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The Oil Rush

## How high-tech prospectors are trying to squeeze fuel--and fat profits--out of the earth while transforming the petroleum market

By Marianne Lavelle

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Much as the storied forty-niners trekked west in their covered wagons to seek a golden future, today a small army of workers boards a fleet of jets each week in Edmonton, Canada, and ventures north into a frozen frontier rich with promise. These latter-day pioneers don't have campfires, but they do have camps--comfortable dormitories with Internet kiosks, catered steak dinners, fitness centers, and satellite TV in every room. The creature comforts come courtesy of Canadian Natural Resources Ltd., one of a dozen companies that have descended upon the wilds of Alberta. The company is spending a fortune to build an enormous workforce in the far north, but it's a pittance compared with the profit it expects to pull out of the frozen ground. As long as the high price of oil continues to fatten corporate coffers, the rush will be on for a black gold called oil sands.

The Canadian sands yield fossil fuels nearly identical to those hidden below the drifting sands of the Middle East. But this mother lode lies in a unique geological formation just 500 miles north of the U.S. border, and it won't surrender its treasure without a lot of labor, vast amounts of energy, and oceans of water. It costs more to wrest a barrel of oil from the ground here than virtually anywhere else in the world.

What's happening in Canada today may be just the start of a new chapter in the world's long love affair with oil. Global demand, particularly in China and India, is outstripping supply--an imbalance that has been painfully evident as pump prices climb toward \$3 a gallon (box, Page 50). Even the optimists agree that the era of "easy oil" is over. Political risk hovers over most conventional reserves, held by the Organization of Petroleum Exporting Countries (including trouble spots like Nigeria and Venezuela) and Russia. So the United States is turning to new possibilities--the largely untapped resource of "unconventional oil" in North America.

**Oh, Canada.** Three technologies promise to unlock much of these reserves. It has long been known that crude could be boiled from the oil sands of Canada or from the oil shale locked in the 16,000-square-mile Green River Formation in Colorado, Utah, and Wyoming. It has also been clear for decades that synthetic oil could be created from coal--the most abundant fuel resource in the United States. To attempt to slake the nation's seemingly insatiable thirst for oil with any of these would have been madness until recently because of their astronomical cost. Today, however, with the market barely blinking at \$70-a-barrel crude, high-tech prospecting doesn't seem quite so crazy.

Within a decade, all unconventional sources will account for some 35 percent of world oil supply, up from 10 percent in 1990, say oil consultants at Cambridge Energy Research Associates. Clearly, the biggest play in the unconventional reclamation game is in Canada. Oil sands production is over 1.2 million barrels per day, nearly double the output of four years ago. That has secured Canada's spot as No. 1 supplier to the No. 1 oil consumer, the United States, even though its conventional oil production is falling rapidly. Oil sands production (together with similar unconventional sources in Venezuela) will grow more than 170 percent by 2015, the Cambridge consultants say. By then, Canada anticipates rising from No. 8 to become the world's fifth-largest oil producer.