

Project Statement

BC Coastal Forest Sector Development Initiative

Program	Resource Characteristics
Project Title	Provide Strategic and Operational Tools to Assess Economic Operability of BC Coastal Landscapes and Harvest Areas
Project Number	R.06
Project Leader	Mihai Pavel
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Start Date	December 1, 2008
Completion Date	March 31, 2011

Rationale:

There is a need to develop analytical methods and tools for assessing and maximizing the value of hemlock/fir stands harvested on the coast of British Columbia. To achieve this goal, first, an adequate spatial and temporal identification and description of existing coastal timber resources is needed. Next, this description must be matched with existing and future products to be manufactured from these stands. Finally, decision-support tools must be developed and implemented to help planners maximize economic margins from forest operations in these stand types.

The decision-support tools to be developed in this project will be used in conjunction with timber supply and value chain models to maximize the value of fiber available (linked to projects H.03, H.04, H.08, and R.04). An operational planning model will aim at increasing the economic margins of management activities over the short term.

In considering what different future opportunities may exist for the Coast forest industry, it is critical to understand what kind of timber product might be most economically profitable under the possible range of market outlooks. This project will therefore also develop a strategic decision support tool. The potential of different policies to encourage management practices that will allow taking advantage of market opportunities in the long term will be analyzed.

Key Objectives:

- Provide a tool for spatial description of timber resources on Coastal BC. Stands will be ranked first by the value of standing timber only (using existing MoFR alphanumeric grades). The decision-support tool will produce maps to code/represent the distribution of stands and their “gross” statutory value.
- Analyze the value of stands with respect to existing and potential products to be manufactured. Also, incorporate the costs incurred during the harvesting process (road construction, harvesting, hauling, sorting, towing and barging) to produce a “net value” map.
- Conduct a temporal analysis: scheduling of stands to be cut over the planning horizon according to various (user-specified) market conditions.
- Develop, test and refine a decision-support tool for forest planners to help implement the resulting harvesting plans.
- Provide a range of potential market outlooks for different wood products already produced on the coast (e.g. cedar, hemlock and fir) and products not yet produced (e.g. bioenergy).
- Develop, test and refine a decision-support tool for government and higher-level decision maker to help simulate the effect of different policies on the economics of timber supply on the coast given these outlooks.

Project Methodology:

- Evaluate types of inputs and outputs available. The analysis starts at the level of forest cover polygons. Depending on the type of data available and the level of detail desired, one of two approaches are feasible:
 1. If only general data are available (for each polygon), utilisation of averages may be the only option. However, this would greatly reduce the accuracy of predictions that could be made.
 2. If detailed inventory data (e.g., operational cruise data) or data from adjacent/similar stand are available, then the analyses should use diameter-class distributions by species and the quality descriptors identified in specific polygons.
- Review the existing literature and technology available on valuing standing forests, and evaluate their applicability to Coastal BC (recognizing, however, that it is unlikely any existing tools will adequately address the specific circumstances of BC coastal forests).
- Identify the market-related inputs that will drive the analysis as these are key factors in defining the products to be obtained during primary in-woods processing.
- Develop the model algorithms and analysis sequences for stratifying stands according to their value.
- Assemble, test, refine and validate the operational model using data from planned pilot studies.
- Provide tools for implementing the results of analyses such as guidelines and utilities for fallers, buckers and processor operators.
- Identify if other site/stand/tree data that could be, but is not currently, collected, would improve the overall quality and/or efficiency of the operational model.
- Determine the impact of external constraints (e.g., land use policy) on the analysis results. These constraints may require, for example, that certain areas of some ecosystems be preserved, or that certain age distributions of stands be maintained.
- Review the existing literature and the current market trade to assess the nature and marketability of timber products on the coast. This will include currently generated and potential products, current market conditions and trends.
- Assemble, debug and validate the strategic model using outputs from the operational model and current market conditions.
- Analyse the potential of different policies to impact the revenues that could be generated by forest management activities.

Project Milestones:

Activities	Planned Completion Date
Develop a detailed study plan.	January 2008
Analyze the types of inputs and outputs available. Obtain and analyze samples of input and output data. In parallel, conduct a literature review and analyze other products available world-wide.	March 2008
Review of literature concerning market outlooks for BC coast timber products.	March 2009
Build and refine a prototype operational planning tool for calculating gross and net stand value. Concurrently, investigate alternative operational planning tools available for data analysis and conduct preliminary assessments with respect to their compatibility to the coastal situation. Analyze the other models developed in the Coastal Initiative and investigate methods for integrating them. Build the strategic timber supply model and start calibrating it.	March 2009
Conduct trials and provide preliminary results to calibrate the operational planning tool. Perform “what-if” analyses (e.g., what other types of data would improve the quality of results).	March 2010
Benchmark the strategic model with the output of the operational model. Conduct “what-if” analyses for a range of market outlooks and policy sets.	March 2010
Refine the analyses and report the results. Finalize and implement the decision-support tool.	March 2011

Key Deliverables:

- The product of this project will be a decision-support tool that will help forest planners to quickly analyze alternative harvesting scenarios and to identify the options that optimize overall revenues by integrating operational and market constraints into their analyses.
- The project will further provide a strategic decision support tool for higher-level managers and government to assess the potential impact of different policies on a) long term economic situations and b) potential states of the forest under those conditions.

Expected Long-term Outcomes:

- In the long term, the decision-support tool developed through this project will improve the economics of harvest operations on Coastal BC by increasing the average value of stands selected for harvest based on current market conditions and opportunities. The tools developed from this project will also enable industry and government to quickly estimate the potential economic impacts of planned or proposed changes to existing forest policy. The goal of this project is to improve the average margin on the coastal hemlock/fir resource by 20%.

Potential Impact:

- The hemlock/fir resource accounts for about 67%, or about 13 million m³, of the coastal AAC. At an average weighted value of \$75/m³ for hem-fir stands, a 20% increase in margin represents a potential increase in revenues of more than \$200 million per year for the coastal forest sector.

Collaboration:

- British Columbia Ministry of Forests and Range and coastal forest industry will be consulted to identify the type of inputs available and outputs and desired.

- Other Canadian and international researchers and forest companies that have conducted similar research.
- Researchers from within the four FPInnovations divisions to provide details on the type of data that can be “fed-back” into the system, to help define the type of products to be manufactured from standing timber.
- Researchers from University of British Columbia Faculty of Forestry to develop and validate the strategic model.