ABSTRACT

The Forest and Range Practices act was introduced in 2004 as a new framework for the forest industry in British Columbia. The act was a response to industry’s push for regulatory reform which addressed the overly prescriptive state of the industry prior. The new legislation pledged to encourage innovation and creativity among forest professionals allowing for individuality to be expressed in presented plans while satisfying overarching government objectives through achieved results. In 2011 a study was carried out which examined the capacity to which the new act was inspiring creativity through the evaluation of forest stewardship plans (FSP) and found limited demonstration of innovation. This study evaluating the second round of FSP submissions effectively eliminated the place of blame on time-sensitivity due to policy adoption lag and the state of the economy as excuses and thereby allows for a justified review of the use of the results based regime and its limitations in the context of forest policy. Other factors that have come to light which require addressing include the influence of district manager approval, risk and liability, public perception and cost and complexity of regulation.

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1.0 – Introduction

1.1 – Introduction to FRPA and the Results Based Framework

The Forest and Range Practices act was introduced as a means of guiding BC’s forest industry into sustainable management. The prior legislation – The Forest Practices Code, was deemed to have considerable government oversight with approval required for an extensive network of plans, as a means of building a reputation of responsible forest management with the public (BC, 2002). The introduction of FRPA was expected to resolve the unintended consequences of the FPC, effectively addressing the failure to produce confidence in environmental management, among other issues (BC, 2002). Upon its introduction in 2004, BC’s premier Gordon Campbell claimed to have “emphasized the importance of economic development and restoring a vibrant economy,” but refused to support such an achievement “at the expense of a sustainable environment (BC, 2002).” The new legislation was a response to dissatisfaction with the prior regulation allowing for more flexibility in commitments while avoiding deregulation of the industry.

![Figure 1](image_url) Shifts in the legal framework from the FPC to FRPA (BC, 2002).

Under the results based regime, broad ideals are set by the government and it is expected in return that industry professionals will produce strategies that demonstrate innovation and creativity in achieving on-the-ground results that satisfy those objectives (MOF, 2002). FRPA encourages forest practices that balance economic and environmental benefits by emphasizing its values for soils, timber, water, fish, wildlife, biodiversity and cultural heritage (BC Forest, 2006).
Industry is then liable in adhering to the commitments that they have laid out in their forest stewardship plans (FSPs) in respect to FRPA’s established values.

In addition to permit approval and auditing for compliance, the Ministry of Forests is responsible for monitoring the sufficiency of the legislation in achieving stated objectives while reporting on indicators of sustainable forest management (BC, 2002). Further, a delegated decision maker is present within each district, holding the responsibility for reviewing submissions; approving plans or stipulating amendments and processes required beforehand. Idealistically, objectives set by the government provide the basis for industry to set and satisfy measurable targets that justify a defense to public proponents of environmentally sound forest practices.

In 2011 the success of the results based code as an instrument for sustainable forest policy in BC was tested. Proposed and approved strategies that forest professionals had committed to for the first five year term under the regulation, in attempts of achieving government stated objectives were evaluated on a scale of perceived innovation. The results deemed that 78% of practices qualified as accepting default standards; practices required by the FPPR barring professionally developed alternative techniques. 10% of practices were considered to be innovative as defined within the context of the study, which entails deviating from the “benchmark” practices that are established under legislation. These results illustrate the dominance of reliance on compulsory commitments that must be adopted in the absence of proposed alternative practices (Malkinson, 2011).

In addition to default practices being considered sufficient in achieving FRPA goals, the timing of the study held a significant weight on the results. The recession prevented measures being taken that may have had the potential to exacerbate economic deficiencies and is considered to have had an indirect influence via plan approval and profitability assurance. The state of the economy during the legislative reform along with adoptive time-lag were figured to be compounding factors limiting the conclusions of the study. Further data collection which eliminates the potential for a time-sensitive bias is required. The time allowance provided between FSP submissions would predictably ensure adequate adoption of the new framework while allowing for modest recovery from the economic recession. Limiting the distribution of fault to social and economic excuses will allow for a fair analysis of the model’s efficiency and will reflect the success of its adoption into the industry.

1.2 – Basis for Current Study

The legislation requires that FSPs be resubmitted every 5 years. It is predicted that forest professionals will have taken greater steps towards developing innovative practices with their second FSP submission than when they were creating their first plans under the new legislation. It is expected that a greater percent of practices will fall within the categories delineated as innovative thereby demonstrating
participation and acceptance of the results based regime; ensuring its endurance as a policy tool towards the concept of sustainable forest management. Reviewing later submissions highlights whether the lack of innovation during the first round of evaluation was due to insufficient time having elapsed to allow implementation or whether the new policy is inefficient in achieving its desired goals. Other factors that have been identified as being considered to dampen the capacity for innovation include the necessity for ensured approval of FSPs that is effectively guaranteed by deferring to defaults, economic considerations, perceptions of risk and liability, and public participation.

2.0 – Methodology

In order to draw a sound comparison with the data that was found in 2011, methodology has been kept consistent with the original study. Using a list of the originally reviewed FSPs, each was evaluated in order to determine their current status. Those that had expired without resubmission were removed from the list. Out of the originally reviewed 65 FSPs, 49 were still in effect.

To make practice commitment changes, tenure holders have amended the FSPs that have been submitted and approved in RESULTS (Reporting Silviculture Updates and Land status Tracking System). All data was viewable through the FSP tracking system, accessible through the RESULTS website. For each plan, all amendments and resubmitted plans were reviewed for changes relevant to the study parameters between March 15, 2007, the cutoff date from the original study, and their respective dates of effective FSP extension approval.

The 49 FSPs were reviewed for their practice commitments to 13 of the FRPA values (Table 1). The following scale was used to rate each individual practice commitment:

1. Default Practice
2. Default Practice With Minor Modification
3. Land Use Plan
4. Alternative Practice
5. Other

Table 1. Summary of main requirements outlined in the FPPR, this list is not exhaustive and does not include exceptions (BC Laws, 2014).

<table>
<thead>
<tr>
<th>Section</th>
<th>Value</th>
<th>FPPR Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>Soil Disturbance Limits</td>
<td>Do not exceed 10% of area covered by standard unit, 5% if predominately sensitive soils</td>
</tr>
<tr>
<td>36</td>
<td>Permanent Access Structure Limits</td>
<td>Do not exceed 7% of cutblock unless there is no other practicable option</td>
</tr>
<tr>
<td>47</td>
<td>Stream Riparian Classes</td>
<td>RMA, RRZ and RMZ width in meters for each stream riparian class as defined within the FPPR</td>
</tr>
<tr>
<td>48</td>
<td>Wetland Riparian Classes</td>
<td>RMA, RRZ and RMZ width in meters for each</td>
</tr>
</tbody>
</table>
A commitment would be valued as default when the FSP claimed compliance with the FPPR while other practice commitments, including land use plan objectives, were absent from the strategy outline.

Minor modifications were found to be optional increases to compulsory commitments laid out in the FPPR guidelines, for example: increased WTR percentages.

The land use plan category was assigned in areas where the tenure boundary fell within an area where overarching legally binding objectives apply. If a tenure holder committed to non-compulsory LRMP stated objectives, it would be rated as an alternative practice as the option to adopt the default practice is still present; such a situation was considered representative of deviation from required government practices. All referenced land use plans were checked for legality (*Plan Related Legal Direction*).

Alternative practices were reasoned to be methods which are unreferenced in the FPPR and represent creativity or innovation in practices. “Other” was used only when there was no reference found to the section in the FSP or it was stated that the parameter was irrelevant for the tenure area.

The data were then analyzed for any changes to practice commitments since the original study conducted in 2011 (Malkinson, 2011).
<table>
<thead>
<tr>
<th>FSP #</th>
<th>Name</th>
<th>2011 Commitment</th>
<th>2011 Scale Rating</th>
<th>2015 Commitment</th>
<th>2015 Scale Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>47</td>
<td>City of Prince George</td>
<td>S.64 “…the agreement holder adopts as a result/strategy section 64 and 65 of the FPPR…” (Prince George, 2006)</td>
<td>1</td>
<td>S. 64 “…if the agreement holder harvests timber in a cutblock where the wildland interface fire hazard is high or very high, the holder may exceed the 60 ha maximum cutblock size (Prince George, 2011).”</td>
<td>2</td>
</tr>
</tbody>
</table>

**Figure 2.** Exemplifies commitment rating change from FSP #47.

### 3.0 – Results

There was found to be a total decrease in default practices by 4%, 2% of which was distributed to an increase in commitments to recently implemented compulsory objectives from land use plans (Figure 3). The remaining 2% was distributed to an increase in commitments to alternative practices. The 0.6% falling in the ‘other’ category was accounted for in the original study with no change in frequency, but was not displayed in the original graph. This category encompasses the claim that section 53 is irrelevant to the area – “there are no temperature sensitive streams within the tenure boundary.”

![Figure 3. Distribution of practice commitments for 2011 and 2015 results.](image)

Few FSPs have outlined commitments diverging from the default practices set out in the Forest Planning and Practices Regulation (FPPR). Only 16 of the 49 studied FSPs had made changes to the observed values since the original study; 8 of which were mandatory due to the implementation of ministerial orders for given land use plans and 1 of which had recourse to default practices. The tenure holders who have made changes to their FSPs have each only done so for 1-2 values. The difference in value
commitment distribution for each of the studied values by percentage of FSPs is given in Figure 4.

The only section with visible change in value commitment distribution is section 66: Wildlife Tree Retention, under which four plans have demonstrated change in commitment (1 increased to minor modification, 3 plans committed to land use planning commitments which were required and 1 plan increased to alternative practice standards).

![Figure 4. Time dependent value commitment distribution by FPPR section from 2011 and 2015 results, respectively.](image)

A contingency table was created and a chi-square test was performed to determine whether there is a statistically significant relationship between year and value rating count for each FPPR section. The Bonferonni method was used to obtain the adjusted alpha level of 0.003846.

The following hypotheses prefaced the data analysis –

- **H₀**: The five percents (as a vector) for 2011 are the same as the five percents for 2015.
- **H₁**: They are not the same.
The results failed to reject the null hypothesis, giving no evidentiary support that the percentages from the 2011 study and the 2015 study differ for all of the studied values, thereby implying that there exists another barrier to increasing ‘alternative practice’ commitment frequency aside from time dependency. The chi-square values and probabilities are given below in table 2.

<table>
<thead>
<tr>
<th>Section</th>
<th>$\chi^2$</th>
<th>Probability</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>0.0992</td>
<td>0.9516</td>
<td>Fail to reject $H_o$</td>
</tr>
<tr>
<td>36</td>
<td></td>
<td></td>
<td>Fail to reject $H_o$</td>
</tr>
<tr>
<td>47</td>
<td>1.3568</td>
<td>0.5074</td>
<td>Fail to reject $H_o$</td>
</tr>
<tr>
<td>48</td>
<td>0.5173</td>
<td>0.7721</td>
<td>Fail to reject $H_o$</td>
</tr>
<tr>
<td>49</td>
<td>0.8381</td>
<td>0.8403</td>
<td>Fail to reject $H_o$</td>
</tr>
<tr>
<td>50</td>
<td>0.0951</td>
<td>0.9536</td>
<td>Fail to reject $H_o$</td>
</tr>
<tr>
<td>51</td>
<td>5.7880</td>
<td>0.5074</td>
<td>Fail to reject $H_o$</td>
</tr>
<tr>
<td>52.2</td>
<td>7.0695</td>
<td>0.0697</td>
<td>Fail to reject $H_o$</td>
</tr>
<tr>
<td>53</td>
<td>4.8639</td>
<td>0.0879</td>
<td>Fail to reject $H_o$</td>
</tr>
<tr>
<td>64</td>
<td>0.0796</td>
<td>0.9942</td>
<td>Fail to reject $H_o$</td>
</tr>
<tr>
<td>65</td>
<td>0.0922</td>
<td>0.9928</td>
<td>Fail to reject $H_o$</td>
</tr>
<tr>
<td>66</td>
<td>7.1455</td>
<td>0.0674</td>
<td>Fail to reject $H_o$</td>
</tr>
<tr>
<td>67</td>
<td>0.8049</td>
<td>0.8483</td>
<td>Fail to reject $H_o$</td>
</tr>
</tbody>
</table>

4.0 – Discussion

4.1 – Explanation of Observed Changes

While none of the categories were found to have statistically significant shifts in frequency, there were minor percentage increases in both land use planning commitments and alternative practices by 2% each (Figure 2). The increased commitments to land use plan standards are compulsory and therefore are not indicative of innovative deviation on behalf of forest professionals. When considering this study is emphasizing the importance of innovation and creativity due to the demand for increased flexibility among forest policy legislation – data allocated to this category should be considered default. The Ministerial Order of the South and Central Coast as well as the order for the North and Central Coast had a cumulative effect on 6 FSPs forcing commitment standards to change. Two FSPs recently committed to objectives set out in the non-compulsory Kalum Sustainable Resource Management Plan (SRMP) that was implemented in 2006, thereby accounting for the increase in ‘Alternative Practice’ commitments.

The following land use plans and ministerial orders were found to have an impact on the data since the 2011 study:

1. Okanagan Shuswap Land and Resource Management Plan – The orders enforcing this plan only did so for non-relevant components to this study. As
such, commitments made in reference to this plan’s objectives for the 13 studied values were considered “alternative.”

2. Ministerial Order of the South and Central Coast – of the five plans studied that were affected by this order, three already had alternative practice commitments that were considered over the compulsory parameters of the order. The increase in LUP for s. 52.2 is partly attributable to this plan as even those with more alternative commitments across the board had previously made default commitments in this section. The necessity to “retain 90% of functional riparian forest in a management zone with an average width of 1.5 times the height of dominant trees” bumped previous commitments from a 1 to a 3. This plan became effective in July 2007 and represents a good proportion of the changes to ‘Land Use Plan’ status since the original study.

3. Ministerial Order of the North and Central Coast – Objectives similar to SCC order.

4. Kalum Sustainable Resource Management Plan – any commitments made to this plan were non-compulsory and so changes with reference to the Kalum SRMP were considered “Alternative.”

A point worthy of consideration is the fact that while there appears to be only a 2% increase in commitments to alternative practices, this percentage is depressed by the FSP that was found to set recourse to default practices from previously alternative and minor modification standing. However, as the 16 plans that were no longer in effect were primarily non-renewable forest licenses, it would be expected that the holders of these short term plans would have less motivation to innovate; with their removal a smaller percentage of default practices would be expected.

4.2 – Factors Limiting Change

In response to the results found in 2011 (ie. 10% alternative practices), professionals were surveyed and asked what they perceived were the biggest barriers to the successful implementation of FRPA. The following list is a revision of the elements originally considered to be limiting the capacity for change:

1. Timeliness
2. District Manager Approval
3. Perceptions of Risk and Liability
4. Public Perception
5. Economic Factors
6. Capacity for Research and Development

4.2.1 – Timeliness
It had previously been suspected that the primary contributing factor to the absence of alternative practices and predominant reliance on defaults was due in part to the timing of the research (Hoberg & Malkinson, 2013). It was expected that with adequate time allowance for adoption of the FRPA paradigm shift and an open opportunity to instigate change on an individual basis via the requirement to periodically resubmit FSPs, that there would be a substantial increase in the amount of tenure holders committing to alternative practices. The results of this study support the conclusion that lack in innovation detailed in FSPs is due to factors alternative to a time delay in sufficient policy practice adoption.

The results of the 2011 study found that only 10% of forest practice commitments were defined as ‘Alternative Practices.’ It was expected that forest professionals would have made a greater effort to increase this percentage when making commitments for another five-year period but this was not the case. A survey conducted in the original study found that forest professionals felt that the pressure to get their FSPs approved had a nullifying effect contrasting efforts towards developing alternative techniques; it is possible that this mindset has carried forward towards the second round of FSP submission (Hoberg & Malkinson, 2013).

Roger’s ‘theory of diffusion’ was identified in anticipation of moderate change in practice commitments, as the influence that successful alternative techniques carried out in the first round held over those in subsequent rounds (Hoberg & Malkinson, 2013). Speculated outcomes that Roger’s theory held true in the context of this study were unsupported by the results.

4.2.2 - DDM Influence, Risk and Liability & Public Perception

There exists a composition of principles to the legal framework which guides the results based code. Readers’ paper outlining these principles instructs that “the law is not a substitute for a commitment to stewardship” iterating that plan approval rests on compliance with government established “benchmarks” – default standards, but should demonstrate creativity and innovation to the extent practicable within those legal standards (Reader, 2001). Reader further dictates that with more regulations placed on forest management decisions, government accountability for outcomes follows suit. Correspondingly, with freedom for management decisions comes liability for the consequences of those decisions (Reader, 2001). As forest professionals gained the right to establish their own practices and meet objectives on their own agenda, they also gained responsibility given the success or failure of those decisions. While limited innovation in 2011 was partially attributed to the downturn of the economy during the study period – leaving little room for performance mistakes that might restrict profitability, such as fines for non-compliance and disapproved plans, the current economic state of the industry now places doubt on the viability of this excuse.
Foresters need only resubmit their originally approved plans with a letter of rationale to the district manager justifying a five-year extension. More often than not, this letter of rationale claimed that no changes were necessary as there were no significant alterations to the respective land base since the original submission. The DDM in turn has the capacity to ask professional foresters to amend their commitments prior to approval. Barring a request for proof of First Nations consultations and changes to Old Growth Management Area (OGMA) commitments, this power has seldom been exercised. It must be considered that when such broad ideals are applied over a large land base, ecological variability will create an inconsistency in appropriate measures thereby making it difficult to “ensure that results and strategies are [consistent] with government objectives” and may produce complications for the quantification of efforts that are being made on behalf of industry (FPB, 2014). However, given the presence of appointed managers within given districts, it is expected that the range of variability and therefore the uncertainty in appropriate practice approaches falling under each jurisdiction, would narrow.

Amendments totaled 439 for the period of interest, 16 of which were pertinent to this study. The remainder of amendments provided no indication or reference to changes in practices, but rather documented public consultation for tenure boundary changes and other administrative and technical responsibilities. In the event that alternatives are proposed, the DDM must consider risk in approving experimental practices, as they are liable to public perception and acceptance of the FRPA regime (Hoberg & Malkinson, 2013). A greater expectation has been placed on the public for their review and formal comment in response to produced FSPs applying for a five-year extension (FPB, 2006). While FSPs are made publicly available for comment for 60 days following their production and prior to DDM approval, there was rare reference to points of contention vocalized by public participants.

A study review was conducted by the Forest Practices Board evaluating the effectiveness of the objectives set out in the FPPR rating them as ‘fair’ (on a scale of good/fair/poor) on the recommendation that “district managers should, as required by FRPA, ensure that results and strategies are both consistent with government objectives, as well as, measurable and verifiable (FPB, 2014).”

4.2.3 - Costs, R&D and Complexity

The requirement for research and evidence supporting the effectiveness of alternative practices has been identified as a key factor in the perceived innovation in forest practices. Not only is it vital for approval on behalf of DDMs but also in persuading efforts on behalf of forest professionals. However, the costs of research and monitoring new ideas for practices have the capacity to be perceived as greater than the potential benefits produced through the adoption of alternative practices (Hoberg & Malkinson, 2013). Budgets and allocated personnel are considered to be
a major component to the dedication to forest management and stewardship by 
governing bodies and industry. Considering that there has been a 56% cut in 
funding for renewable resource ministries between 1998 and 2011, it has been 
proposed that "government and industry are not devoting the level of funding and 
estaffing to renewable resource management" that is required to meet laws and non-
statutory initiatives (Archibald et al. 2014).

Archibald et al. illustrate concern "about the viability of the results-based 
management model" and state that "with diminishing resources, increasing 
complexity [of responsibilities], dated inventories, and declining numbers of 
foresters and biologists, [the] model is at risk of failure (2014)." The 2014 review by 
the Forest Practices Board included the following in their advisements to amend 
FRPA in regards to objectives set out in the FPPR:

1. “Government should complete the full-suite of legal designations and 
objectives necessary to ensure the proper functioning of FRPA, and 
ensure there is an efficient process for updating objectives when 
necessary.

2. Government should clearly articulate the status of objectives in plans 
that do not have legal standing and may be outdated. This could be 
done formally in some cases, or reflected in the documented and 
public rationales of licensee and government decision-makers as and 
when decisions are made.

3. Government should establish a single, publicly-accessible website that 
sets out all government objectives under FRPA."

The growing complexity depicted by Archibald et al. can be appreciated when taking 
to account that FRPA is only the latest development in forest policy and that 
legislative requirements stemming from multiple ministries and governing bodies 
with variation in legality also require consideration and compliance. It has further 
been demonstrated that the increasing number of responsibilities given the growing 
complexity of legislature is directly proportional to the required technical and 
trained personnel. However, there has been a rapidly fluctuating employment rate 
in the resource ministry, and it has been found that an all-time high currently exists 
in amount of responsibilities, diverging considerably from the associated budget 
available for staffing and research in this field (Archibald et al., 2014).
Archibald et al. conclude that these trends would be of much less concern given proven compliance and appropriate participation meeting legislative expectations under the results based management regime (2014). They further explain how “the research capacity within the ministries of forest and environment has been severely reduced, during a time when a better understanding is clearly needed to address issues such as the mitigation or management of both climate change and cumulative development impacts on the provincial land base. These research programs were once key contributors to the credibility and public acceptance of the province’s management approach to forests, fish, wildlife and parks (Archibald et al. 2014).”

4.3 – Indication of the Effectiveness of the Results Based Framework

The results based regime under FRPA was initiated in 2004 – 10 years prior to this study. The lack in indication of innovation in forest practices derived from the results of studies conducted over this time frame provides a basis for doubt as to the effectiveness of this framework in achieving its goals. Either industry is not taking advantage of the flexibility that is supposed to be represented under FRPA or the perception that they will not acquire approval due to past performance under the FPC has created a new disposition among foresters restricting the extent to which they attempt to stretch beyond the established bare minimum.

Compliance and enforcement is seen as one of the most significant aspects to the success of using a performance based regime to carry out forest practices. In 2011 it was mentioned that levels of inspection have decreased by 40% since FRPA came into play. It was recommended that monitoring be ongoing, not only to provide updated statistics on level of compliance but also to promote learning given the success of alternative practice commitments (Malkinson, 2011). The FPB acknowledged that there are limitations to the amount of inspections that can be
conducted in regards to forest activities, including staffing and time pressure (FPB, 2013). In 2011 one of the factors identified by surveyed professionals for limited levels of innovation was the idea that making commitments in plans renders those ideas legally enforceable; thereby, to reduce the risk of liability to penalties for non-compliance, experimental practices are typically omitted from FSPs (Hoberg & Malkinson, 2013).

It is apparent that a gap exists between the goals set out by FRPA and those held by the professionals who are developing plans for tenure holders. A recent report written by the Forest Practices Board has found that “the objectives contained in the FPPR lack clarity needed to form the basis for results and strategies, and serve more as general expressions of intent” thereby placing a limitation on the transparency and absorption of the regulation (FPB, 2014).

4.4 – Implications for Future Research

In regards to the factors identified as having made a contribution to the level of innovation in FSPs, time was refuted as a primary component. Data collected upon the completion of future FSP approval for the same sample subset, given an observed difference in commitment distribution should be analyzed for relationships between the perceived degree of innovation as well as percent increase in innovation over time to the following factors: size of corporation, possession of third party certification, tenure size, and tenure license type. A regression analysis of these factors could produce insight to the effectiveness of reform in natural resource regulation potentially depicting leadership among the industry and the influence of successful practices upon those lagging behind due to limited resources. This was not conducted for the current study as such little change in percentages (no significance) would not produce conclusive results.

5.0 - Conclusion

A wide list of reasons have been developed excusing the perceivably limited success of the results-based regime. Given a decade for adoption, the framework still appears to be lacking in its capacity to inspire innovation among forest professionals. It could be perceived that factors such as social and economic considerations, as well as, legal ramifications, have a significant weight in the results. However, the data obtained in this study limit the blame that can be placed on both the research timing and policy adoption lag. Furthermore, without an increase in innovation on behalf of larger companies, leadership for smaller tenure holders is absent. While it is unclear how much alternative practices will increase in the future, without bigger steps being taken by those with access to adequate resources for experimentation and buffering inefficiencies, it can be assumed that future results will follow their current trajectory. The minimal non-statutory commitment changes that have occurred within the time gap since the original
study produce uncertainty as to how well the results-base code will fit in the succession of sustainable forest management within BC.
Works Cited


