

Operational Report

by

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Project Title: The Economics of Triad Forest Zoning

Abstract:

Because of its vast forest resources, Canadian and U.S. forest policy through much of the 20th Century addressed environmental concerns by enlarging the area of forestland set aside as parks and wilderness area, and managing remaining forestland for multiple uses (integrated management). Inevitably demand for environmental services from forest ecosystems came into conflict with the ability of forests to supply society's wood fiber needs. Towards the end of the 1900s, it was apparent that the production possibilities frontier had been reached, even in Canada where the forest resources seemed endless in their bounty. As a result, policymakers need to design better governance structures for dealing with conflicts among competing uses, or find ways to increase production possibilities – to harvest more from less land. One suggestion is to reallocate existing forestland that is currently under integrated management (and increased pressure) into three zones: an ecological reserve (in addition to existing reserves such as parks) and an intensive timber production zone are to be created, with remaining land to continue to be managed for multiple uses (integrated management). This is known as Triad zoning.

By relaxing environmental regulations and intensifying silviculture in special zones dedicated to timber production, Triad forest zoning could potentially be a mechanism for pushing out the forest possibilities frontier – for increasing wood fiber supply and environmental services simultaneously. In this study, therefore, timber supply and provision of environmental amenities under traditional integrated forest management are compared with what they would be under a Triad zoning scheme. A bioeconomic model is developed and solved as a mixed-integer linear program. Sensitivity analysis is used to investigate the conditions under which the Triad regime can offset the impact on timber production from increased environmental demands. Using data from the central Coast of

British Columbia, the results indicate that higher environmental demands may be satisfied under the Triad regime without increasing the financial burdens on the industry or reducing its wood supply. This occurs, however, only if regulatory constraints in timber production zone are sufficiently lax, an outcome that may not be acceptable.

Keywords: Forest policy and management; economics of triad zoning

Activities, Results, and Outputs:

Activities:

The research undertaken on the project consisted of four distinct sets of activities:

1. data collection that included on-site visits with government and industry;
2. literature compilation and review;
3. model construction; and
4. analysis.

The following visits were carried out.

1. Two trips were made to government offices in Victoria to discuss potential locations for applying the model and to collect data. In the end, incompatibility between computer operating systems and the sheer size of the GIS data files, as well as the short time horizon available for the project and the fact that the Ministry of Forests was in the process of moving and restructuring, prevented us from pursuing this avenue further. However, this is something that we would like to do in the future.
2. Some three trips were made to Weyerhaeuser offices in Nanaimo, and company officials also traveled to Vancouver to meet with researchers on the project. As a result of an ongoing working relationship with Weyerhaeuser, the PI approached company officials about the possibility of using one of their management units as a case study. Given their enthusiasm for this endeavor and the ensuing problems with Ministry of Forests data, it was decided to work with Weyerhaeuser. Their cooperation in providing GIS data and, in particular, aiding us in converting the data for use in our models is greatly appreciated. We hope to continue working with the Company on this research in

the future since the current time frame was inadequate to incorporate many of the nuances of the study region into the model. Further research in this regard is required.

We conducted an extensive literature compilation and review. This was used to construct the bioeconomic model and convert it into a mixed-integer, linear programming framework.

Results:

Triad zoning can be used to increase production possibilities – to increase timber supply and address increasing environmental demands. However, the silvicultural investments required may be onerous, while the relaxing of regulatory constraints in the intensive timber production zone may be unacceptable.

Outputs

We have prepared a final report on the project (attached).

Evaluation

Despite the problems noted above, we have been generally successful in achieving the milestones and deliverables we identified. The major obstacle to our research has been data availability. While our preference would have been to have several case studies from around the Province, data collection and its reconfiguration precluded this. The time frame for this research was simply too short. Given this constraint, we are satisfied that we were able to accomplish what we did.

Assessment of Applicability of Results

We believe that this is important research. Given that British Columbia faces a constraint on forestland available for provision of economic development, timber and environmental services, a constraint that previously could be ignored, it is important to determine whether timber production can be maintained or increased by concentrating it on a smaller land base, and at what cost. This study is the first to investigate this important aspect of forest policy.

Identification of Contribution

As noted, this study is the first to investigate whether Triad forest zoning can be used to offset the loss in timber supply from increased demand for environmental services from forests, and at what cost. We address the important question: Can Triad zoning be used to increase production possibilities and, if so, at what cost? Answers to this question are important for the design of forest policy.

Key Operational Variances

We were able to accomplish most of what we wanted to do. However, we found that, because of data problems, management of the project took a much greater amount of resources than initially anticipated.