

Timber Sustainability



Noteworthy:

- Between 1961 and 2003, the volume of timber harvested increased by 484%—to 20 million cubic metres in 2003.
- Based on our estimated Timber Sustainability Index, Alberta went from a “surplus” of 4.7 in 1964 to a timber sustainability “deficit” of 0.83 in 2002 (in 2003, the index rebounded to 1.24). In other words, in some years more timber is being liquidated than is being replenished through natural growth and regeneration.
- The volume of timber harvested in relation to the Annual Allowable Cut (AAC) has gone from 19% in 1974 to as high as 95% in 1997; in 1997 the limit of allowable cut as defined by the Alberta Government was virtually maximized.
- If current harvesting, fire, and linear disturbance (oil, gas, roads, and other developments) continue, Alberta’s oldest trees will be gone in roughly 42 years and will have been converted to an industrial forest where timber capital is managed on a just-in-time inventory basis.

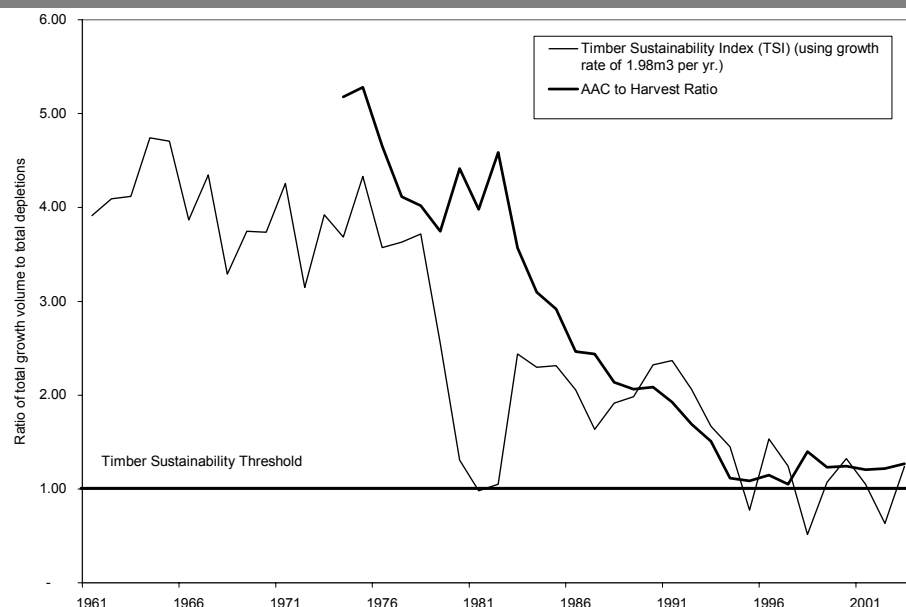
Timber Sustainability in Alberta: How Much?

Forests cover roughly 58% of Alberta’s 66.2-million hectare land base. Roughly 17.8 million hectares are suitable for industrial timber harvesting. Are Alberta’s forests sustainable? Two indicators, the Timber Sustainability Index (TSI) and the Annual Allowable Cut (ACC) reveal different stories. Using detailed forest resource accounting methods, we estimated a TSI, which is the ratio of annual growth of timber capital to total timber depletions from harvesting, fire, industrial land use and insects.

The TSI shows that in 1998 and 2002 total depletions exceeded annual growth of timber, implying unsustainable timber consumption. In contrast, the 2003 timber harvest was roughly 80% of the AAC—the amount of timber that professional foresters determine is harvestable on a sustained basis. Thus, while the TSI indicates that the rates of forest harvesting in select years exceed sustainable levels, (when the TSI is below 1.00) the AAC indicates that harvesting rates are within

sustainable levels. The risk to exceeding the AAC increases with natural catastrophes (fire, insects), oil and gas development, and timber harvest demands. Looking beyond simple timber capital, we also account for the integrity of forest ecosystems by assessing the degree of fragmentation due to dramatic increases in oil and gas development across the province. By 2003, roughly 8% of Alberta’s “productive” forests was estimated to be in an unfragmented condition.

Alberta Timber Sustainability Index (TSI) vs. Annual Allowable Cut (AAC) to Harvest Ratio, 1961 to 2003

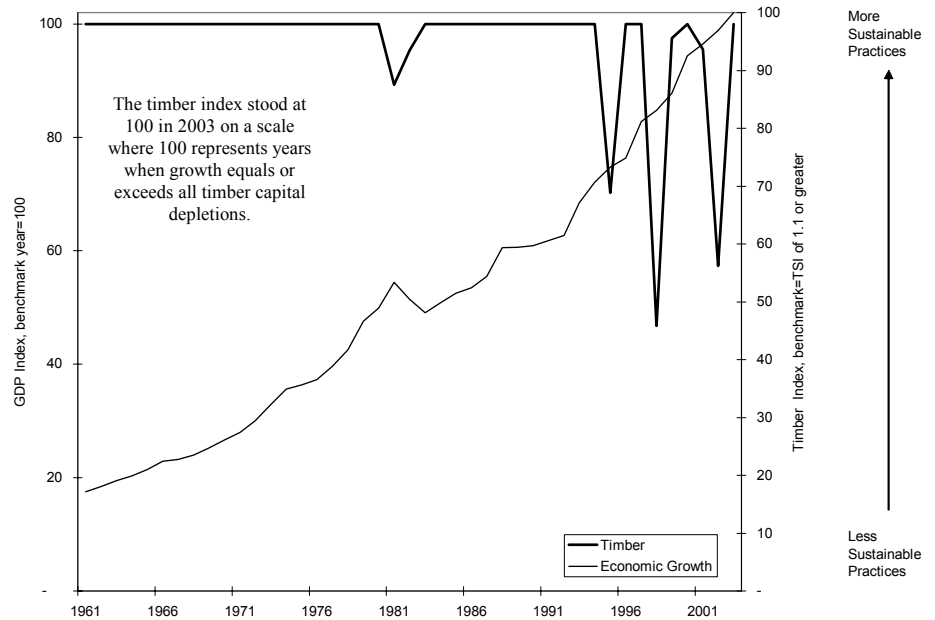


Source: Alberta GPI forest accounts using data from Alberta Environment and Statistics Canada

So What?

Sustainable stewardship of renewable resources means living off the interest of nature without eating into the capital stock. The GPI forest accounts show that both timber capital sustainability and forest ecosystem integrity (due to fragmentation) have been declining. While exceeding timber capital sustainability may not be of immediate concern to the forest industry—which can adapt to changing market demands and resource scarcity—there is a more fundamental question of the long-term ecological and economic impacts of loss of ecosystem integrity. Forests are complex systems that provide multiple benefits and services. Our timber accounts show that for some years Alberta appears to be living beyond the interest of nature’s capital when considering the cumulative impacts of harvesting, industrial development and natural impacts (fire and insects). These conditions and trends may not be problematic for industrial foresters whose goal may be to move towards an even-aged forest management regime. However, to some ecologists the fragmentation of the forest, loss of species diversity and effective wildlife habitat as well as the liquidation of old-growth trees is seen as a real threat to ecological health. Our Timber Sustainability Index (TSI) shows that timber sustainability was violated in 1995, 1998 and 2002 even as the Gross Domestic Product (GDP) continued to increase. Despite expansion of Alberta’s forest industry, economic returns, in terms of forest industry GDP per tree harvested, have remained virtually unchanged over 30 years of development (see figure). Direct employment per cubic metre of timber harvested has declined from 2.4 jobs per 1,000 cubic metre harvested in 1967 to 0.84 jobs per 1,000 cubic metres in 1999.

Timber Sustainability Index: Where are we today?



Alberta Forestry GDP per Cubic Metre of Wood Harvested, 1971 to 2003



While putting a price tag on the cost of unsustainable timber consumption is difficult, we estimate: a) cost of non-timber values due to loss of productive forest land to be \$16 million in 2003, and b) the cost of unsustainable timber capital depletion in terms of pulp production values at \$13 million in 2003. Thus, the total cost was an estimated \$29 million in 2003.

