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Gassy Ponds May Hold Key to Alberta's Oil-Sands Emissions Battle

Jeremy van Loon and Rebecca Penny/Aug 22, 2016 4:50 am ET

(Bloomberg) -- Alberta's battle to reduce oil sands' greenhouse gas emissions is taking aim at one of the industry's biggest environmental bugaboos: tailings ponds.

While producers have focused on curbing methane from drilling operations, the ponds, designed to hold residue from mining operations, are among the largest sources of emissions for oil-sands miners, said Eric Newell, a former chief executive officer of Syncrude Canada Ltd.

Figuring out how to curb the gases emanating from the ponds would allow energy companies to expand operations while staying below Alberta's new limits for emissions, Newell said in a phone interview.

"It's an area of low-hanging fruit, and they should be moving on it," he said. Newell has been part of numerous efforts to improve the environmental footprint of Canada's oil industry since retiring from Syncrude in 2003. "Methane is about 25 times more potent a greenhouse gas than carbon dioxide. So there's that multiplier effect, too."

Tackling emissions in tailings ponds isn't a no-brainer, though. The industry already is spending heavily to clean up solid pollution in the ponds, and the ultimate goal is to get rid of them entirely. Producers must decide whether it makes better sense to dedicate more money to pond cleanup, or to focus their spending on emissions in other parts of their operations.

Industry Overhaul

Canada's oil sands industry is in the midst of an overhaul, with emissions being reined in through a carbon tax, reductions to methane and a 100 million-ton cap on greenhouse gases. At the same time, companies are slashing costs to remain competitive in a lengthening market downturn.

The Alberta government's climate plan is designed to help fix the industry's reputation as an environmental laggard. It's also emboldened opposition and stalled construction of oil pipelines needed to access overseas markets.

The government's goal is to reduce methane emissions from the oil and gas industry by 45 percent from 2012 levels by 2025, said Kyle Ferguson, a spokesman for the environment ministry. Canada, the U.S. and Mexico in June agreed to make similar reductions from their petroleum industries.

As part of its climate policy, Alberta is focusing on sources of methane emissions, including tailings ponds. The ponds hold remnants of lighter fuels known as diluent that are used to process the tar-like bitumen harvested from the ground. Methane is released as the diluent breaks down.

Revenue Bonus

The ponds account for about 10 percent of greenhouse gas output from oil-sands mining, according to estimates by the provincial government and industry. Now, at least one solution is poised to turn an environmental liability into a new revenue stream.

Companies are beginning to test technology that would reduce the flow of diluent into tailings ponds and help slow the growth of methane output. That's also the first step in tackling a public health danger posed by toxic waste that's settled to the bottom of 220 square kilometers (85 square miles) of the man-made lakes. Cleaning up the ponds involves draining them and disposing of the waste -- enough to fill hundreds of thousands of Olympic swimming pools.

Zircon Recovery

Titanium Corp. has developed and tested a system that reduces methane emissions while at the same time recovering zircon, a mineral that is used in making ceramics, by mining the waste stream flowing from operations. The system can be attached to existing facilities, said Titanium's Chief Executive Officer Scott Nelson.

"There's a tipping point now with the focus on the environment and the negative image of the oil sands," Nelson said. "The ponds and climate change have come together."

Suncor Energy Inc., Syncrude and Canadian Natural Resources Ltd. all participated in a consortium, providing tailings samples for Titanium's C\$35 million (\$27 million) successful pilot and the company has two on-site projects with Syncrude, Nelson said. Oil prices need to stabilize at a higher level before producers will be willing to adopt the technology on a commercial scale, he said.

Evaluating Solutions

Canadian Natural continues to evaluate technology including Titanium's for potential application in managing tailings at its Horizon oil-sands mine, Julie Woo, a spokeswoman, said in an e-mail.

"With this technology, it's creating value from waste," Nelson said. The clincher for oil-sands companies is that one mine could produce 50,000 tons of zircon a year, or about 5 percent of the world's annual supply, and earn as much as C\$200 million in annual revenue from the sale of minerals, according to Titanium's estimates.

Suncor is expected to begin production next year at its new Fort Hills mine, and is currently working on its tailings management approach. Canada's largest oil producer company isn't releasing any details yet, and will submit its plan to Alberta regulators by the end of the year, said Suncor spokeswoman Erin Rees.

As part of a Canadian Oil Sands Innovation Alliance project, Suncor and Imperial Oil Ltd. are testing ways to better measure fugitive emissions from the ponds using satellite technology. The first test began in June with the launch of a probe from an Indian space center and which will take measurements of GHGs as it passes over the oil sands.

The cost of pond emissions, meanwhile, is about to go up. Companies are currently required by provincial regulations to report their emissions from tailings ponds and pay for them under a policy that sets a rate of C\$15 for each equivalent ton of carbon dioxide. That policy will be replaced by a carbon levy of C\$30 a ton in 2018.

Expensive Distraction?

But oil-sands developers are already spending billions of dollars to clean up mine tailings ponds to comply with the latest provincial environmental rules. Adding more spending on technology to reduce the greenhouse-gas impact of those ponds may be a distraction companies aren't willing to make, Newell said. The industry's ultimate goal is to eliminate the need for ponds entirely.

"Tailings ponds are one of the biggest challenges the industry faces and eliminating them completely would be quite a feat," Andrew Read, an analyst at environmental consultancy Pembina Institute. If a technical solution exists to reduce methane from the ponds, companies should deploy them, he said.

(Updates with details on project to measure emissions in 18th paragraph.)

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