

Oil, Gas and Oil Sands Reserve Life



Noteworthy:

- In 2003, an estimated 7.6 years of conventional crude oil, 8.9 years of natural gas and 25.5 years of crude bitumen and synthetic crude oil from oil sands remained.
- Alberta's oil sands contain more economic reserves (300 billion barrels) of oil than Saudi Arabia (264 billion barrels).
- The ratio of "additions to reserves" to the "annual production from reserves" is a key indicator of future supply. Since 1985, production of conventional crude oil consistently outstripped new discoveries (a ratio of 0.59 from 1985 to 2003). In the case of natural gas, this ratio has averaged 0.71 since 1990; a ratio of 1.00 represents full replacement threshold.

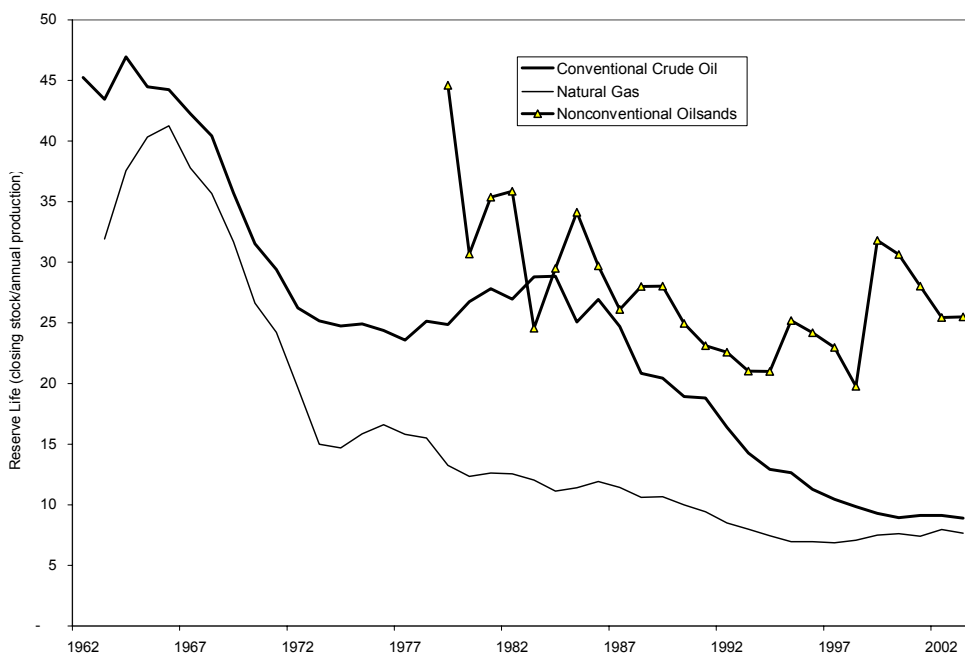
Oil, Gas and Oil Sands Reserve Life in Alberta: How Much?

Non-renewable energy resource capital (oil, natural gas, oil sands, coal) is Alberta's most important natural capital asset. The extraction of this non-renewable natural capital has provided Alberta with enormous financial wealth. But is the use of these resources sustainable? Are we investing enough in alternative renewable energy capacity? Based on data from the Canadian Association of Petroleum Producers and

Statistics Canada, the GPI energy accounts reveal that in 2003 roughly 7.6 years of conventional crude oil, 8.9 years of natural gas and 25.5 years of oil from oil sands remained if production and inventories remain unchanged. However the oil sands reserves (effectively a mine) will likely last for several decades. Massive expansion of Alberta's oil sands will provide long-term eco-

nomie benefits as long as global demand for oil continues. And while new reserves will be discovered, the historical trends suggest that we are still drawing down our most important resource: natural gas. Prudent management argues that Alberta should diversify its energy portfolio by building renewable energy capacity while oil and gas prices are high.

Alberta's Conventional Oil, Oil Sands and Natural Gas Reserve Life, 1961 to 2003

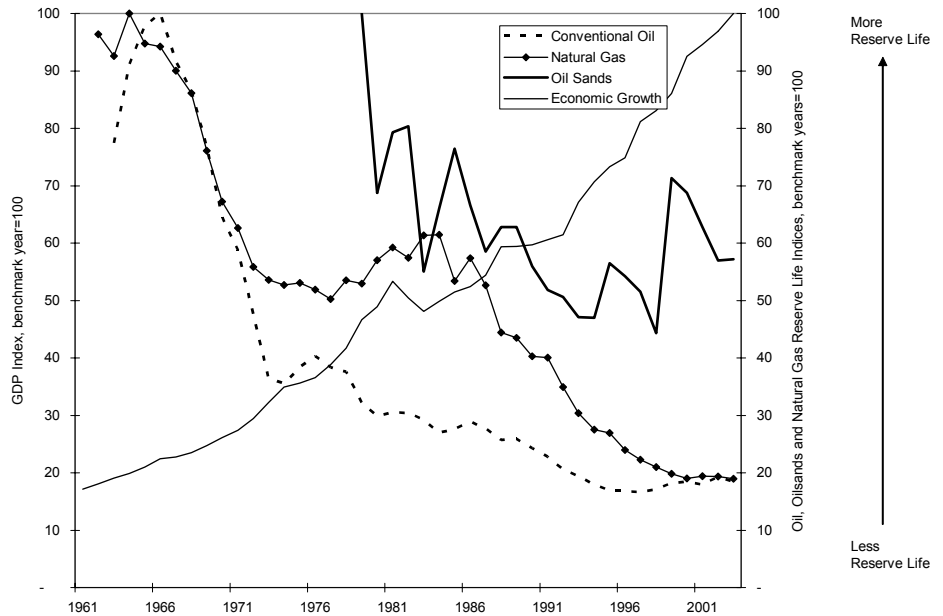


Source: Derived from data in the Canadian Association of Petroleum Producers Statistical Handbook.

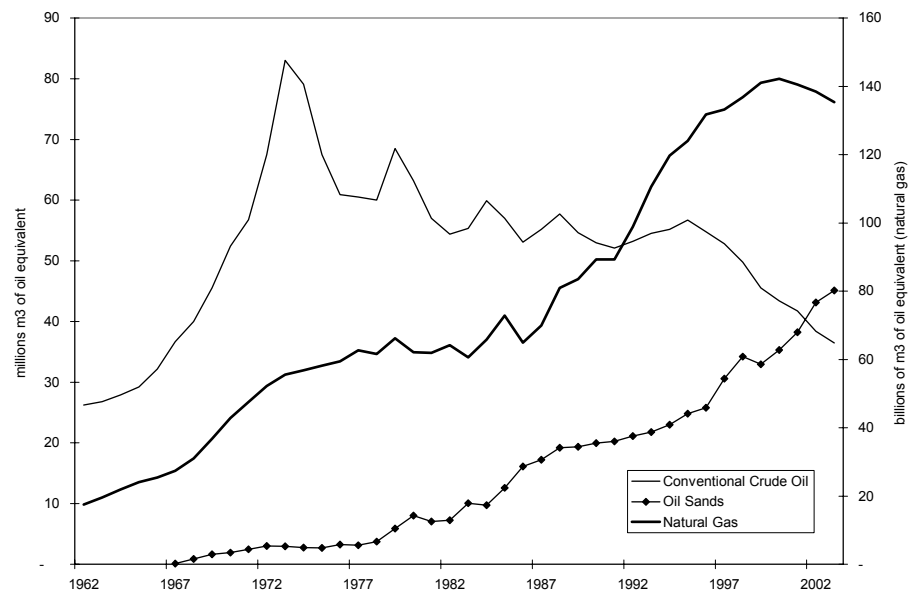
So What?

As the Gross Domestic Product (GDP) has grown exponentially in the past 40 years, and so too has the drawdown of Alberta's non-renewable natural capital. The figure to the right shows the decreasing reserve life of these nonrenewable resources. This is not surprising given the increase in production volumes since 1961 (see lower figure). Prudent accounting would treat the depreciation of a capital stock as a cost against income, yet the GDP treats resource depletion simply as a gross benefit. GPI Accounts, in contrast, consider both the condition (reserve life) of oil, oil sands, gas and coal capital as well as the depreciation cost associated with its liquidation. Liquidating natural capital for financial gains is not problematic *per se*, but Albertans should be conscious that reserves of natural gas and conventional crude oil are declining steadily. This important natural capital contributes significantly to Alberta Government revenues and provides energy security for Alberta and Canada. The soaring rates of production of natural gas relative to ratios of new discoveries suggest that natural gas reserves will continue to diminish, putting even more pressure on rising natural gas prices. While there will undoubtedly be new discoveries, new reserves tend to be smaller and more costly to find and extract. From an ecological point of view, increasing exploration, drilling and extraction activity will continue to come at a cost to ecological integrity of an already fragmented forest ecosystem.

Conventional Crude Oil, Oil Sands and Natural Gas Reserve Life Index: Where are we today?



Annual Production Volumes of Conventional Crude Oil, Oil Sands Bitumen and Natural Gas, 1961 to 2003



Source: Canadian Association of Petroleum Producers Statistical Handbook.

As indices out of 100, the conventional crude oil index scored 19.6, the natural gas index scored 19.8 and oilsands scored 79.1, where 100 is maximum reserve life for any of the three resources.

Since depletion of non-renewable natural capital should count as a depreciation cost, the estimated depreciation cost (based on economic rent calculations) in 2003 was \$21.9 billion, or 17% of Alberta's GDP.

