a whole could be achieved if companies adopted existing solutions demonstrated by their peers and explored new ways to reduce environmental impacts.

**2** *Companies should make project specific oil sands environmental performance information more widely available and in a consistent format.*

There is substantial room for improvement in terms of how this information is presented.

## The Future

*Under-Mining the Environment, The Oil Sands Report Card* is a catalyst to start a dialogue on what represents appropriate environmental performance for oil sands companies as they develop natural resources on public lands belonging to all Albertans. WWF-Canada and the Pembina Institute are committed to working with companies to minimize the environmental impacts associated with oil sands development. We intend to repeat this survey in the future and hope to be able to report improvements in environmental performance among oil sands mine projects in the Fort McMurray region.

## The Report

*Under-Mining the Environment, The Oil Sands Report Card* is available for download from [www.pembina.org](http://www.pembina.org).



▲ *Oil sands mining has a substantial impact on the environment.*

PHOTO: DAVID DODGE, THE PEMBINA INSTITUTE

## Contact information



The Pembina Institute  
Box 7558  
Drayton Valley, Alberta, T7A 1S7  
Phone: 780-542-6272  
E-mail: [piad@pembina.org](mailto:piad@pembina.org)



WWF-Canada  
245 Eglinton Ave. East,  
Suite 410  
Toronto, Ontario M4P 3J1  
Phone: 416-489-4567  
Email: [ca-panda@wwfcanada.org](mailto:ca-panda@wwfcanada.org)