



Oil Sands

A strategic resource for Canada, North America and the global market

Land Use and Reclamation

100 percent of land must be reclaimed

Oil sands development is subject to environmental standards that are among the most stringent in the world. The Government of Alberta requires that companies remediate and reclaim 100 percent of the land after the oil sands have been extracted. Reclamation means that land is returned to a self-sustaining ecosystem with local vegetation and wildlife.

Long before the landscape is touched by development, comprehensive assessments identify potential environmental impacts, such as those affecting land, air, water and biodiversity. Steps are then taken during the life of a project to minimize any negative effects. Oil sands companies must file a Conservation and Reclamation Plan as part of their initial project application, keep it current, and post financial security bonds for reclamation. The provincial government ensures that all oil sands companies fulfil their legal obligation to reclaim the land.

In the oil sands area, the Government of Alberta has committed to conserving and protecting more than 2 million hectares (ha) (20,000 square kilometres [km²] or 7,722 square miles [sq. mi.]) of habitat for native species as part of the 2012-2022 Lower Athabasca Regional Plan. In addition, there are almost 4.5 million ha (44,800 km², 17,300 sq. mi.) of federally protected land – Wood Buffalo National Park of Canada – just north of the oil sands.

Oil sands mineable area is 0.2 percent of Canada's boreal forest

Canada's crude oil reserves are the third-largest proven deposit of crude oil in the world. Ninety-seven percent of these reserves, or 167.2 billion barrels of oil, are in the form of oil sands bitumen.

The oil sands are found in western Canada and are located within the boundaries of Canada's boreal forest, which stretches more than 5,000 km (3,100 mi.) from coast to coast and covers about 30 percent of the country's land mass.¹ The total area of the oil sands that is accessible through surface mining represents 0.2 percent of Canada's boreal forest.



Syncrude's Gateway Hill was recently certified reclaimed by the Government of Alberta.

¹ The boreal forest, as described here, includes forest and other wooded land in Canada's boreal zone.

Most future development will be drilled, not mined

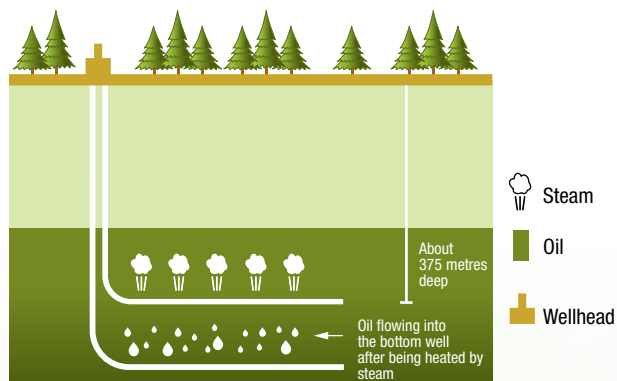
Oil sands bitumen can be extracted by two methods: mining and in-situ.

Reserves near the surface can only be accessed through mining. In this process, the bitumen is dug up, mixed with water and agitated to separate the bitumen from the sand and clay. Mining operations require the removal of all vegetation and top soil to access the raw oil sands. This material is then stored for use later in reclamation.

Reserves too deep to mine require some form of drilling technology. Drilled production, also known as in-situ production, often involves drilling wells and pumping steam underground to separate the bitumen from the sand and clays and then recovering the bitumen through the wells.

Currently, in-situ technology is used for 53 percent of oil sands production, with mining methods comprising the balance. Even so, approximately 80 percent of the remaining oil sands resource can only be recovered using in-situ technology. For this reason, there will likely be a significant shift from mining to in-situ technologies for extraction in the near-to-medium term.

In-situ production



Source: Cenovus, adapted by Natural Resources Canada, 2010

In-situ land disturbance is 10 to 15 percent of a similar-sized mining project

The land impact of an in-situ project is 10 to 15 percent the size of a similar mining operation, and no tailings ponds are produced.² As a result, site reclamation occurs more quickly and requires less remediation.

The lifespan of oil sands mining projects ranges from 40 to 80 years. Oil sands mining started in 1967, and while 1.04 km², or 0.40 sq. mi., of land disturbed by mining has been certified reclaimed by regulators, reclamation of tailings ponds and most disturbed land is just beginning, and will take many years.

Since 1967, 895 km² (346 sq. mi.) of land have been affected by mining activity – an area smaller than the area of New York City, London, or the Greater Toronto Area. Once mining is complete in these areas, all of the land will be reclaimed.



² Government of Alberta, September 2013