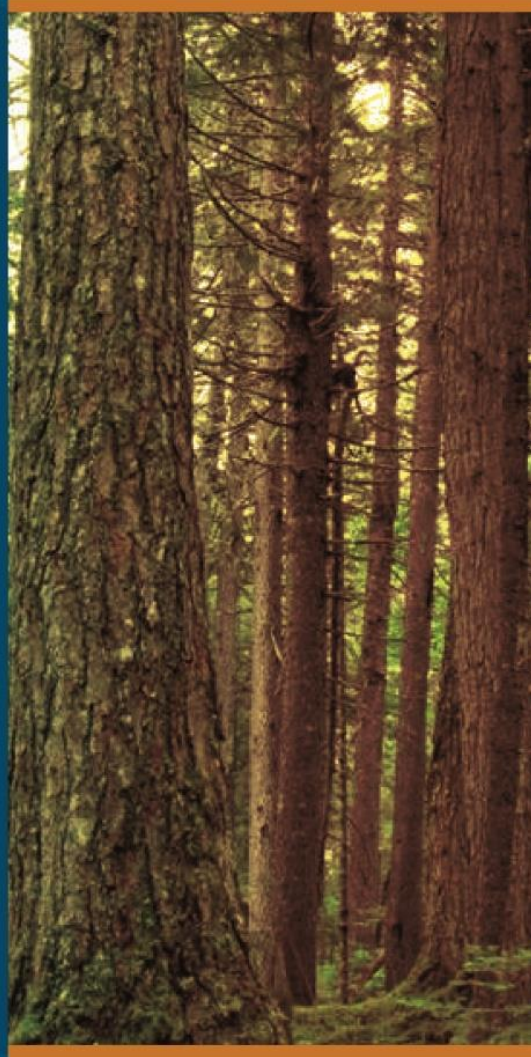


Independent Evaluation of Implementation of the

Forest Practices Report for Nova Scotia (2018)



William Lahey

President and Vice-Chancellor of the University of King's College

With the contributions, advice, and assistance of

Rob Assels (until October 2020), Jane Barker, Peter Duinker (until April 2021),
Al Gorley, Malcolm Hunter, Laura Kenefic, Rob Malatest (from November 2020), Tom Soehl

November 2021

Independent Evaluation of Implementation of the Forest Practices Report for Nova Scotia (2018)

William Lahey

President and Vice-Chancellor of the University of King's College

With the Contributions, Advice and Assistance of

Rob Assels (until October 2020)

Jane Barker

Peter Duinker (until April 2021)

Al Gorley

Malcolm Hunter

Laura Kenefic

Rob Malatest (from early 2021)

Tom Soehl

November 2021

Contents

| | |
|--|-----|
| EXECUTIVE SUMMARY | iii |
| Part 1: Introduction and Context | 1 |
| Mandate | 1 |
| Evaluation Team | 3 |
| Part 2: Progress to Date on Implementation | 5 |
| Evaluation Methodology, Approach, and Process | 5 |
| Overall Approach to Implementation | 7 |
| Decision to Focus on Crown Lands | 7 |
| Organizational Approach | 9 |
| Implementation Strategy | 12 |
| Progress on Specific Recommendations | 15 |
| The Overall Picture | 15 |
| Progress on Major Recommendations | 24 |
| Status of Work on Other Crown Land Recommendations | 28 |
| Transparency and Accountability | 32 |
| Implementation on Private Land | 34 |
| Parallel Initiatives | 36 |
| Embrace of the Ecological Paradigm | 38 |
| Overall Assessment of Implementation | 41 |
| Part 3: Framework for Ongoing Evaluation | 45 |
| Introduction | 45 |
| Independence, Function, and Evaluators | 45 |
| Holistic Evaluation | 47 |
| The Triad and Ecological Forestry | 47 |
| Interconnections between Recommendations for Crown and Private Lands | 48 |
| Visualizing the FPR as More Than the Sum of Its Parts | 50 |

| | |
|--|----|
| The FPR's Logic Model | 55 |
| Concluding Observations on Holistic Evaluation | 59 |
| Levels of Evaluation | 62 |
| Progress Evaluation | 62 |
| Outputs Evaluation | 63 |
| Outcomes Evaluation..... | 65 |
| Evaluation and the Logic Model | 71 |
| Frequency of Evaluations | 73 |

Figures

| | |
|---|----|
| Figure 1 Visualizing the FPR as an integrated whole | 52 |
| Figure 2 Logic model for implementation of the FPR | 57 |
| Figure 3 Logic model for the FPR, showing preliminary evaluation indicators | 72 |

Tables

| | |
|---|----|
| Table 1 Implementation status of FPR recommendations | 17 |
| Table 2 Summary of recommendations showing applicable logic model categories and whether recommendations apply to Crown or private lands..... | 60 |

Attachments referred to in this report (see separate pdf file):

- A. Mandate
- B. Department's Progress Report and Executive Summary on Implementation of the Forest Practices Report
- C. Laura Kenefic Review of Draft Silvicultural Guide for the Ecological Matrix (SGEM)
- D. Laura Kenefic Review of Revised SGEM (April 2021 version)
- E. List of Evaluation Related Activities and Material

EXECUTIVE SUMMARY

The mandate for this evaluation has two parts. The first is an evaluation of the progress the Department has made on each of the 45 recommendations in the Forest Practices Report of 2018 (the FPR). The second part is to recommend an evaluation framework to evaluate not only ongoing progress on the recommendations but also progress over time toward the high-level outcomes that the FPR's recommendations were intended to achieve.

Part 1 of the Mandate

Evaluation has been completed for 44 recommendations rather than the 45 made in the FPR. This is because the Department explicitly excluded one recommendation from its commitment to implement the FPR: recommendation 14, which proposed silviculture funding for the use of herbicides in the high-production zone on Crown lands.

At a very rudimentary level, progress can be summarized as follows:

- Work has started on 40 of the 44 recommendations (91%).
- Work on 26 recommendations (59%) is in the policy and planning stage of implementation.
- Implementation beyond policy and planning is underway for 10 of the 44 recommendations (23%).

Implementation has been completed for five important recommendations: amendment of the purpose clause of the Crown Lands Act (recommendation 19); deciding to proceed with implementation of the FPR instead of conducting a study of economic and ecological benefits to determine whether to implement the FPR (recommendation 23); creating a framework for small-scale wood energy projects to improve market conditions for forest products (recommendation 35); having an evaluation of implementation conducted by an independent committee (recommendation 44); and including goals for the implementation of the triad model of ecological forestry in the Environmental Goals and Sustainable Prosperity Act (recommendation 45).¹ The licensing of Crown land to the Mi'kmaq Forestry Initiative called for

¹ On November 4, 2021, the Nova Scotia legislature passed the Environmental Goals and Climate Change Reduction Act, which is broadly modelled on the Environmental Goals and Sustainable Prosperity Act of 2007. In 10(c), it commits the province "to implement by 2023 an ecological forestry approach for Crown lands, consistent with the recommendations in 'An Independent Review of Forest Practices in Nova Scotia' prepared by William Lahey in 2018, through the triad model of forest management that prioritizes the sustainability of ecosystems and biodiversity in the Province' and to "identify by 2023 the percentage allocation of Crown land dedicated to each pillar of the triad model of forest management referred to in clause (c)."

in recommendation 37 has also been completed. Much solid progress is also being made on five recommendations that are of fundamental importance to the overall implementation of the FPR:

- Development and implementation of a new silvicultural guide for the ecological matrix on Crown land.
- Mapping natural disturbance regimes, submitting the mapping to peer review, and aligning the Department's ecosystems-based management framework with the outcomes of that research.
- Developing regulations to make forest management plans for Crown lands subject to environmental assessment.
- Creating a framework for the selection of Crown land for high-production forestry.
- Development of a new Old Forest Policy that deals with not only protection but the development of old forests.

A significant milestone in the Department's progress on FPR implementation occurred on July 16, 2021, when the completed silvicultural guide for ecological forestry on Crown lands was released with stakeholder support as ready for implementation. A further draft of the framework for identifying high-production forests on Crown land was released on the same day. Together, these two policy documents are crucial to the implementation of the triad model of ecological forestry on Crown land.

Work is underway on a majority of the FPR's recommendations, although too much of it is in preliminary stages. The Department has been working hard on implementation. The pace and vigour of its progress has noticeably improved in the last six months. The implementation of the FPR is potentially being significantly assisted by the work of the Forest Innovation Trust, the creation of a Forest HR Council, and the apparent broader concern of the provincial government with the transition of the forest industry toward ecological forestry. There is a need for better integration between these broader initiatives and the work of the Department in direct implementation of the FPR. The objective of the broader initiatives should be more strongly and explicitly stated to be contributing to the full implementation of the FPR.

None of the work underway on FPR recommendations has resulted in much if any actual change on the ground in how forestry is being planned, managed, or conducted, and I have no indication of when any of it will. From the information at my disposal, I am not able to conclude that much or any change has happened in how forestry is practised based on the work the Department has done on implementing the FPR. *This is the overriding and central conclusion of this evaluation.*

Combined with the fact that only five recommendations have been fully implemented, and that the implementation phase of work on recommendations has not started on roughly two-thirds of all recommendations, *implementation cannot so far be judged a success.*

A number of interconnected factors have played a role in making this so. The most important of them within the scope of this evaluation is the good faith decision of the Department not to develop a sufficiently clear or strong overall implementation strategy or plan that connects the work on each recommendation to the work on other recommendations, and that connects all of the work on all of the recommendations to an overall understanding of the big goals (outcomes) of ecological forestry and the triad. This obstacle to effective and efficient implementation of the FPR can be described as follows:

- The Department's approach to implementation is missing a clear articulation of its overall implementation strategy.
- Such a strategy would show how work on all of the recommendations of the report is to be sequenced over time to ensure that the cumulative effect of implementation of each recommendation leads to widespread adoption and implementation of the triad model of forest management over the forested lands of the province to accomplish the core objective of the FPR – maintaining and restoring multi-aged and mixed-species forests in which late-successional species have the opportunity to grow and mature where they represent the forest's natural condition.
- In broad terms, such a strategy should outline the logic by which choices are made in selecting the recommendations that are worked on, including a rationale for sequencing and consideration of where the effective implementation of one recommendation depends on the results of implementing another recommendation or completing an earlier phase of implementation.

Other factors that have delayed progress on implementation are also identified in this report:

- Extent and nature of change from business as usual that is called for by the FPR.
- Difficulty the Department is having not only in adjusting mindset and culture from business as usual to increased protection of ecosystems but also in even understanding that a fundamental change in mindset and culture is required.
- Resistance from within or from outside the Department to the shift to ecological forestry.
- Delays the Department has sometimes experienced in getting approval to proceed with steps in implementation or to share documents or information with the public or those directly involved in forestry through the processes the Department has created to address concerns with transparency.
- Disruption caused by the closure of Northern Pulp and the early stages of the pandemic on the productivity of the Department, particularly in relation to consultations.

The immediate issue, however, is the effect rather than the reasons for the slow state of progress. It is a particular concern that forestry that is not ecological forestry continues to be conducted on Crown lands that will be largely reserved for ecological forestry once the triad is finally implemented on Crown land. Since this current forestry is not guided by the yet-to-be-implemented silvicultural guide or limited by the yet-to-be-approved Old Forest Policy, it could

be seriously degrading the very forests that implementation of the triad on Crown land would be protecting from clearcutting. It could thereby be compromising and delaying many opportunities to protect and enhance forests that will be within the ecological leg of the triad when the triad is fully implemented on Crown land.

It is particularly serious that, more than three years after the release of the FPR, the new Forest Management Guide (now called the Silvicultural Guide for the Ecological Matrix [SGEM]) called for in recommendation 10 of the FPR has still not been implemented. Substituting ecological forestry for industrial forestry (clearcutting) on a substantial majority of Crown land not managed exclusively for conservation or intensive forestry *was the most important change called for in the FPR*. In the meantime, the level of harvesting on Crown land, and the percentage of harvesting conducted by clearcutting, appear to have remained constant from the date on which the FPR was submitted to the Department, which was August 22, 2018.

These concerns are accentuated by the Environmental Goals and Climate Change Reduction Act, in that it gives government until 2023 to implement the triad and therefore the ecological matrix on Crown lands.

This concern is not addressed by the Department's interim policy requiring variable retention with clearcutting of between 10 and 30 per cent. This interim policy was adopted immediately after the release of the FPR to mitigate the ecological impact of existing forest practices while the recommendations of the FPR were being implemented. It was never claimed that these retention levels were a substitute for the ecological forestry practices the FPR calls for. Still, the policy showed promising intent by the Department in its willingness to curb clearcutting as it proceeded with implementation of the FPR.

It is now clear, however, that the interim retention policy does not come close to replicating the ecological outcomes expected from ecological forestry. It follows that the longer the delay in making the transition to ecological forestry, the greater the ecological loss in the parts of the forest that will eventually come under an ecological forestry regime. The situation requires urgent attention, out of the same laudable motivation that inspired the interim retention guidelines, until the new SGEM can be fully implemented.

This evaluation also reached the following more-specific conclusions:

- The Department's decision to focus on recommendations for Crown land, while reasonable in 2018, now needs to be revisited in light of the importance of concerted attention to implementation of the FPR's recommendations for private land, as well as implementation on private land of recommendations that were for Crown and private land.
- The Department needs to adopt a more centralized and directional approach to the organization of work on implementation of the FPR and assign overall leadership of the process to a forester who is committed to ecological forestry who has the experience and knowledge to lead Nova Scotia's embrace of an ecological paradigm. Appointment

of this person to the vacant statutory position of the province's Chief Forester should be considered.

- Some important recommendations need urgent attention:
 - Revising and expanding the State of the Forest report and improving the transparency, clarity, and accessibility of information and analysis on the state of the forests of the province (recommendations 5 and 6).
 - Amending the pre-treatment assessment (PTA) process to provide better protection for wildlife (recommendation 11).
 - Implementation of landscape-level planning (recommendation 13).
 - Development of research-based strategies for sensitive soils, bird populations, tourism values, outdoor recreation, and operations near protected areas (recommendation 16).
 - Moving implementation of the Endangered Species Act past improving policies and procedures for its implementation on Crown to its actual implementation on the ground on Crown and private lands (recommendations 18 and 29).
 - Reviewing the silviculture funding systems for Crown and private lands to ensure alignment with ecological forestry (recommendations 22 and 30).
 - Reviewing the efficacy of regulations on riparian zones and wildlife clumps (recommendations 25 and 26).
 - Adopting a regulation under the Forests Act requiring owners of private industrial lands to achieve outcomes similar to those required under Maine's Outcomes-based Forest Policy (recommendation 28).²
 - Developing a comprehensive strategy to encourage landowners to adopt the triad (recommendation 31).
 - Maximizing opportunities for landowners to access carbon markets (recommendation 33).
 - Conducting a land use planning process for Western Crown Lands by an independent party (recommendation 36).
 - Developing and adopting an adaptive management framework (recommendation 42).
 - Developing a strategy for attracting and retaining forestry professionals and attending to their professional development (recommendation 43).
- Although the Department has made substantial progress in being open and transparent in sharing its plans and taking input from those interested in forestry and the management of forests, it continues to have much progress to make. It needs to fully

² Recommendation 15 said the same requirements should apply to forestry in the high production zone on Crown land.

embrace transparency and accountability as standard operating procedure and as a culture. It also needs the full support of Communications Nova Scotia and the centre of government to make this progress happen.

It is not clear that the Department has embraced the ecological paradigm called for in the FPR. Instead, it appears to be still operating within a paradigm in which forest production and ecological systems are regarded as values to be balanced against one another, with the balance in favour of the former where the two come into essential conflict. This is contrary to foundational conclusions in the FPR that

- “environmental, social, and economic values should be balanced by using forest practices that give priority to protecting and enhancing ecosystems and biodiversity” (page iii);
- “ecosystems and biodiversity should not be balanced against other objectives and values as if they were of equal weight or importance to those other objectives or values,” but instead “protecting and enhancing ecosystems should be the objective (the outcome) of how we balance environmental, social, and economic objectives and values in practising forestry in Nova Scotia” (page iii); and
- environmental, social, and economic interests should be balanced “within a framework that gives priority to the protection and enhancement of ecosystems and biodiversity” (page 10).

It is also not clear that the ethical dimension of the recommendation to make the conservation and sustainable management of ecosystems and biodiversity the objective of how forestry is practised is being fully recognized and followed. It should always be remembered and recognized that this dimension includes the location of the forests of Nova Scotia on the unceded lands of the Mi’kmaq and that reconciliation with the Mi’kmaq calls for and can be advanced by an ethical and not just a functional approach to provincial forest policy, one informed by Mi’kmaw teachings, values, and example.

Part 2 of the Mandate

For Part 2 of the mandate, this report recommends a framework for future evaluations that are, like this one, conducted as independent evaluations. The function of future evaluations should be understood not only to report on the progress of implementation but also to provide guidance to the ongoing progress of implementation. To ensure that evaluation can engage in deep qualitative assessment of how much progress is being made in achieving the larger outcomes that implementation is intended to achieve, future evaluations should be conducted by a team that includes deep and multi-disciplinary expertise and experience in the ecological forestry that is at the heart of the FPR.

Future evaluations should be framed and conducted as evaluations not only of the progress being made on the implementation of discrete recommendations, but of the FPR as a whole, and of the outputs and outcomes that holistic implementation is intended to achieve. For this

to happen, evaluation must have a more robust implementation plan from the Department. It must also proceed under an evaluation framework that provides greater clarity than was provided in the FPR on the following questions:

- Is the triad, including the intensive forestry leg, part of or something distinct from ecological forestry?
- What are the interconnections between recommendations for Crown and private lands?
- What is the future for forestry and forests that the implementation of the FPR, together with parallel initiatives, is intended to achieve?
- What is the logic (or logic model) that connects implementation of specific recommendations with the creation of that future?

This report offers answers to each of these questions.

Each subsequent evaluation should include progress evaluation, outputs evaluation, and outcomes evaluation, with increasing focus on outcomes in successive evaluations. Implementation of the FPR recommendations on improving state of the forest reports and reporting (recommendations 5 and 6) will, if properly implemented, provide much of the data required for robust outcomes evaluation. In developing indicators for outcomes evaluation to be applied on the basis of the State of the Forest report or on the basis of other data, future evaluations will need indicators that satisfy the criteria of feasibility, measurability, predictability, relevance, understandability, and validity. To facilitate granular comparison, these indicators should be measurable at the ecodistrict level and for Crown and private lands. Among the categories of indicators needed are those measuring forest and ecosystem health, Mi'kmaw biocultural outcomes, and wood supply outcomes.

I recommend that independent evaluations be conducted every three years, starting three years from the date of this report. Each of these evaluations should be of progress on implementation and outputs. Due to the timescale at which outcomes can be expected to be measurable, evaluation of outcomes should happen on a six-year cycle (i.e., in every second evaluation), starting with the next evaluation. The independent evaluation of outcomes should continue until evaluation of outcomes can be fully addressed through state of the forest reporting, improved and enhanced as recommended in the FPR.

Part 1: Introduction and Context

Mandate

On August 22, 2018, I submitted the Forest Practices Report (the FPR) to the Honourable Iain Rankin, then Minister of Lands and Forestry.³ In December 2018, the report was accepted by government in a statement by the Minister that embraced the ecological paradigm called for by the FPR and the triad model of forest management. The statement committed to implementation of many of the FPR's major recommendations and only explicitly excluded one recommendation from the government's general acceptance of the FPR. Full implementation of the FPR has subsequently been promised by all candidates in the leadership race of one political party, a speech from the throne, and in the platforms of each of the parties that have elected members to the legislature in Nova Scotia's most recent election.

In his statement on behalf of the government, Minister Rankin announced that I had agreed to lead an evaluation of government's progress as part of a commitment to "report on progress and inform and involve stakeholders and the public as work moves forward." I subsequently was given a mandate, broadly consistent with FPR recommendation 44, to carry out an evaluation of the Department's work in implementing the FPR, sometimes inaccurately called "the Lahey Report," and to propose a framework for subsequent evaluations.⁴ A copy of the mandate is Attachment A to this report. It makes clear that the mandate is to evaluate progress on all of the FPR's recommendations.

The mandate has two parts.⁵ The first is a report-card style of evaluation of the progress the Department has made on 44 of the 45 recommendations in the FPR. This part of the mandate is covered in Part 2 of this evaluation report—Progress to Date on Implementation.

³ Throughout this report, "the Department" refers to the Nova Scotia Department of Natural Resources, renamed the Department of Lands and Forestry (July 2018), and most recently the Department of Natural Resources and Renewables (August 2021).

⁴ William Lahey, *An Independent Review of Forest Practices in Nova Scotia*: Executive Summary, Conclusions and Recommendations, August 2018, https://novascotia.ca/natr/forestry/forest_review/Lahey_FP_Review_Report_ExecSummary.pdf. The review team comprised Dr. Peter Duinker, Dr. Robert Seymour, Dr. Malcolm Hunter, Mr. Laird van Damme, Mr. Jeremy Williams, Mr. Chris Wedeles, and Mr. Al Gorley. Mr. Tom Soehl, Mr. David Foster, and Mr. Hugh Fraser, all provided support to the team. Members of the team wrote a series of technical papers that provide much of the underlying analysis reflected in the conclusions and recommendations: see *An Independent Review of Forest Practices in Nova Scotia*: Addendum, August 2018, https://novascotia.ca/natr/forestry/forest_review/FP_Addendum.pdf.

⁵ This evaluation is the Department's response to recommendation 44 of the FPR: "Establish an independent committee of technical experts, including members of the Review team, to annually evaluate and publicly report on the progress of DNR [Lands and Forestry] in implementing these recommendations and otherwise embracing and achieving an ecological model of forestry management in Nova Scotia."

The second part of the mandate (covered in Part 3 of this evaluation report—Framework for Ongoing Evaluation) is to recommend an evaluation framework to evaluate not only ongoing progress on the recommendations but also progress over time toward achievement of the high-level changes and outcomes that the FPR's recommendations were intended to achieve. These are the outcomes:

- Explicit and formal adoption of a new paradigm, called ecological forestry, primarily concerned with the effects of forestry on ecological values (such as water, social, and habitat for species that inhabit and constitute those ecosystem), in which
 - protecting and enhancing ecosystems and biodiversity should be the objective (the outcome) of how we balance environmental, social, and economic objectives and values in how forestry is practised in Nova Scotia, and
 - ecological knowledge (including traditional knowledge), principles, and concepts are integrated into how forestry is conducted.
- The maintenance and restoration of multi-aged and mixed-species forest where they are the natural forests, on Crown and private lands, depending on how forestry is conducted.
- The triad model of forestry land management is fully implemented on Crown land and is implemented on an increasing percentage of private land by landowners.
- The management of a high percentage of Crown land either solely for conservation or for a combination of conservation and production values using forestry that is ecological in the sense that it is intended to protect ecosystems
- A supply of wood for a profitable forest products industry through improved productivity of forests managed for high-production forestry and through the effective application of ecological forestry practices to forest lands managed for a combination of production and conservation values

The idea behind an evaluation framework for future evaluations is that it will function both as a management tool for guiding the ongoing implementation of the FPR and as a framework of accountability for progress that is or is not being made toward the ultimate goals. It will go beyond the question of what the Department has done (or not done) in any specific evaluation period – though it will also do that – to analyze the impact of implementation efforts and to provide a way to understand the efficacy of the recommendations of the FPR and whether they need to be supplemented or replaced with additional or different measures and actions. In other words, to the extent that progress lags, it will allow for objective analysis as to whether the issue is inadequate actions on the original recommendations or inadequacy of the recommendations, or some combination of both problems.

Such evaluation is crucial to the implementation of the system of adaptive management that the FPR calls for.

My mandate was to complete this evaluation no later than March 31, 2020. This proved impossible for multiple reasons (including health issues I have been managing since being asked to lead this evaluation and a significant increase in my responsibilities as the President and Vice-Chancellor of the University of King's College due to the pandemic that the College has been responding to since March 13, 2020). I am grateful to the Department and three ministers and deputy ministers in agreeing to give me more time for the completion of this report.

Evaluation Team

To conduct this evaluation and develop an evaluation framework, I assembled a team with a combination of expertise in policy/program evaluation expertise and expertise in ecology and forestry, including evaluation and audit in forestry and forestry policy, programs, and practices.

Another goal was to have a combination of people who had worked with me on the original report on forest practices – to ensure continuity, and more specifically to ensure that evaluation was grounded in the analysis conducted for that report – and people who had not been involved or extensively involved in the review of forest practices. This was to ensure that the work of evaluation benefits from fresh and independent perspectives.

The continuity comes from Dr. Malcolm (Mac) Hunter, who was part of the forest practices review team. He is a recently retired professor of forest ecology at the University of Maine and is a leading authority on wildlife ecology. He was co-author with Dr. Robert Seymour on the papers that introduced the concept of the triad into academic forest management literature.⁶

Mr. Al Gorley is another member of the evaluation team who also worked on the FPR. Mr. Gorley's role was limited in the forestry practices review to providing an independent set of eyes on a close-to-final draft of the report. So he also brings a set of fresh eyes and an independent perspective to the evaluation process. The other important part of Mr. Gorley's expertise is that he is a recently retired professional forester (albeit with experience primarily in BC) who was an assistant deputy minister in British Columbia's Ministry of Forests, was heavily involved in the establishment of forest practices regulation changes in BC, and later chaired the province's independent Forest Practices Board. He therefore has extensive experience in shaping forestry practices through public policy and in evaluating forestry practices for consistency with legislation and policy.⁷

⁶ When the evaluation team was assembled, it was understood that Dr. Seymour, whose ideas on silviculture and ecological forestry were crucial to the conclusions reached and the recommendations made in the FPR, would be an important advisor to the Department as it developed the new Forest Management Guide recommended in the FPR. It was decided that this precluded him from being an advisor to the evaluation process, given the centrality of this recommendation to the work of implementing the FPR.

⁷ Recently, with Mr. Garry Merkel, Mr. Gorley completed a report for British Columbia on protecting and enhancing old-growth forests: A New Future for Old Forests – A Strategic Review of How British Columbia Manages for Old

Mr. Tom Soehl of the Department of Lands and Forestry – being renamed Natural Resources and Renewables – who served as the secretariat for the forest practices review, has also provided continuity by fulfilling that role for the evaluation process.

Dr. Peter Duinker, who was part of the core team who worked on the FPR, was a member of the evaluation team until April 14, 2021. At that time, we mutually concluded that he should end his involvement in the evaluation process in light of his involvement in working with the Department on its response to several of the FPR's recommendations, including the recommendation on old forests, and to allow him to continue his work with the Department. His contribution to the evaluation has been important and lasting.

The new members of the team include Dr. Laura Kenefic, who brings an essential expertise in silviculture and its role in ecological forestry to the evaluation process. Dr. Kenefic is a faculty associate in the School of Forest Resources at the University of Maine and a research forester and Principal Silviculturist with the United States Forest Service. She has more than 20 years' experience studying and applying silviculture in multi-aged and mixed-species stands in the Acadian Forest and elsewhere.

Ms. Jane Barker, who is the Co-Director of the Mersey Tobeatic Research Institute (MTRI), is another member of the evaluation team who was not a member of the forest practices review team. She was, however, involved in the work that MTRI did for the Review on changes to the state of the forest reporting that the Review recommended should be adopted. One of the contributions Ms. Barker has made to the evaluation process is helping us to understand how a longer-term evaluation framework can and should dovetail with the extensive changes on state of the forest reporting recommended by the FPR. In addition, the MTRI is an important resource of the forest community in Nova Scotia, and it should be utilized more than it is in helping with the transition to ecological forestry, especially on private land.

Until October 2020, the evaluation team also included Mr. Rob Assels of Malatest Evaluation. Mr. Assels is a professional program implementation evaluator. He has educated me and the rest of the team on the key concepts and methodologies of evaluation science, specifically on the centrality to evaluation of logic models. Mr. Assels left the team due to a career change for him that made it impossible to continue his work on the team. He has, however, made an invaluable contribution in how the team has organized and completed its work. Since his departure in October 2020, the team has continued to have access to evaluation science advice from Mr. Rob Malatest of Malatest Evaluation.

I am deeply grateful to all members of the evaluation team, including editor Doug Linzey, for their invaluable individual and collective contributions to this report and the analysis on which

it is based. The strengths of the report owe much to each of them while the remaining limitations and deficiencies are my responsibility alone.

I want to acknowledge the support and cooperation throughout the evaluation process our team received from the dedicated staff of the Department of Lands and Forestry, now the Department of Natural Resources and Renewables, under the leadership of first Deputy Minister Towers and then Deputy Minister LaFleche. I want to thank both deputy ministers for their dedication to the change in forestry and forests envisaged by the FPR.

A Note on the Triad

Throughout this report, I will refer to the triad and its implementation. It may therefore be useful to readers to be reminded of how the FPR described the triad. At paragraph 30 of the FPR, I wrote:

Under this approach, aligning forestry with ecological well-being involves categorizing forests as being either predominantly for conserving ecological integrity, predominantly for producing timber, or for a balanced combination of conservation and production objectives, all for the overall objective of aligning forestry with ecological protection. In Nova Scotia, one branch of the existing de facto triad is the protected areas and other legally protected forests, including privately conserved forests, in which timber harvesting is prohibited. The high-production branch of the triad includes the plantations mentioned above, some of which are on Crown land, and the other land that owners decide to manage using high-production methods. The third branch of the triad, yet to be clearly denoted as such, is the wider landscape or matrix on which both protection and production objectives are applicable and where forestry would generally be of a low intensity nature to ensure consistency with broader biodiversity conservation objectives.

A fuller explanation of the triad and of its implementation in Nova Scotia has been provided by Dr. Graham Forbes in his paper for the Department called “Triad – A New Vision.”⁸

Part 2: Progress to Date on Implementation

Evaluation Methodology, Approach, and Process

During the course of this evaluation, the evaluation team has been briefed several times by the Department on work in progress.

In October 2019, I provided the Department with a spreadsheet. One column listed each of the 45 recommendations, organized thematically. A second column – blank – was for completed

⁸ Available at <https://novascotia.ca/ecological-forestry/Triad-A-New-Vision-for-NS-Forests.pdf>.

activities on each recommendation. A third column – also blank – was for planned activities on each recommendation. On completed activities and planned activities, the Department was asked to indicate what had been or would be accomplished by completing those activities. Using this spreadsheet, the Department provided a detailed progress report on implementation on May 6, 2020. On September 10, 2020, I received a further document called “executive summary” from the Department. These documents are Attachment B to this report.

Evaluation of the Department’s development of a new Forest Management Guide, now called the Silvicultural Guide for the Ecological Matrix (SGEM), for the part of Crown land that will be dedicated to ecological forestry began in February 2020. I said in the FPR, and immediately after its release, that the recommendation to significantly revise the Guide was my most important recommendation. Dr. Laura Kenefic was added to the evaluation team to ensure that the team had the capacity and expertise needed to rigorously evaluate the Department’s work on this recommendation.

The original idea was to have Dr. Kenefic evaluate the SGEM after it was finalized by the Department. We altered this when the Department put a draft of the new SGEM out for consultation. It seemed a missed opportunity to hold Dr. Kenefic in reserve until the SGEM was finalized, so, in February 2020, I asked her to review the draft so the Department could consider her review along with the feedback received from everyone else. Dr. Kenefic’s review of the draft SGEM is Attachment C of this report.

Dr. Kenefic’s review was submitted to the Department on March 27, 2020. In response, the draft SGEM was extensively modified. The revised SGEM was released for further public consultations on January 20, 2021. Dr Kenefic’s review of the original draft was shared with Minister’s Advisory Committee (MAC)⁹ on January 12, 2021.

On April 12, 2021, I asked Dr. Kenefic to review material that had been added to the SGEM following the public consultations that started on January 20, 2021. This further review by Dr. Kenefic was submitted to the Department on May 4, 2021. It is Attachment D to this report.

Since receiving the Department’s progress report on May 6, 2020, the Department also provided supplemental information on more-recent progress on a number of recommendations including those with respect to natural disturbance regimes, old forests, high-production forestry, species at risk, and environmental assessment (EA).

I have met with the MAC three times. On April 2, 2020, I made a presentation to the Committee on my mandate to evaluate the Department’s implementation of the FPR, my progress to that date, and how I was proposing to complete the evaluation. At that meeting, the Committee was advised that the Department had been asked to provide me with the information I needed

⁹ The Department established the Minister’s Advisory Committee in March 2020 to advise on implementing the new approach for ecological forestry. I provided advice to the Department on the establishment of the MAC.

through the spreadsheet described above and that they would be provided with an opportunity to provide their views on the information provided to me by the Department. Subsequently, on June 11, 2020, I met with the MAC to seek their views on the Department's progress on implementation. At that meeting I provided to all MAC members the spreadsheet completed by the Department, with a blank column added for the submissions of MAC members. Written submissions independent of the spreadsheet were also invited from MAC members. I have considered all MAC member submissions in writing this report.

On April 21, 2021, I provided the MAC with a verbal briefing of my provisional conclusions in this part of my mandate – i.e., the progress of the Department to date in implementing the FPR.

I want to thank the members of the MAC for the feedback they provided to me on my presentations to the committee on the evaluation process and its preliminary conclusions. Thank you also to members of the Committee who provided their own separate input into the evaluation process. My impression is that the Committee has made strides in recent months in becoming a more effective advisory committee. I hope that this progress is sustained and increased in the months ahead, as the Department needs an effective advisory committee to implement the FPR effectively.

A full list of evaluation activities is provided in Attachment E.

Overall Approach to Implementation

Decision to Focus on Crown Lands

The Department made the decision to focus the first phase of its implementation efforts largely on recommendations addressing the management of Crown lands. An exception is the action of the Department on the recommendation to enable and facilitate small-scale use of wood energy to heat public buildings, which is a recommendation that has relevance for forestry on both Crown and private lands.

The decision to focus initially on Crown land recommendations made sense given the emphasis the FPR placed on those recommendations, the direct control the Department has over what happens on Crown lands, and one of the Report's core assumptions – *that to secure substantial protection on a provincial scale for ecosystems and biodiversity as they are affected by forestry, implementation of ecological forestry on Crown lands must be an urgent priority*. The Department's choice also made sense from the perspective that implementation of the FPR as a whole is a large and complex undertaking. It requires choices to be made as to how to invest the Department's limited resources in different stages of implementation to ensure substantial progress on specific recommendations. Otherwise, the danger is that limited resources will be spread too thinly among many recommendations, with none or few receiving the dedicated work they need to be completed.

The Department's choice has resulted in encouraging progress on some of the key recommendations for the management of Crown lands. This is discussed below. This progress has, however, taken more than three years, and it has yet to result in much, if any, change in how forestry is being conducted on Crown lands, most particularly in forests on Crown lands that will be managed in the ecological matrix for a combination of conservation and production objectives.¹⁰ Meanwhile, much less is being done to implement FPR recommendations on private land.

If the Department had started working on recommendations for Crown lands and recommendations for private land at the same time, there presumably would have been more progress on implementation of private land recommendations but also even less progress on implementation of recommendations for Crown lands. This would be a less-desirable situation than the status quo, but it does not make the status quo acceptable. The focus on Crown lands has not yet yielded significant change in how Crown lands are managed. In the meantime, although there have been some steps toward implementation on private land, implementation of the FPR on private land is at a very early stage.¹¹

The FPR stressed the importance of implementation of an ecological forestry paradigm on Crown lands because of the relative ease with which it could be implemented on Crown lands, where the province is the owner. But the FPR did not say that implementation of such a paradigm on private land, to the extent possible, was unimportant. Given that roughly 70 per cent of forested land is privately held, implementation of an ecological paradigm on as much of it as possible is imperative.

The FPR recognized that the measures it recommended for private land would, by their nature, be more gradual in their operation and effect than those recommended for Crown lands. It is therefore all the more important that work on these measures gets started as soon as possible. Later, in considering "Progress on Specific Recommendations," I will consider the possible consequences and missed opportunities of further delay in concerted effort to advance the

¹⁰ I have considered how much credit should be given to the Department for the implementation of interim retention guidelines soon after my submission of my report on forest practices. In public comments, I was positive about the impact these guidelines could have. Based on the Department's data, retention levels increased significantly from 2018 to 2019. In 2018, 63% of harvests had less than 5% retention. The interim guidelines required at least 10%, starting in 2019. In 2019, 68% of harvests had at least 20% retention. The issue, however, is whether this retention is guided by an ecological understanding of the trees that should be retained to maintain or restore the harvested area to its natural condition, or something close. Observations suggest it is not. This may be one of the reasons why so much of what has been retained has blown down. This is discussed further under "Overall Assessment of Implementation."

¹¹ The steps taken are discussed below and include the work done on sharing LiDAR technology and data with private landowners and the creation of a framework for small-scale wood energy projects. Another step taken, at the initiation of private landowner organizations, has been a shift in emphasis in private land outreach project deliverables and reporting expectations toward those consistent with ecological forestry.

implementation of the FPR on private land, both ecological and economic. Here, I will simply say it is time for implementation of the FPR to expand to include work on the recommendations of the report for private land, as well as to the implementation on private land of recommendations that apply to both Crown and private lands.

The decision of the Department to focus almost exclusively on Crown lands was reasonable when made in 2018. But, three years later, to continue to remain primarily focused on implementation of the FPR on Crown lands from this point forward would be unreasonable.

Organizational Approach

The Department created a distinct governance structure within itself to oversee and manage the implementation of the FPR. It has taken a project management approach to the FPR's implementation. There is a project steering committee and a dedicated strategic lead position has been created to work exclusively on overall coordination and project support.

Instead of assigning responsibility for each recommendation to the division or unit of the Department with lead responsibility for the work covered by the recommendation, the Department created eight cross-divisional teams to work on the following projects and the recommendations from the FPR within the scope of each project:

- Revised Forest Management Guide and Pre-treatment Assessment Process
- Old Forest Policy
- Natural Disturbance Regimes
- Outcomes-based Forest Management
- Species at Risk Program Renewal
- High-production Forestry
- Small-scale Wood Energy Initiative
- Environmental Assessment

It later created two additional teams to work on recommended changes to the State of the Forest report and a review of silviculture systems. There have also been project teams dealing with work for recommended changes to the Crown Lands Act, transparency and accountability, and development of a multi-year research strategy. Over the past three years, the Department has also put a lot of work into the recently passed Biodiversity Act.¹² While certainly consistent with the thrust of the FPR, this legislation was not, contrary to media reports, recommended in the FPR.

¹² While the act, especially as originally proposed, was consistent with the primary conclusions and core recommendations of the FPR, it was not, contrary to statements made to the contrary, a recommendation of the FPR.

The membership for project teams is drawn from across the divisions of the Department. Each is led by a staff member who was not a member of the Department's senior management team. In these respects, the objective was to take work on the policy phase of implementation of the FPR outside the managerial hierarchy and structure of the Department.

The objectives of this approach were multi-faceted:

- To avoid having a small group of staff in a few divisions being responsible for developing policy on many recommendations, complicating and slowing both the development of policy and the work of those divisions.
- Separating work on implementation from the Department's management hierarchy and from units of the Department that had previously "owned" policy or operational responsibility in the subject-matter of recommendations.
- Infusing the implementation process with multi-disciplinary expertise from across the Department.
- Inculcating ownership across the Department of the Department's response to the recommendations.

A further overriding objective has been to ensure that the Department's biologists were active participants in the work of implementation and not limited to the role of advisors to those doing the implementation.

Some of the teams were, as recommended in the FPR, assisted by members of the team that worked on the FPR: Dr. Robert Seymour, on the revision of the Forest Management Guide and pre-treatment assessment process; Dr. Peter Duinker, on the Old Forest Policy and environmental assessment; and Mr. Laird van Damme, on outcomes-based forest management, high-production forestry, and environmental assessment.¹³

My assessment is that this organizational approach has worked reasonably well. The several briefings I have received over on the work of these teams showed they were working hard and that they were taking their assignments very seriously. These briefings also satisfied me that teams enjoyed considerable autonomy and support from the Department's senior management.

I am also confident – both from the briefings I have received and from the volume and quality of work some teams have produced – that the time teams have taken to make progress reflects not only the volume and complexity of the policy development required by each recommendation or set of recommendations, but also the impact of the disruption of COVID 19 and several major operational issues the Department has faced that required urgent attention from members of various teams. I am bolstered in these conclusions by the review of the

¹³ A number of other independent experts are involved on a number of the project teams. These include Graham Forbes, Thom Erdle, Anthony Taylor, David MacLean, and Yolanda Wiersma.

evaluation team of the activity report I received from the Department on May 7, 2020. Unanimously, the view of team members was that the Department has been committing substantial resources and effort to implementation of the FPR through the work of these project teams and its project management process. The feedback I received from the MAC when I met with it on April 2, 2020, was to very similar effect, though not universally.

I would, however, encourage the Department to consider refinements to the organization of its implementation efforts in light of the almost three years of experience it has with its current organizational model. As explained further below, I am concerned that the decision of the Department to go directly to implementation of specific recommendations instead of starting with “strategic work,” while laudable in many respects, may have simply downloaded the strategic work to each of its implementation teams. This is a very inefficient way to create strategy; it is less likely to yield strategic coherence than more centralized or coordinated approaches.

Project teams would benefit from more centralized strategic direction – not just from coordination and support – including a stronger overall implementation strategy, discussed below. The Department should also ensure that the delegation of policy and planning development work does not add an unnecessary layer of duplication of work between project teams or between them and Departmental management. It must also ensure that implementation teams work in coordination with one another to avoid duplication and conflict, and that each team produces work that is aligned with that of other teams and that the work of all teams fits together to ensure implementation of the FPR as a cohesive whole. Results are likely to be better if this cohesiveness comes from implementation teams working together under a well-articulated plan than if cohesiveness is left to be injected into their work after the fact.

This central strategic direction could come from the deputy minister, an associate or assistant deputy minister with responsibility for forestry, the Department’s senior management team, or some combination of these alternatives. I encourage the Department to consider a different model that builds on and retains the advantages of its original choice to manage the implementation of the FPR as a project that is separate from the ongoing management of the Department. Under this model, direct leadership of the implementation of the FPR would be the responsibility of a senior forester with high commitment to ecological forestry who would, of course, work as a member of the Department’s senior management team and be accountable to the Deputy Minister.¹⁴ But the key would be that this leader is not simply a forester, but a forester with the commitment to ecological forestry and the qualifications and

¹⁴ Under the oversight and direction of the Minister, the Deputy Minister would continue to be ultimately responsible for the FPR’s implementation.

experiences needed to lead the implementation of a report on forest practices that calls for a new paradigm of forestry called ecological forestry.

This approach would ensure that the implementation process receives the leadership it needs, while also ensuring that the process does not interfere but aligns with the management of the Department. It could also address another difficulty facing the Department.

It is clear to the evaluation team that ecological forestry as proposed in the FPR is not well understood within the Department, where it tends to be thought of as an approach to forestry that relies less on clearcutting. This is descriptively accurate, but it misses the crucial point that ecological forestry is more than less clearcutting. It is an approach to silviculture that aims to maintain, restore, and improve forests over the long term. It requires knowledge of all the factors that contribute to the long-term well-being of the forests it is being applied to and expertise in how to plan forestry in accordance with those factors and profitability. Applied to multi-aged, mixed-species forests, it results in a substantial reduction of clearcutting in those forests, but this is its outcome, not its method. Knowledge of its methodology is fundamentally important both to the Department's ability to design the policy architecture it requires for its implementation on Crown lands and to the ability of operators to work profitably within that architecture.

The kind of forester I have said should be appointed to lead the implementation of the FPR would be well positioned to improve the Department's understanding of ecological forestry. This person would, in other words, be able to provide the centralized leadership and oversight that should, in time, reduce the need for centralized leadership and oversight as knowledge, understanding, and experience with ecological forestry becomes more widespread across the Department. At the same time, the Department would be better positioned to assist the industry and landowners with the transitions they must make if ecological forestry is to be not only incorporated into laws, policies, and public administration but integrated into how forestry is practised on and off of Crown lands.

In addition to appointing an ecological forester to lead implementation of the FPR, the Minister of Lands and Forestry should consider naming this individual as Chief Forester of the Province under ss. 6(4) of the Forests Act. This would be to give the individual independent statutory responsibility and stature somewhat akin to that of a chief medical officer of health in the public health field. It would reinforce their authority and visibility and make it clear that, in addition to their administrative responsibility within the Department, their role was one of thought leadership in and beyond government.

Implementation Strategy

The Department's approach to implementation is missing a clear articulation of its overall implementation strategy. Development of such a strategy was not expressly recommended in

the FPR. In this important respect, the FPR did not provide as much clarity and guidance to the Department and those involved in forestry as it may have.

In significant degree, it can be said the Department decided not to have an extensive or detailed implementation strategy. The Department's explanation to me was as follows:

While one implementation option was to "start at the beginning" and look at the strategic work first, then proceed to tactical and then operational implementation, using this option would have meant a significant amount of time would pass prior to being in a position to implement visible changes to forestry practices, including reducing clearcutting. As a result, priority was placed on implementing a number of recommendations, in parallel with strategic work, that would support relatively quick operational changes in forestry practices.

The Department's de facto implementation strategy was defined by the choice to focus first on the Crown land recommendations and the role that implementing ecological forestry and the wider triad on Crown lands could play in modelling how forest management on private land should be conducted. Further than that, the Department's strategy has been to focus on recommendations most directly related to changing how forestry on Crown lands is authorized, conducted, and overseen. It seems also to have given priority to recommendations most directly related to forest practices that were within the direct policy-making and administrative authority of the Department.

Subject to what is said in this evaluation on how little has so far actually changed in how forestry is conducted on Crown lands, there is much practical wisdom in this approach to implementation. I believe it was a good faith response to valid criticisms of the Department's previous track record of "planning to plan" and giving lip service to recommendations in previous reports and its own internal plans, which predate the FPR, to move toward ecosystem-based forestry.

The weakness of the approach is that it does not give a clear picture of the overall plan for implementing the FPR as a whole, not just as 45 discreet recommendations but as an overall system of forest management and practices. It does not explain the Department's understanding of how the recommendations, supplemented as needed by additional measures, will be implemented to create that system. Among other things, this constrains the extent to which other players can anticipate and contribute to what the Department is trying to accomplish. It raises uncertainty about the Department's commitment to implementation beyond the recommendations it is currently working on. It means implementation is proceeding without those interested in forestry and the broader public having a clear view of the overall outcome that is being pursued, how it will be achieved through cohesive and integrated implementation of the FPR's recommendations (supplemented as needed by other measures), and a sense of the timeline on which full implementation will occur and outcomes will be achieved.

One immediate consequence is that the desire to get on with it may actually be one of the things slowing down the teams that have been tasked with getting on with it. They have been assigned responsibility for doing without clarity on what they are supposed to be doing. The choices made to dispense with front-end strategizing may have resulted in too much of the strategizing being unintentionally delegated to the project teams that have been tasked to work on pieces of the puzzle without knowing enough about how the larger puzzle fits together. Working on how specific recommendations should be implemented is bound to take more time without the context of a broader strategy for implementation as a whole, or at least for Crown lands.

The best example of this may be the Department's work on a new guide for silviculture in the ecological matrix on Crown lands. This work is discussed more extensively below. Here, the point is that one of the reasons for the slowness with which it has proceeded may be that those doing the work have been figuring out what ecological forestry means by designing the silvicultural guide that will be used to implement it. Recognizing that there is an iterative relationship between the concept and the guide that operationalizes it, this may be putting too much reliance on work on the guide to define the concept it is meant to implement.¹⁵

A more robust implementation strategy would show how work on all of the 45 recommendations of the FPR will be sequenced over time to ensure that the cumulative effect of implementation of each of the recommendations leads to widespread adoption and implementation of the triad model of forest management over the forested lands of the province to accomplish *the core objective – maintaining and restoring multi-aged and mixed-species forests in which late-successional species have the opportunity to grow and mature where they represent the forest's natural condition*. In broad terms, such a strategy should outline the logic by which choices are made in selecting the recommendations to be worked on. It should include a rationale for sequencing, considering where the effective implementation of one recommendation depends heavily on the results of implementing another recommendation or on completion of an earlier phase of implementation.

The implementation strategy should identify anticipated milestones in the implementation process. I do not recommend rigid implementation dates for each recommendation, an

¹⁵ The FPR does not give a definition of ecological forestry but identifies many of the characteristics it should include in Nova Scotia. These include thinking of forests as ecosystems; giving priority to ecosystems and biodiversity instead of thinking of them as priorities of equal weight to other priorities; thinking of maintaining and enhancing ecosystems and biodiversity as the objectives of forestry; replicating natural disturbance regimes in forestry; maintaining and restoring forests that are mixed-species and multi-aged; integrating the protection of wildlife into the Department's PTA process; and limiting clearcutting to designated high-production zones and to the circumstances listed in the FPR as suitable for clearcutting. These and other characteristics of ecological forestry laid out in the FPR are its bones, but the concept itself is larger, requiring greater and ongoing elaboration. This is necessary to ensure that specific actions taken in its name are consistent with the larger concept and also to ensure that the adoption of ecological forestry in Nova Scotia is capable of answering questions, important to its realization, not answered in the FPR.

approach that was taken in the past. Such detailed commitments are likely to be based on arbitrary guesses as to how long it will take to properly implement particular recommendations, and they can introduce inflexibility into the implementation process. A better approach would be both to identify the timeline by which Nova Scotians can expect to see significant milestone changes taking effect in how forestry is practised on Crown lands and to create and implement a comprehensive strategy for facilitating private landowner adoption of ecological forestry and the triad more broadly.

A more comprehensive and explicit implementation strategy is also important to evaluation of the Department's work, and therefore to its accountability, and to the guidance evaluation can provide to the Department as implementation continues. Evaluation is constrained, however, if it is limited to assessment of how the Department is doing on specific recommendations. To be robust, it must know what the overall implementation strategy is so that it can assess over time whether the Department is following its strategy and also, if it is, whether the strategy is proving to be the right strategy or whether it requires adjustment in light of (a) changing circumstances, (b) what is learned through implementation, and (c) the guidance received from recurring evaluations. This would be consistent with the formal adoption by the Department of a comprehensive adaptive management – recommendation 42 in the FPR.

My conclusion is that the Department should develop and adopt this kind of comprehensive, systemic, and integrated implementation strategy. This is necessary if the Department is to ensure that its efforts on specific recommendations or groups of recommendations not only achieve the specific objectives of those recommendations but also contribute to achieving the overriding goal – forests that are progressively healthier, more resilient, and productive because they are progressively more natural and diverse. As I said earlier, it is for the Department to develop this strategy. The Department's executive summary of the implementation progress report provides an explanation and rationale for the implementation approach taken thus far, and a comprehensive strategy may build on this. However, it is my strong recommendation that the Department should also use the logic model I present below for a long-term evaluation framework – or a better logic model – in developing its implementation strategy.

Progress on Specific Recommendations

The Overall Picture

The information provided by the Department on its progress in implementing the FPR is presented in summary in Table 1. For this purpose, recommendations are not listed in the order in which they appear in the FPR but are instead grouped together to better show their functional relationships to each other.

Table 1 shows the stage reached in implementation for each recommendation. It shows if work on the recommendation has started and, if so, whether it is in the policy and planning stage or the implementation stage.

Progress on policy and planning is evaluated as being in the early, intermediate, advanced, or completed stage. Progress on implementation is similarly evaluated as being early, intermediate, or completed or ongoing. The final stage of implementation is described as “completed or ongoing” because while some recommendations can be said to be definitively completed by the taking of the recommended action, most require ongoing implementation once implementation has started.

Assessing the level of progress made is complicated for recommendations that are for Crown and private lands because the Department has decided to focus primarily on implementation of the FPR on Crown lands. This has meant that where encouraging progress is being made in implementation of province-wide recommendations on Crown lands, the overall progress being made on those recommendations is evaluated as in the early stages.

Evaluation has been completed for 44 recommendations rather than the 45 made in the FPR. This is because the Department explicitly excluded one recommendation from its commitment to implement the FPR: recommendation 14, which proposed that the use of herbicides in high production zones on Crown lands be eligible for silviculture funding. To the extent that this could minimize the productivity of these high production zones, it will be important that alternative measures be taken to mitigate this risk. More broadly, if the use of a herbicide is restricted from current levels for any reason, including evolving scientific research on its adverse effects, alternative measures to maximize productivity in high-production zones of the triad will be important to ensure the success of the triad as a whole.

Table 1 Implementation status of FPR recommendations

| | | | Policy/Planning | | | | Implementation | | |
|---|-----------------------------|---|-----------------|--------------|----------|-----------|----------------|--------------|-----------------------|
| | Number from Original Report | Recommendation | Early | Intermediate | Advanced | Completed | Early | Intermediate | Completed/ Ongoing |
| Overarching Recommendations | | | | | | | | | |
| Priority to ecosystems and biodiversity | 1 | Give priority to conservation of ecosystems and biodiversity | ✓ | ✓ | | | ✓ | | |
| Ecological Forestry | 2 | Align forestry on Crown lands with ecological considerations, natural processes | ✓ | ✓ | | | ✓ | | |
| | 3 | Overall objective/outcome: multi-aged, mixed-species forests | ✓ | | | | | | |
| | 8 | Avoid clearcutting where not ecologically appropriate | ✓ | | | | | | |
| | 9 | Conduct clearcutting only in limited circumstances | ✓ | | | | | | |
| Triad Model | 4 | Implement the triad model (on Crown and private lands) | ✓ | ✓ | | | | | |
| Transparency and Accountability | 38 | Deeply and pervasively embrace culture of transparency and accountability | ✓ | | | | ✓ | | |
| Forest Practices | | | | | | | | | |
| Statutory Changes | 19 | Amend Crown Lands Act | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 45 | Add triad model to EGSPA | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Triad Implementation | | | | | | | | | |
| Matrix | 10 | Amend Forest Management Guide | ✓ | ✓ | ✓ | ✓ | | | |
| | 11 | Amend PTA process to include wildlife issues | ✓ | | | | | | |
| | 12 | Analysis and research to test levels of post harvest retention | ✓ | | | | | | |
| High Production | 14 | Public funding for herbicide use in production zone of triad | X | X | X | X | X | X | X |
| Private Land | 27 | Encourage private landowners to adopt triad | ✓ | | | | ✓ | | |
| | 31 | Comprehensive strategy to encourage landowners to follow triad | | | | | | | |
| Natural Disturbance Regime | 7 | Carry out NDR research and align EBM framework | ✓ | ✓ | | | | | |

| | Number from Original Report | Recommendation | Policy/Planning | | | | Implementation | | |
|-----------------------------|-----------------------------|--|-----------------|--------------|----------|-----------|----------------|--------------|-----------------------|
| | | | Early | Intermediate | Advanced | Completed | Early | Intermediate | Completed/ Ongoing |
| Planning Tools | 5 | State of the forest reporting | ✓ | | | | | | |
| | 6 | Collaborate with interested parties to improve forestry reporting | ✓ | | | | | | |
| | 13 | Landscape-level planning | ✓ | ✓ | | | | | |
| | 20 | Environmental assessment | ✓ | ✓ | | | | | |
| | 36 | Land use planning for western Crown lands | ✓ | | | | | | |
| Regulation Changes | 24 | Prohibit full-tree harvesting on Crown and private land when clearcutting | ✓ | ✓ | ✓ | | ✓ | | |
| | 25 | Wildlife Habitat and Watercourse Protection Regulations: independent review of riparian zones | ✓ | | | | | | |
| | 26 | Wildlife Habitat and Watercourse Protection Regulations: independent review of wildlife clumps | ✓ | | | | | | |
| Endangered Species | 18 | Fully implement Endangered Species Act on Crown lands | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| | 29 | Work with landowners to fully implement Endangered Species Act on private land | ✓ | | | | | | |
| Old Forests | 17 | Steps to increase and conserve old forests (long rotations, data collection, review area targets, old forest restoration, etc.) | ✓ | ✓ | ✓ | | | | |
| Strategies for Other Values | 16 | Strategies for sensitive soils, bird populations, tourism values, outdoor recreation, operations near protected areas | ✓ | | | | | | |
| Silviculture | 22 | Review Crown lands silviculture programs | ✓ | | | | | | |
| | 30 | Review private land silviculture programs | ✓ | | | | | | |
| Outcome Based Management | 15 | OBM for high-production forest areas on Crown lands | ✓ | | | | | | |
| | 21 | Outcome based approach for Matrix on Crown lands (subject to Crown Lands Act changes, EA process, Endangered Species implementation, monitoring program, buy-in by the Department, licensees, professionals) | ✓ | | | | | | |
| | 28 | Private industrial lands: Regulation under Forests Act to achieve outcomes similar to Maine's Outcome-based Forest Policy | | | | | | | |

| | | | | Policy/Planning | | | | Implementation | | |
|----------------------------------|-------------------------|-----------------------------|--|-----------------|--------------|----------|-----------|----------------|--------------|-----------------------|
| | | Number from Original Report | Recommendation | Early | Intermediate | Advanced | Completed | Early | Intermediate | Completed/ Ongoing |
| Forest Sector | | | | | | | | | | |
| | Forest Professionals | 43 | Strategy for forest professionals (human resources, professional development, diversity, right-to-practise legislation) | ✓ | | | | ✓ | | |
| | Science | 39 | Increase reliance on science | ✓ | | | | ✓ | | |
| | Innovation and Research | 40 | Encourage innovation and research across forest sector | ✓ | ✓ | | | ✓ | | |
| | | 41 | Make government data and technology (e.g., LiDAR) available to support research and innovation | ✓ | ✓ | | | ✓ | | |
| | Adaptive Management | 42 | Develop adaptive management framework | | | | | | | |
| Market Access | | 35 | Small-scale wood energy projects | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 32 | Independent study on carbon credits for private woodlots | ✓ | | | | | | |
| | | 33 | Maximize opportunities for access to carbon markets | | | | | | | |
| | | 34 | Monitor percentage of Crown/private harvest in Western Nova Scotia to confirm that private sources are primary source of timber | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Community Forest, Mi'kmaq Forest | | 37 | Support for Community Forest (longer licence, more land), Mi'kmaq Forestry Initiative | ✓ | ✓ | ✓ | | ✓ | ✓ | |
| Analysis | | 23 | Open, transparent study of economic and ecological costs/benefits, or proceed with implementation using adaptive management approach | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Independent Evaluation | | 44 | Independent committee to oversee implementation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Work has to a varying extent started on 40 of 44 (91%) recommendations. These are the four recommendations (9%) on which work has yet to begin:

- Adopting a regulation under the Forests Act requiring owners of private industrial lands to achieve outcomes similar to those required under Maine's Outcomes-based Forest Policy (recommendation 28).¹⁶
- Developing a comprehensive strategy to encourage landowners to adopt the triad (recommendation 31).

¹⁶ Recommendation 15 states that the same outcomes regulation or framework should apply to high-production forestry on Crown lands. The Department reports that it has started work on this recommendation. This is a good example of how divorced the work of the Department on recommendations for Crown lands is from its work on recommendations for private land.

- Maximizing opportunities for landowners to access carbon markets (recommendation 33).
- Developing and adopting an adaptive management framework (recommendation 42).

Work is in the policymaking and planning stage of implementation for the following 26 recommendations (59% of recommendations):

- Advancing the overall objective of protecting and enhancing multi-aged/mixed-species forests (recommendation 3).¹⁷
- Implementing the triad on Crown and private lands (recommendation 4).¹⁸
- Revising and expanding the State of the Forest report and the process of reporting on the state of the forests (recommendation 5).
- Collaborating with interested parties to improve forestry reporting (recommendation 6).
- Undertaking further peer-reviewed research on natural disturbance regimes, and aligning the Department's ecosystems-based management framework with the outcomes of that research (recommendation 7).¹⁹
- Preventing clearcutting where clearcutting is ecologically inappropriate (recommendation 8).
- Limiting clearcutting to circumstances where it is acceptable (recommendation 9).
- Amending the pre-treatment assessment process to better include wildlife issues (recommendation 11).²⁰
- Conducting analysis and research to test levels of post-harvest retention (recommendation 12).
- Landscape-level forestry planning (recommendation 13).
- Outcome-based management for high-production forestry on Crown lands (recommendation 15).

¹⁷ Progress on this recommendation depends on the implementation of many other recommendations. Given the overall level of progress on other recommendations, it must be the case that progress on this recommendation is in the very early stages.

¹⁸ Work on this recommendation relates primarily to implementation on Crown land. I have little evidence of substantial progress on implementation on private land.

¹⁹ Good progress has been made on improving the mapping of natural disturbance regimes. Aligning forestry with the improved mapping of natural disturbance regimes has either not started or is in the very early stages.

²⁰ The information I received on the progress made on this recommendation did not give me a clear picture of how much progress has been made or remains to be made.

- Strategies for sensitive soils, bird populations, tourism operations and developmental plans,²¹ outdoor recreation activities, and protected areas (recommendation 16).²²
- Steps to increase and conserve old forests (recommendation 17).
- Environmental assessment for forestry management plans (recommendation 20).
- Outcomes-based approach for managing the ecological matrix portion of Crown lands (recommendation 21).²³
- Review of silviculture funding program for Crown lands (recommendation 22).
- Prohibiting full-tree harvesting on Crown and private lands when combined with clearcutting (recommendation 24).²⁴
- Independent review of efficacy of riparian zone provisions of wildlife habitat and watercourse protection regulations (recommendation 25).
- Independent review of efficacy of wildlife clumps provisions of wildlife habitat and watercourse protection regulations (recommendation 26).
- Implementation of the Endangered Species Act on private land (recommendation 29).²⁵
- Independent review of silviculture funding for private land (recommendation 30).
- Independent study on carbon credits for private woodlots (recommendation 32).
- Independent land use planning process for the western Crown lands (recommendation 36).
- Increasing reliance on science in policymaking, planning, and operations (recommendation 39).

²¹ In my April 21, 2021, meeting with the Minister's Advisory Committee, I was told by the representative of the tourism industry that the relevance and importance to the tourism industry of how and where forestry is conducted requires better definition and specification if the implementation of the FPR is to meaningfully benefit from industry input.

²² The FPR called for "immediate and sustained action" on these strategies.

²³ While preliminary work has been completed on this recommendation, its implementation is subject to meeting five preconditions, only one of which – changing the preamble of the Crown Lands Act – has been met. The others are implementation of an environmental assessment process, full and effective implementation of the Endangered Species Act, implementation of a monitoring process that addresses the 2015 recommendations of the Auditor General, and demonstration by the Department, licensees, and forestry professionals of commitment to ecological forestry.

²⁴ My understanding is that this forest practice is prohibited by policy on Crown lands and that this policy was in place before the FPR recommended a regulation putting this prohibition into place on Crown and private lands. Action on this regulation is in the policy and planning stage of implementation.

²⁵ Work on this recommendation appears to be in the very early stages.

- Encouraging innovation and research across forestry sector (recommendation 40).²⁶
- Developing a human resources strategy for the forestry sector (recommendation 43).²⁷

Based on information provided by the Department and progress subsequently made, particularly on recommendation 10, implementation can now be said to be underway or ready to get started for the following nine recommendations (20% of recommendations)²⁸:

- Giving priority to ecosystems and biodiversity (recommendation 1).²⁹
- Aligning forestry with an overall approach to forestry called “ecological forestry” (recommendation 2).³⁰
- Amending the Forest Management Guide (recommendation 10).³¹
- Implementation of the Endangered Species Act on Crown lands (recommendation 18).³²

²⁶ To encourage research and innovation across the sector, the Forestry Innovation Transition Trust has been created, and it has funded the creation of the Centre of Forest Innovation at the Nova Scotia Community College (NSCC) and, more recently, the work of the Family Forest Network. The Trust is doing invaluable work, but in my view without the advantage of a comprehensive strategy for encouraging research and innovation that will contribute to the implementation of the FPR.

²⁷ The assessment of the progress being made on this recommendation is based largely on the work being funded by the Forestry Innovation Trust and, in particular, the funding provided by the Trust to NSCC for its Centre of Forestry Innovation. The work of the Trust and of NSCC is not, however, the same thing as a human resources strategy for the forestry sector. No such strategy that I am aware of as been produced by the Department or the Forestry Sector HR Council.

²⁸ The Department also listed recommendation 35, which called for a framework for small-scale wood energy projects, as being in this category. Based on my understanding that this framework is operational, I have instead categorized this recommendation with the recommendations that have been implemented.

²⁹ Beyond the fact that a lot of work is being done to implement the FPR, and the fact that the SGEM has been completed, I do not have specific information on what the Department is doing to implement this crucial recommendation. As indicated elsewhere in this report, there are significant questions about whether the Department is giving priority to ecosystems and biodiversity in its overall approach to implementing the FPR or in its ongoing oversight of forestry on Crown lands. It is clear however that work on a small number of important recommendations, discussed below, will contribute to implementation of this recommendation.

³⁰ My comment here is the same as in the previous footnote.

³¹ The Department’s progress on recommendation 10, developing a new forest management guide for the ecological matrix on Crown land, is included in this category because the Department recently released the SGEM. It is my understanding that the work of operationalizing this guide on ecological matrix lands will now begin. So this is now a recommendation – and a critical one – on which “implementation is underway.” It is also a major step in implementing the triad on Crown lands (recommendation 4) and setting the stage for its implementation on private land.

³² As stated elsewhere in this report, the progress made on implementation beyond policymaking and planning is limited.

- Encouraging private landowners to adopt the triad (recommendation 27).³³
- Monitoring harvest levels from Crown and private lands in Western Nova Scotia (recommendation 34).³⁴
- Providing a licence with a longer term to the Medway Community Forest over a larger allocation of Crown lands (recommendation 37).³⁵
- Improving transparency and accountability (recommendation 38).
- Sharing technology, including LiDAR, for research and innovation (recommendation 41).³⁶

What is meant by “implementation is underway” varies across these recommendations and is in some cases unclear. In the case of broader overarching recommendations on this list, such as to give priority to ecosystems and biodiversity and to align forestry with natural disturbance regimes, my understanding is that the progress being made is primarily if not exclusively based on the work being done to implement a limited number of more specific regulations, such as prohibiting full-tree harvesting in clearcutting, which has been done by policy on Crown lands, and to implement the Endangered Species Act on Crown lands, which is at the beginning of the implementation stage. Work being done on broader recommendations, like implementing the triad on Crown lands, is also contributing to progress on these overarching recommendations but has itself not yet reached the implementation stage.

Five recommendations (11%) have, in my assessment, been implemented, recognizing that for some recommendations implementation will always be ongoing:

- Amending the purpose clause of the Crown Lands Act (recommendation 19)
- Deciding to proceed with implementation of the FPR instead of conducting a study of economic and ecological benefits to determine whether to implement the FPR (recommendation 23)

³³ To encourage landowners to adopt the triad, the Department has increased its work with woodlot owner organizations, increased silviculture funding, and conducted a survey of landowners.

³⁴ I am told that monitoring harvest levels from Crown and private lands in Western Nova Scotia is being addressed through the routine tracking of data that has always been available through the Registry of Buyers.

³⁵ Mary Jane Rogers, the Executive Director of the Medway Community Forest, questioned the Department’s statement that “implementation was underway” on the part of recommendation 37, which says the Medway Community Forest should be given a longer licence over a larger part of Crown land. I was told by the Department that substantial progress was being made on this recommendation.

³⁶ I have conflicting information as to whether this is happening, the extent to which it is happening, or the awareness among landowners that it is happening. What I know is that LiDAR data for the majority of the province is now available for download on the government website. I am told that analytical tools based on those data are under development.

- Creating a framework for small-scale wood energy projects to improve market conditions for forest products (recommendation 35)
- Having an evaluation of implementation conducted by an independent committee (recommendation 44)
- Including implementation of the triad model of ecological forestry in legislation (recommendation 45).³⁷

In addition, two other recommendations have been implemented in part. The licensing of Crown lands to the Mi'kmaq Forestry Initiative, called for in recommendation 37, has happened. In addition, the prohibition of full-tree harvesting on Crown and private lands when it is combined with clearcutting (recommendation 24), has happened on Crown lands.³⁸

Progress on Major Recommendations

The Department reports substantial progress on work that is responsive to the following recommendations, or parts of recommendations :

- Establishing a framework for the selection of Crown lands for the high-production leg of the triad (recommendation 4).
- Addressing the concerns and critiques of the Department's mapping of natural disturbance regimes with peer-reviewed science, and aligning its ecosystem-based management framework for forestry on Crown lands with the new peer-reviewed mapping (recommendation 7).
- Amending the Forest Management Guide/SGEM to align it with ecological forestry (recommendation 10).
- Creating an Old Forest Policy (recommendation 17).
- Adopting legislation to make forest management plans for forestry on Crown lands subject to environmental assessment (recommendation 20).

Each of these qualifies as a major recommendation. In combination, they are critical parts of the policy framework and governance foundations on which implementation of the triad and other more specific recommendations on Crown lands can happen. It is therefore positive that they are being tackled in the first stage of implementation of the FPR.

I received documentation for review on the work of the Department in three of these five areas of progress before I briefed the MAC on April 21, 2021: the development of a new forest

³⁷ The FPR called for adding implementation of the triad model to the Environmental Goals and Sustainable Prosperity Act. On November 4, 2021, the Nova Scotia legislature passed the Environmental Goals and Climate Change Reduction Act. I am assessing this FPR recommendation as implemented. I note, however, that the legislation is limited to implementation on Crown lands. Recommendation 45 was not limited to Crown lands.

³⁸ This is being done by policy rather than by the regulations that were recommended.

management guide (i.e., the SGEM), the Report on Natural Disturbance Regimes, and the framework for the selection of Crown lands for the high-production leg of the triad. Public consultations have happened on both the SGEM and the framework for high-production forestry. In addition to being in the process of peer-review for publication, the paper on natural disturbance regimes has been shared with interested parties, but there have not been consultations on it.

After my meeting with the MAC, I received documentation on the Department's work on an Old Forest Policy, including a copy of the draft policy. This policy had at that time not been shared for consultation with the Mi'kmaq or stakeholders. I also received a project update on the work underway on environmental assessment and an accompanying document called "Forest Stewardship Planning Standard, Guide for the Preparation of Forest Stewardship Plans in Nova Scotia, Second Draft," dated March 2021.

I have had all of the documentation provided on work in progress on each of these recommendations reviewed by members of the evaluation team.

As mentioned above, a draft of the new SGEM was reviewed in detail by Dr. Laura Kenefic as if she were conducting a peer review in an academic context. Dr. Kenefic found that the first draft of the SGEM required significant revisions to address some important deficiencies. A follow-up review, after the draft was amended in light of her first review, satisfied her that her recommended improvements were substantially adopted.

Dr. Kenefic subsequently finished another independent review of additional changes that were subsequently made to the SGEM after a further round of public consultations. She recommended that further important improvements be made to these subsequent changes to the SGEM.

The primary theme of both of Dr. Kenefic's reviews is that the Department has progress to make in embracing the intention behind a new guide for the ecological matrix leg of the triad, which is not only to reduce clearcutting and the ecological harm of clearcutting but to fully replace the mindset of clearcutting silviculture with that of ecological silviculture. The latter will significantly reduce clearcutting, but it will do so as a consequence of its positive focus on the forest's long-term ecological integrity and well-being.

As noted earlier, the SGEM has now been finalized as an evergreen document ready for its implementation. It incorporates the improvements identified in each of Dr. Kenefic's evaluations of earlier drafts. My conclusion is that the SGEM now represents substantial fulfilment of the call in recommendation 10 for a new Forest Management Guide for the ecological matrix leg of the triad. It now has to be operationalized.

Mr. Al Gorley reviewed the framework for high-production forestry. On November 11, 2020, Mr. Gorley advised me that the framework was of high quality and that it included responses to

much of the input received in consultations on an earlier draft. He ended his evaluation as follows:

Addressing the HPF (high-production forestry) component of the Triad model is one of the Department's eight priority projects aimed at implementation of the FPR. The work done to date represents a solid first step, and acknowledges that full implementation will take time, and the full benefits will not be realized for decades.

The work so far addresses the key technical aspects of implementing the recommendation. In my opinion there are three additional components that will also be important to success:

1. Implementation will need ongoing, clearly articulated support by the most senior levels of the government.
 - a. It is important for the government (at the highest levels) to continue communicating about HPF in the context of its essential role in the overall Triad approach to ecological forestry.
 - b. The government should communicate its intent about how (e.g., what legislative mechanism) it will provide certainty to protect designated lands for HPF at a level more-or-less equitable with how lands are protected to meet conservation objectives.
2. In addition to spatially identifying candidate HPF lands, Phase 2 should clearly define the process and authorities by which candidate lands will be formally designated for HPF, including how Indigenous Peoples and stakeholders will participate, at what scale, and over what expected timelines.
3. The government should consider establishing a target for the amount of HPF lands it expects to designate. This may include short- and longer-term priorities and could be adjusted over time if necessary.

Dr. Malcolm Hunter of the evaluation team reviewed the Department's paper on Natural Disturbance Regimes. He described it to me as "rigorous."

I have had the draft Old Forest Policy reviewed by Mr. Al Gorley, Dr. Malcolm Hunter, and Ms. Jane Barker.³⁹ Their collective view of the draft policy is generally positive: the draft seems logical and consistent with the recommendation it responds to, which is recommendation 17. It has been developed with a focus on 11 objectives that align with the key elements of recommendation 17. All team member comments relate to specific details of the draft policy and seek greater clarity or propose specific improvements to what is otherwise viewed as a

³⁹ This policy, or a later version of it, has now been released for public consultations.

strong and promising draft policy. Here are some of those comments, written by Mr. Gorley and agreed to by Dr. Hunter and Ms. Barker:

3. The draft policy document focuses mainly on Crown lands but does include a section on private land. The commitment to “work with forest owners,” etc., is a good start, but it is unclear how far the policy will be used to ensure conservation of key ecological values that don’t exist on Crown lands.
4. While it is recognized that an 8 per cent target probably reflects significant challenges resulting from the amount of private land versus Crown, and the long history of industrial forest disturbance and conversion, it would be ideal if there could be a higher long-term target combined with ecosystem connectivity.
5. The policy should more clearly outline how the SGEM will trigger an old forest score/old-growth forest assessment/flag potential restoration stands and include protocols in an appendix.
6. There is no reference to the cultural importance of old forests to the Mi’kmaq, or incorporation of Indigenous knowledge in the policy.
7. There should be mention of non-natural disturbances such as exotic invasive pests (e.g., Hemlock Woolly Adelgid – a current serious threat to many of our old-growth forests), and whether loss due to those agents will trigger more restoration of potential old forests.
8. One of the review’s recommendations calls for a silviculture manual for restoration – does this exist? Why would the SGEM team develop this and not the Old Forest team?
9. I don’t see anything about penalties for damaging old forests, and so there is a danger of the policy not changing behaviours that lead to “inadvertent” loss of old forests.
10. It appears a stand that simply fits the veg type name and is 31 years post-harvest could be designated a restoration opportunity. It would have to have more information on how often designation in these circumstances could happen.
11. This raises the interesting question of how far down on the continuum of age, area, and other characteristics it will be necessary to go to achieve the 8 per cent goal.

Mr. Al Gorley reviewed the material provided to me on environmental assessment (EA). This is his overall assessment:

Although I have no doubt that it has taken some effort to bring together staff from two ministries to develop a proposed approach, implementation of the recommendation appears to be only in the very preliminary stages. The effort that has gone into development of the draft guide suggests a degree of commitment to this approach within the ministry(s). The plan for approval by October is encouraging, but is it realistic?

The work appears to be focused largely on the planning at this point (which may be appropriate). However, as the literature points out, environmental assessment of landscape scale, long-term forestry activity is very different than for site-specific disturbances and installations. The criteria to be used in an assessment will need to be clear. This may be where they are going in lines 352–360, and the statement of values and objectives in the draft guide.

Further, Mr. Gorley concludes that the approach to EA proposed by the Department adheres to the principles and objectives of ecological forestry, albeit implicitly rather than explicitly, as follows:

Presumably, adoption of the new Forest Management Guide will result in adherence at an operational level, and any tactical planning in the FSP will be consistent. I note that the “Guiding Concepts for Forest Management in Nova Scotia” stated in the draft planning guide do not specifically mention “ecosystem-based forestry” but use “adaptive sustainable forest management” and “outcomes-based forestry.”

Without seeing the proposed regulation changes, it isn’t possible to know if the principles and objectives will be explicitly incorporated in the environmental review (such as in an overarching purpose statement for forestry EAs), or if it is to be implied through compliance with the planning standard set out in the guide.

The work on EA is clearly at an earlier stage than the work on the SGEM, the mapping of natural disturbance regimes, a framework for high-production forestry on Crown lands, and the Old Forest Policy. Still, in light of the history of the sometimes contentious relationship between the department of environment and the department responsible for forestry, I find it encouraging that the two departments have agreed on a framework to make forestry on Crown lands subject to environmental assessment under the Environment Act. The work on a framework for selecting high-production sites, mapping natural disturbance regimes, creating a forest management guide for ecological forestry, and developing a policy on old forests is in all cases substantial, positive, and strongly in the right direction.

Status of Work on Other Crown Land Recommendations

There are a number of other recommendations for Crown lands, or for Crown lands and private land, that have not received adequate attention at this stage in the implementation process. Like the ones discussed above, they are of a foundational nature in that they address aspects of the overall governance of forest management and forestry practices:

- Revising and expanding the State of the Forest report and the process of reporting on the state of the forests more generally and doing so by collaborating with interested parties (recommendations 5 and 6).

- Amending the pre-treatment assessment (PTA) process to provide better protection for wildlife (recommendation 11).
- Implementation of landscape-level forestry planning (recommendation 13).
- Development of strategies on forestry and sensitive soils, bird populations, tourism operations and developmental plans, outdoor recreation activities and protected areas (recommendation 16).
- Implementation of the Endangered Species Act on Crown lands (recommendation 18).
- Review of the silviculture funding allocation system for Crown and private lands (recommendations 22 and 30).
- Reviews of the ecological adequacy and effectiveness of regulations on riparian protection zones and wildlife clumps (recommendations 25 and 26).
- Creating a land use planning process for Western Crown Lands by an independent party (recommendation 36).

It is problematic that work on these recommendations is not more advanced and that on most of them, work is in the early stages of “policy and planning has begun” implementation. Work on implementation of the Endangered Species Act on Crown lands has progressed to the implementation stage, but only to a limited degree

In the case of the Endangered Species Act, progress has definitely been made in getting ready to better implement and enforce the act on Crown lands. The progress that has been made in actually improving the act’s implementation and enforcement is limited. While most of the progress that has been made appears to be for implementation of the act on Crown lands, full and effective implementation of the act even on Crown lands does not appear to be progressing at the rate it should be if this basic legislative protection for biodiversity is to be in place on Crown lands in the near future.

Dr. Malcom Hunter, along with Jane Barker, both members of the evaluation team, joined me for a briefing on the progress that has been made on moving toward full implementation of the Endangered Species Act. Dr. Hunter reviewed all of the documentation that was shared with us for that briefing, which was substantial. These paragraphs are from the short memo he sent to me on the basis of his review:

It is my impression, perhaps incorrect for lack of ease of tracking dates, that there has been no surge in recovery activity in the last year, beyond the significant uptick in planning required to generate these documents.

Many of the activities listed are about planning, so still focused on “talking” rather than “walking.” Many more are somewhere in between these poles in my opinion; notably research, education, and monitoring activities are very numerous, far outnumbering direct efforts to manage a population or its habitat.

In sum, reviewing this list corroborated my impression that the potential for increasing direct management activities is vast. Planning, research, monitoring and more are all essential parts of species recovery efforts, but at the end of the day they are a foundation without a house until populations and their habitats are directly managed.

Ms. Barker agreed with his assessment. I am, however, encouraged that the Department says it has now completed the policy needed to implement the act on Crown lands. It must accelerate its implementation on Crown lands and on private land as “an immediate priority,” as called for in the FPR.

Only preliminary work has been undertaken on the recommended reviews of the system of silviculture funding for Crown lands to ensure it encourages and supports ecological forestry on Crown lands. This is another recommendation that should be tackled in the early stages of implementation because of the crucial influence this system of funding may have on the decision-making that determines how forestry is conducted. Because the issue of silviculture funding cuts across Crown and private lands, the system that applies to Crown lands should be reviewed with the system that applies to silviculture on private land.

Work on the detailed recommendations made for improving the State of the Forest report and for a broader and multi-faceted process of reporting on the state of the forest seems also to be at an early stage. I am less concerned about this given the greater urgency of other recommendations in actually changing how forestry is practised. At the same time, too much further delay in producing an improved and expanded State of the Forest report would be concerning for these reasons:

- It will inhibit our ability in the near future to measure and evaluate change – or the lack of it – in the condition of forests as a result of implementation of other FPR recommendations.
- As discussed below in Part 3, expanding state of the forest reporting in the ways recommended in the FPR will be crucial to the effectiveness of future evaluations and the role evaluation can play in guiding implementation of the FPR and improving transparency and accountability.
- An improved State of the Forest report and forest reporting process offers a clear and regular mechanism for the Department to be more regularly and predictably transparent and accountable to the public⁴⁰ and for demonstrating the progress made in implementation of the FPR and in transitioning to ecological forestry, particularly on Crown lands.

⁴⁰ During the finalization of this report, Dr. Malcolm Hunter brought new research to my attention showing that forest degradation, not loss, drives widespread avian population declines. The research includes data from Nova Scotia, New Brunswick, and Prince Edward Island.

- The recommendations on the changes that should be made to state of the forest reporting were, compared to others, quite detailed and specific, and this should assist with their expeditious implementation.

It is important to have accelerated work on the recommendation for the development of research-based strategies for sensitive soils, bird populations, tourism values, outdoor recreation, and operations near protected areas. These strategies may well have significant implications on forestry planning and operations. Given the information I have, I can only conclude that the development of these strategies has received minimal attention.

Three of the other recommendations listed above all relate to the legislative and planning framework for the conduct of forestry on Crown lands: landscape level planning, the regulations on riparian zones and wildlife clumps and land use planning in the western region. As such, they are all recommendations that relate to the overall governance framework for forestry. As explained in the discussion of the logic model of the FPR in Part 3, this highlights the importance of these recommendations being addressed in the early stages of implementation – they are part of the context needed for optimal implementation of recommendations that are more specific and operational.

Work on recommendation 11 – to better address wildlife issues in the PTA process – may be on hold in the expectation the objective of the recommendation will be significantly addressed in the new SGEM. There is, however, some way to go before the SGEM will be operational, and the same is true of the outcomes-based regulations that were recommended for high production on Crown lands, on which work is in its early stages. The status of work on recommendation 11, while clearcutting continues across the working forest on Crown lands, is a microcosm of the larger concern that too much forestry that is not ecological is happening on Crown lands, while the process of implementing the FPR remains largely in the policy and planning stage of implementation or, in the case of some recommendations, only in the early stages of implementation beyond policy and planning. This is discussed in greater length below under “Overall Assessment of Implementation.”

I end this section by noting the concerns expressed at the MAC and elsewhere that the Department is working on the shift to outcomes-based forest management on Crown lands while appearing to ignore the stated preconditions the FPR says must be met before that shift occurs. My conclusion is that the concern may be based on a mistaken impression of how much progress the Department has actually made on the recommended shift to outcomes-based forest management, which I believe is minimal. Nevertheless, I am pleased to reiterate the preconditions, which are listed in recommendation 21 of the FPR: making the recommended amendments to the Crown Lands Act; implementing the recommended legislated forestry management process, with environmental assessment; full and effective implementation of the Endangered Species Act; development and implementation of a monitoring, oversight, and accountability system that fully addresses the recommendations of the Auditor General; and demonstration by Lands and Forestry and licensees of their commitment to ecological forestry.

The Department has satisfied one of these preconditions, but has a long way to go on all the others.

Transparency and Accountability

The Department has made significant progress in the policy-making aspect of its work in being more open and transparent in sharing its plans and taking input from those interested in forestry and the management of forests.

Two of the Department's project teams have created – and been allowed to create – opportunities for public, Mi'kmaq, and stakeholder involvement in their work as it progressed, and the input received has significantly influenced later versions of the documents in question. This has been strongly so in the case of the new SGEM and the framework for selecting areas for high-production forestry on Crown lands.

The Department has also formed the MAC, something the department had committed to, but did not act on, in its action plan for the natural resources strategy, with broad representation to advise on the implementation of the FPR and other strategic forestry issues. The formation of the committee is an important part of the process of embracing transparency and accountability as an operating principle, as recommended in the FPR. However, the Minister and the Department need to act quickly to make the committee into a forum for meaningful discussion of important issues and implementation choices to counteract the growing frustration among members about meetings largely dedicated to information sharing by the Department. For example, as noted above, the Department has not developed a comprehensive long-term plan for implementing the FPR. It should do so, and it should involve the Advisory Committee in developing that plan.

There are still issues needing attention in the area of transparency and accountability.

The majority of the targeted consultations and engagement processes recommended in the FPR are yet to happen and many have not started. The FPR included 12 recommendations in which targeted consultations and engagement were called for:

- Work with interested parties to improve reporting on forestry, including the state of the Forests report (recommendation 6).
- Revise the forest management guide with input from industry, technical and academic experts, forestry policy stakeholders, and technical representatives from the original FPR (recommendation 10).
- Work with interested parties to assess the work that is underway for landscape-level planning (recommendation 13).
- Engage interested parties in collaborative problem-solving forums to address potential adverse impact of forestry on sensitive soils, bird populations, tourism operations and development plans, outdoor recreation activities, including established trails and protected areas (recommendation 16).

- Work with landowners to develop and implement a plan of action for fully and effectively implementing the Endangered Species Act on private lands (29).
- In collaboration with registered buyers, private landowner groups, silviculture contractors, and others, including technical experts, initiate a review of silviculture programs on private land (recommendation 30).
- Work with the Departments of Environment and Energy and other relevant departments as well as interested stakeholders, to develop a framework for maximizing access of Nova Scotia landowners to carbon credit trading opportunities (recommendation 33).
- Enable small-scale wood energy by working with other relevant agencies, municipal governments, and regional development agencies (recommendation 35).
- Establish a land use planning process conducted by an independent person or panel for western Crown lands (recommendation 36).
- Enable the department's scientists to work with the broader scientific community to address or understand scientific uncertainties associated with forest management within an ecological forestry paradigm (recommendation 39).
- Partner with the forest sector on research and innovation endeavours to improve how forestry is managed (recommendation 40).
- Work with industry, landowners, researchers, and other stakeholders to make data and technology systems, including LiDAR, available for research and innovation (recommendation 41).

Of these, consultations have been completed for only two recommendations, the revision of the SGEM (10) and the small-scale wood energy initiative (35). Some engagement, at a preliminary level, has also occurred for improving the state of the forest reporting (6) and to engage private landowners on endangered species (29). I believe that discussions and engagement responsive to recommendations 40 and 41 are also underway, including through the Forestry Innovation Transition Trust.

Other concerns regarding Department's approach to consultation and engagement include

- the sometimes ad hoc and therefore uncertain nature of the Department's process for sharing of information, seeking input, and communicating the status of ongoing work.⁴¹
- unexplained delays in communication and sharing of information.
- inconsistency between approaches to consultations, engagement and information sharing between project teams and recommendations.

⁴¹ When being consulted or advised, people want more certainty than they are now sometimes given about what will happen with their input and when and how decisions made on matters on which they have been consulted will be shared with them and others.

- continuing criticisms of the Department's harvest viewer website.

What is missing is an articulated and comprehensive process for consultations, engagement, and information sharing that applies to the whole of the implementation process and to each working group involved in the implementation process.

Ideally, the Department would create a consultations plan, including an updates calendar and consultations schedule, and stick to it or explain why it has to depart from it. If this schedule could be approved as a whole by the government and Communications Nova Scotia, thus reducing the reliance of the Department on getting approval for each consultation and information sharing, it would be very helpful to the Department in accelerating its work on implementation. It would increase the trust and confidence people can have in the Department.

Consultation, as the Department fairly points out, takes time. This acknowledged, the Department needs to avoid using consultation as a delay or diversionary tactic. It needs to make sure it consults for a purpose and not simply to be able to say it consulted. The survey it conducted on what the public would like to see in a new State of the Forest report may be an example of a consultation process that was more about appearances than substance, in light of the detailed recommendations in the FPR on state of the forest reporting.

The Department has submitted its natural disturbance regime paper for peer review, which is a positive development. The Department must, however, guard against assuming that this is all that is required by recommendation 7, which should be read in conjunction with recommendation 39, which calls for a broader engagement with the scientific community. Peer review is a necessary part of this, but the FPR as a whole contemplates a more holistically collaborative engagement with the research community.

Implementation on Private Land

The Department has not really started intensive and comprehensive work on recommendations made for private land, or on the implementation on private land of the recommendations for both Crown and private lands. This is to be expected since the Department announced it was going to implement the recommendations for Crown lands before moving to the implementation of the FPR on private land. I think this was a sensible approach when it was announced; it probably explains the amount of progress that has been made in policy development and planning for the implementation of Crown land recommendations, reviewed above. But it is less defensible now when we are past the third anniversary of the FPR.

Further delay in significant implementation of the FPR on private land will create corresponding delay in change and improvement in forest management and forestry practices on private land. This is made more serious by the necessarily gradual rate at which the recommendations for private land are likely to be adopted and to produce systemic change once concerted work on

them does begin. The implications could include reduced or delayed adoption of the triad model on private land, leading to

- reduced or delayed adoption of ecological forestry on private land.
- reduced or delayed adoption of management of private land for intensive forestry.

This in turn could lead to

- delayed or limited improvement of the productivity of forests on private land.
- reduced or delayed improvement in protection for ecosystems and biodiversity on private land.

And this could potentially lead to

- lost opportunities to improve the health and quality of forests.
- lost opportunities to improve wood supply.
- lost economic opportunities for landowners.

As noted above, the Department has implemented the small-scale wood energy initiative that was recommended in the FPR to enhance market opportunities of private landowners for low-quality wood. The Department also reports that LiDAR technology and data are being shared with owners of private land, and that it has started work on policy and planning for action on most recommendations applicable to private land. But, as concluded above, most of this work appears to be in its preliminary stages.

The province has also created the Forest Economy Task Force and the Forestry Innovation Transition Trust. These will be discussed in more detail below under “Parallel Initiatives.” The trust is a \$50 million fund focused on accelerating new opportunities within the Nova Scotia forestry sector, including on private land, to enhance environmental, social, and economic values and adoption of new ecological forestry practices. Its creation is responsive to recommendations 27 (that the objective of forestry policy in relation to private land should be to achieve widespread participation in ecological forestry by owners of privately owned forests) and 31 (calling for a comprehensive, multi-faceted and integrated strategy for encouraging and enabling private landowners to engage in forestry management in accordance with the triad model of ecological forestry).⁴²

⁴² In the final stages of this report’s preparation, the Trust announced it was providing \$9.8 million in multi-year funding to the Family Forest Network to assist private woodlot owners in adopting and maintaining sustainable resource management practices through outreach, demonstration, and research. The project will include a large-scale pilot of ecologically sensitive forest treatments in a wide range of woodlands across the province, with a special emphasis on restoring degraded stands to their natural diversity and productivity. What is particularly encouraging is that the Network is a collaboration among 11 organizations reaching an estimated 12,590 woodland owners that was “the first and largest group of forestry service providers to publicly endorse and practice the recommendations of the Independent Review of Forest Practices in Nova Scotia, commonly referred to as the

These are good steps, but they do not substitute for the comprehensive and concerted effort for adoption of the triad and ecological forestry on private land called for in the FPR, particularly in recommendation 31. Additionally, only modest progress has been made on the following more specific recommendations for private land:

- Maximization of opportunities for access to carbon markets (recommendation 33).
- Independent study of efficacy of current regulations on riparian protection zones (recommendation 25).
- Independent study of efficacy of wildlife clumps (recommendation 26).
- Outcomes-based forestry regulations for private industrial lands (recommendation 28).
- Implementation of the Endangered Species Act on private land (recommendation 29).
- Prohibition of full tree harvesting in clearcutting on private land (recommendation 24).

There is a danger in diverting attention from the work being done on the implementation of Crown land recommendations when that work may finally be moving from the policy-making and planning stage to the implementation stage. I believe, however, it is time for implementation of the FPR to expand to include organized work on the recommendations that apply exclusively to private land, as well as to implementation on private land of the recommendations that apply to both Crown and private lands. I am worried that if this does not happen soon, implementation of the FPR may never get to private land in any serious way because of the inertia that can form when the lapse of time between the making and action on recommendations becomes inordinate. This is a particular risk in this context due to what I see as a historic unwillingness of the Department to address forestry on private land, and the continuing tendency to doubt whether it can or should.

Parallel Initiatives

Outside of the Department, a number of government initiatives will support achievement of the objectives of the FPR's recommendations even though they are not being conducted as part of the implementation of the FPR.

One of these is the Forestry Innovation Transition Trust, mentioned above. It is a part of a larger forestry sector transition process addressing trade opportunities and market research; innovation, diversification, and entrepreneurship; workforce development; woodlot owner leadership; and supply chain management.⁴³ This broader process is being led or advised by the Forestry Economy Task Force. Among other initiatives, it has provided \$250,000 of funding to a Forestry HR Sector Council, which is sponsored by the Department of Labour and Higher

Lahey report." See "Two More Forestry Projects Funded: Next Round of Applications Opens," <https://novascotia.ca/news/release/?id=20211015003>.

⁴³ More information is available at <https://novascotia.ca/forestry-sector-support/transition.asp>.

Education. This Council could contribute to progress on FPR recommendation 43, which calls for an overall strategy for attracting and retaining forest professionals and their professional development in the mechanics, principles, and science of ecological forestry. Also promising in this regard is the announcement of \$6,160,130 in funding from the Trust for the creation of a Centre of Forest Innovation at the Nova Scotia Community College, with a training mandate that embraces ecological forestry practices and the gender, racial, and age inclusiveness of forestry as an industry, as called for in the FPR.⁴⁴

This transition process has been guided by a vision that is brief and general but broadly consistent with the themes of the FPR. It includes initiatives that could support systemic change in Nova Scotia's forestry industry in an ecological direction. It would, however, be reassuring if the objectives of the process were more unequivocally stated to be the adoption and implementation of the triad and ecological forestry more specifically and the broader implementation of the FPR. The work of the Trust, the Task Force, and the Forestry HR Sector Council should be clearly and strongly connected to the work of the Department in implementing the FPR to ensure that each supports, builds on, and amplifies the work of the others. It is particularly important that the Department's work on FPR implementation and these parallel initiatives are pursuing the same objectives, guided by a common understanding of the two overriding recommendations of the FPR – embrace of an ecological forestry paradigm and implementation of the triad approach to forest management zoning. These connections and alignments may already be in place, but they are not apparent to me.

It is very positive and encouraging that Nova Scotia is continuing to build its network of protected conservation areas. There was no specific recommendation on this in the FPR, but the report did say the conservation leg of the triad was unfinished and that there should be “ongoing development of the province's network of wilderness areas, nature reserves, parks and privately conserved lands.”

Since the FPR's release, the province designated more than 17,000 hectares of new protected areas and increased its provincial target from 13 to 14 per cent. More recently, the government announced a target of protecting 20 percent of the province's lands and waters by 2030, which has recently been enshrined in law through the Environmental Goals and Climate Change Reduction Act. Currently, approximately 30 per cent of Crown lands are protected, and less than 0.5 per cent of protected land is privately owned. If Nova Scotia is to reach both its own new goals – and national and international conservation goals⁴⁵ should it ever decide to adopt them – in a way that ensures representativeness and leaves space for forestry on Crown lands, conservation on privately held lands as well as on Crown lands will have to increase

⁴⁴ <https://thelaker.ca/creation-of-centre-of-forest-innovation-for-nsc-announced/>

⁴⁵ An international conservation goal of 30% of landmass has been gaining traction in some jurisdictions. It has been adopted by Canada.

substantially.⁴⁶ For that to happen, conservation on private land needs to be supported by all available active means.

Embrace of the Ecological Paradigm

I have an overall impression that, between the lines of all of the good work underway, the Department has not fundamentally embraced the ecological paradigm called for in the FPR. I view it as still operating within a paradigm in which forest production and ecological systems are regarded as values to be balanced with one another, with the balance in favour of the former where the two come into essential conflict. This is contrary to what was explicitly said in the first few paragraphs of the FPR, where, after stating concerns about the mandate I had been given to make recommendations balancing “long-term environmental, social, and economic interests in managing the province’s forests,” I wrote:

I have concluded that my approach should be to make recommendations that seek to balance environmental, social, and economic interests within a framework that gives priority to the protection and enhancement of ecosystems and biodiversity.

In the Executive Summary of the FPR, I wrote:

My mandate was to make recommendations on forest practices that would, if implemented, balance environmental, social, and economic objectives, which I have interpreted to include values. My conclusion is that environmental, social, and economic values should be balanced by using forest practices that give priority to protecting and enhancing ecosystems and biodiversity.

In other words, I have concluded that protecting ecosystems and biodiversity should not be balanced against other objectives and values as if they were of equal weight or importance to those other objectives or values. Instead, protecting and enhancing ecosystems should be the objective (the outcome) of how we balance environmental, social, and economic objectives and values in practising forestry in Nova Scotia. A number of reasons are given for this conclusion, but the primary reason is that ecosystems and biodiversity are the foundation on which the other values, including the economic ones, ultimately depend.

These key conclusions were embedded in the first three recommendations in the FPR, as follows:

⁴⁶ I have not considered the Owls Head controversy, or controversies over particular harvesting approvals, as part of this evaluation. Just the same, I must observe that transparency, integrity, and accountability in conservation governance and decision making is every bit as important as I said, in the FPR, they were in the governance and operational aspects of forestry on Crown lands.

1. In respect to forestry practices and related forestry policy, economic, social, and environmental values and objectives must be balanced within a policy and operational framework that gives priority to the conservation and sustainable management of ecosystems and biodiversity.
2. To align forestry with the priority to be given to ecological protection and enhancement, policy and operational decision making relating to forestry practices should be guided by an overall approach to forestry called “ecological forestry,” which seeks to
 - A. align forestry with ecological considerations and with ecological protection and enhancement by integrating ecological knowledge, principles, and concepts, including traditional knowledge, into how forestry is conducted.
 - B. combine the societal mandate to both protect ecological systems and biodiversity while sustaining a productive and profitable forestry sector by aligning forestry practices with natural processes, including disturbance regimes, that ecological forestry emulates.
3. Consistent with the ecological forestry paradigm, the objective of forestry practices in Nova Scotia should be, wherever appropriate, to maintain or restore multi-aged and mixed-species forests in which late-successional species have the opportunity to grow and mature where they represent the forest’s natural condition. Practices that do otherwise in those forests should be curtailed.

These three recommendations were immediately qualified by the fourth, which calls for the robust implementation of the triad model of forest management and the development of each of its legs: the conservation leg, the high-production leg, and the intervening ecological matrix leg, where conservation and production objectives are combined through ecological forestry.

On the recommendations on which it has invested substantial effort, the Department’s progress points in the direction of these conclusions and recommendations. But given how arduous some of this progress has been and the lack of comparable progress on the majority of recommendations, I am not convinced there has been a fundamental embrace of the ecological forestry paradigm – the recommendation in the FPR that most of the other recommendations were intended to implement. In other words, the Department’s approach lacks clarity of understanding between means and ends. The overarching priority of protecting and enhancing ecosystems and biodiversity and the objective of, wherever appropriate, maintaining or restoring multi-aged and mixed-species forests, must be the critical considerations in how each recommendation is understood and implemented.

With this clarity, within the framework of the triad, it would be clearer than it seems to be that implementation choices between options that prioritize or emphasize production (especially in the ecological matrix) and those that prioritize ecological protection and enhancement, *should consistently be made in favour of ecological protection and enhancement*. This should be clear because, “the objective of forestry practices in Nova Scotia should be, wherever appropriate, to

maintain or restore multi-aged and mixed-species forests in which late-successional species have the opportunity to grow and mature where they represent the forest's natural condition."

This objective must be the critical consideration in how all recommendations that are directed toward ecological protection and enhancement are understood and implemented. This is particularly important for recommendations that are directly about the ecological matrix leg of the triad, such as the development of a new silvicultural guide for those lands. It is, however, also important for virtually all implementation choices, including how lands are selected for the various legs of the triad.

There is an important ethical dimension in the conclusion that the objective of forestry practices in Nova Scotia should be, within the framework of the triad, to maintain or restore multi-aged and mixed-species forests in which late-successional species have the opportunity to grow and mature where they represent the forest's natural condition. This objective should not be understood as solely a functional objective designed to support a range of practical environmental, economic, and social goals. It rests more deeply on a moral proposition, that we are obligated to care for the well-being of other animals and plants and the natural conditions on which their well-being and ultimately our well-being depends. This is why the conclusion that "protecting and enhancing ecosystems should be the objective (the outcome) of how we balance environmental, social, and economic objectives and values in practising forestry in Nova Scotia" is also an ethical duty, not only sound policy.⁴⁷

This viewpoint is reinforced by understanding that caring for and protecting the land, including forests, is central to Mi'kmaw ethics, way of life, and world view, which does not see forests and trees as resources but as relations. An ethical, and not just functional, approach to provincial forest policy – one informed by Mi'kmaw teachings, values, and example and the centrality of the forests to Mi'kmaw culture, communities, economy, and life – is called for by

- respect for Mi'kmaw sovereignty, the treaties of peace and friendship, and recognition that Nova Scotia is unceded territory;
- full embrace of the Mi'kmaw concepts of Netukulimk, or sustainability, and Etuaptmumk, or two-eyed seeing; and
- the overarching and fundamental imperative of reconciliation, and the vital importance to it of responsible stewardship of the land.

⁴⁷ Chelsea Batavia and Michael Paul Nelson, "Conceptual Ambiguities and Practical Challenges of Ecological Forestry: A Critical Review" *J. For.* 114(5): 572–581 <http://dx.doi.org/10.5849/jof.15-103> (2016). The authors argue that one of the reasons for the failure of attempts to institute ecological forestry is the tendency to focus on technical dimensions of the transition from industrial to ecological forestry without adequate regard for its ethical and moral rationales. I am grateful to University of King's College student Chelsea McMillan in bringing this article to my attention.

Overall Assessment of Implementation

Work has started on 89 per cent of the FPR's recommendations, although it is at a preliminary stage for many of those recommendations. There is much solid progress being made on policy and planning to implement some of the most important FPR recommendations for Crown lands. Work on 20 per cent of recommendations is in the implementation phase beyond policymaking and planning.

The Department opted to implement the FPR instead of studying whether to implement it, and started by creating an independent evaluation process led by the leader of the review that produced the FPR. It included other members of the review team on the departmental teams that were assigned responsibility for key recommendations and relied on their advice.

A crucial enabling document for the triad on Crown lands, the SGEM, as well as the framework for identifying high-production zones, which is still under consultation and review, should finally allow the triad on Crown lands to be implemented in the near future. Input received in consultations (in the case of the high-production document) and from both consultations and independent evaluation (in the case of the SGEM) has been substantially incorporated into both of those documents. This is, I think, more telling than the inadequacies of the first drafts, which were, after all, developed with the independent advice of members of the forest practices review team.

The Department has been working hard and in good faith, if not always with optimal efficiency and effectiveness, and under all the constraints that apply to making change happen in government, to implement foundational parts of the FPR that pertain to Crown lands. I do not believe there has been an organized effort to delay implementation for the purpose of frustrating the FPR's implementation. The amount of work completed and the allocation of resources to the work has been impressive. The commitment of those doing it and of their deputy ministers has been strong.

The provincial government has taken several potentially significant parallel initiatives that could be important to implementation of FPR recommendations on private land: the creation of a sector council focused on HR issues, establishment of the Forest Innovation Transition Trust, and funding of the Nova Scotia Community College's Centre of Forest Innovation and the Family Forest Network. Action is underway to increase the percentage of Crown lands that are protected for conservation.

The reality, however, is that none of this solid work has resulted in actual change on the ground in how forestry is being planned, managed, or conducted, and I have no indication of when any of it will. Combined with the fact that only four recommendations have been fully implemented and that the implementation phase of work on recommendations has not started on roughly two-thirds of all recommendations, implementation cannot be so far judged a success. Based on the information at my disposal, I am not able to conclude that any change has happened in

how forestry is practised based on the work the Department has done on implementing the FPR. And I am not able to assess the quality of the work that I believe has been done on several major foundational recommendations. Further, as discussed above, work on a number of major recommendations has barely begun.

I have not conducted the kind of forensic investigation that would allow me to determine why this is so. I believe one important contributing factor is the extent of change from business-as-usual called for by the FPR. The Executive Summary of the Department's progress report acknowledges this:

One challenge has been in adjusting mindset and culture with respect to how the Department approaches implementing ecological forestry. The Forestry Review identified the need to shift to prioritizing biodiversity – a notable difference in the way the Department has worked in the past. While the Department was in the midst of a shift to more ecosystem-based management, the Lahey report accelerated the shift, which has also accelerated the approach required to have successful outcomes. This shift includes having a more intense focus on the work and on increased use of the expertise of the Department's biologists and ecologists.

The frankness of this acknowledgement, as compared to past claims that the Department was giving priority to ecosystems and biodiversity when it was not, is encouraging. So is the recognition, albeit implicit, that a shift in mindset and culture is difficult, complex, and time-consuming.

Another crucial factor has been the unintended consequences of the good faith decision of the Department not to develop a sufficiently clear or strong overall implementation strategy or plan that connects the work on each recommendation to the work on other recommendations and all of the work on all of the recommendations to an overall understanding of the big goals (outcomes) of ecological forestry and the triad. This may have limited delay in getting the work started on particular recommendations but if so, it was at the cost of delaying the speed at which that work has progressed due to the number of strategic questions that may have become entangled with the operational and administrative aspect of implementation.

It would be surprising if resistance from either within or outside the Department was not another impediment to the Department, particularly in light of the shift in mindset and culture the Department recognizes is called for by the FPR. Another question I do not have the information to answer is whether the Department has received adequate support from the rest of government. It is my impression that the Department has sometimes experienced delays in getting the approval it required from within the machinery of government (1) to act on recommendations as and when it wanted to, or (2) to conduct consultations and share information and documents through the processes the Department has created to address concerns with transparency. I accept the Department's claim that an increase in participatory

processes is resource intensive and deliberate work that adds time to policy and decision making.

The Department reports that progress has been inhibited by the need to respond to the closure of Northern Pulp and by the adverse impact of the early stages of the pandemic on the productivity of the Department, particularly in relation to consultations. Without knowing the details, I can easily understand how both of these events could have created delay in the FPR implementation process.

The immediate issue, however, is the effect rather than the reasons for the slow state of progress. It is a particular concern that forestry that is not ecological forestry continues to be conducted on Crown lands that will be largely reserved to ecological forestry once the triad is finally implemented on Crown lands. Since this forestry is not guided by the yet-to-be-finalized or implemented SGEM or limited by the yet-to-be-approved Old Forest Policy, to give but two examples, it could be postponing many opportunities to protect and enhance the forests that will be within the ecological matrix leg of the triad when the triad is finally implemented on Crown lands.

It is particularly serious that the new SGEM has still not been implemented more than three years after the release of the FPR, given that (a) it was described as the most important of the Report's 45 recommendations and (b) substituting ecological forestry for industrial forestry (clearcutting) on a substantial majority of Crown lands was *the most important change called for*.⁴⁸ The Department has shown it is concerned to get the SGEM right, as is clear from its acceptance of the improvements proposed by Dr. Laura Kenefic in the evaluations she has written of the second and third drafts of the SGEM. But in the meantime, both the level of harvesting on Crown lands and the percentage of it conducted by clearcutting appear to have remained constant from the date on which the Report was submitted to the Department, which was August 22, 2018.

This concern is accentuated by the Environmental Goals and Climate Change Reduction Act, which gives government until 2023 to implement ecological forestry and the triad on Crown land. It is very positive that this commitment is now legislated, and it is understandable that the time frame for satisfying the commitment must take account of how much work remains to be done before implementation can happen. But it begs the question of the interim measures that can be taken to prevent further degradation of the forests that will be reserved for ecological forestry under the triad when it is implemented.

It is now clear that the interim retention guidelines instituted in 2018, which I initially supported, are not satisfactorily addressing this concern. These guidelines require variable

⁴⁸ On page vi of the FPR, the overall conclusions of the report were said to call for "robust use of the Crown's authority over Crown land to require – on an ambitious timeframe – that forestry on it be conducted ecologically."

retention, with clearcutting of between 10 and 30 per cent. This policy was adopted immediately after the release of the FPR to mitigate the ecological impact of existing forest practices while the recommendations of the FPR were being implemented. It was never claimed that it would substitute for the ecological forestry practices the FPR calls for. Still, the policy showed promising intent on behalf of the Department, as the effect of the policy, depending on how it is administered, is to reduce the yield of economically valuable trees that can be cut in harvesting activities. I accept that it has probably accomplished that limited goal.

There are, however, three serious problems with the interim retention guidelines. The first is that retention by itself does not come close to replicating the ecological outcomes expected from ecological forestry. It follows that the longer the reliance on the retention guidelines and the delay in making the transition to ecological forestry, the greater the ecological loss in the parts of the forest that will eventually come under an ecological forestry regime.

The second problem with the retention guidelines is an amplification of the first. A limit on the percentage of a stand that can be harvested is a very different thing from harvesting that is guided by intentional matching of harvesting methods and volume to ecological objectives that are germane to the ecosystem in which harvesting is happening. The former somewhat mitigates the adverse ecological impacts of clearcutting.⁴⁹ The latter uses silviculture to intentionally leave behind the volume and variety of trees – as well as the forest structures – the ecosystem needs to maintain its functionality and to promote the regeneration the forest needs to maintain or regain its natural characteristics.

The third problem with the retention guidelines is a consequence of the difference between retention for the sake of retention and harvesting to achieve multi-generational ecological objectives. With the former, the experience of the last few years suggests that trees are vulnerable under the interim guidelines to being blown down because the retention patterns are not designed to mitigate this vulnerability. Observation indicates there has been considerable blowdowns of trees retained under the interim retention policy. As emphasized in the FPR, blowdowns have ecological value. But it is limited value compared to the ecological value yielded from ecological forestry approaches, such as irregular shelterwood, that are, among many other things, designed to limit blowdowns.

The situation requires urgent attention, out of the same laudable motivation that inspired the interim retention guidelines, until the new SGEM can be fully implemented. This would be consistent with the number one recommendation in the FPR – to make ecosystems and

⁴⁹ Because there is no specification in the interim retention policy of amount or proportion of acceptable growing stock to be retained, implementation may have a degrading effect on treated stands if trees of poor quality, form, and vigour are exclusively left. There is no guard in the policy against that, and this is counter to the intentions of ecological forestry, which blend management for ecological outcomes and protection against stand degradation.

biodiversity the priority in how forests are managed, especially on Crown lands. It is imperative that immediate action be taken to ensure that any and all harvesting on Crown lands that may be included in the ecological matrix leg of the triad be limited to harvesting that would be in accordance with the new SGEM, amended in accordance with the last review of it by Dr. Kenefic.

Meanwhile, designating the parts of Crown lands that will be for ecological forestry and for high-production forestry, respectively, must happen soon, at least provisionally. No matter how strong the SGEM or the framework for the selection and operation of high-production zones may be, neither can have any impact until this designation happens. Conversely, designation would be a major step forward in overall implementation of the FPR.

Part 3: Framework for Ongoing Evaluation

Introduction

In the FPR, I wrote, at paragraph 161, “In light of recent history, in which DNR prepared a series of reports evaluating its own progress on implementing the commitments made in the natural resources strategy, there is a need for a mechanism of arms-length and external accountability.” I then proposed that evaluation be by an “independent committee of technical experts.” I contemplated yearly evaluations.

In addition to completing an evaluation of progress to date, my mandate is to propose a framework for future evaluations. The Department has therefore accepted the recommendation for an ongoing process of evaluation.

Independence, Function, and Evaluators

Independent evaluation plays an important accountability role. It can help to ensure that the Department follows through on its commitment to implement the FPR and to ensure that it does so with sufficient seriousness, intent, and effort to change forestry and forests in the fundamental ways that the FPR says they must be changed. This is the role of evaluation that appears to be of most interest to those who support independent evaluation of the Department’s implementation of the FPR. It is a mechanism to guard against the concern that the Department and, more broadly, government and the industry, will not follow through.

Evaluation should, however, also be seen as a source of positive guidance to the process of implementation. For implementation to be successful, it needs more than the right intentions and level of effort. It needs objective and reliable information on whether the choices made at each stage of implementation are proving to be the right ones – including information on the many choices that must be made on questions not answered in the FPR and on which there is incomplete evidence, professional disagreement, and valid differences of opinion between people who support the FPR and its implementation. More broadly, the implementation

process needs to have information as to whether the overall process of implementation is producing results that are moving forestry and forests in the direction called for in the FPR. The implementation process also needs advice, based on objective assessment of the results being achieved, as to how implementation of the FPR can be altered, accelerated, and supplemented to enhance its effectiveness in achieving the FPR's objectives.

In the long term, evaluation is intended to allow us to determine not only if change is happening, and the rate and extent of that change, but also what accounts for the change. For example, if evaluation shows diligent implementation is happening, yet there is minimal or slow progress toward corresponding outcomes, this should lead to inquiry as to what else, beyond implementation of the FPR's recommendations, is needed to accelerate progress.

Providing guidance and assistance to implementation in all of these ways is the deeper role of evaluation. Its importance is demonstrated by the evaluations Dr. Laura Kenefic conducted, as part of this evaluation, of successive drafts of the SGEM, and by the Department's positive response to those evaluations. More broadly, the importance of this dimension of evaluation lies in the reality that the shift to ecological forestry called for in the FPR is a complex, not merely complicated, undertaking. Implementation must learn from itself if it is to be successful, even if intentionality and will are kept strong through accountability. This demands the feedback, learning, and opportunities for adaptation that an ongoing process of independent evaluation can provide.

Independence from the Department – which is crucial – is not the only kind of independence that matters. My experience in leading both the forest practices review and this evaluation leads me to conclude that the independence of evaluation from both sides in Nova Scotia's polarized debate about forestry and how it should be conducted is also very important. The value of evaluation depends on its objectivity. This kind of independence is crucial to objectivity of evaluation of the implementation of the FPR.

For these and other reasons, future evaluations, like this one, should be conducted by an independent team that includes deep expertise and experience in the ecological forestry that is at the heart of the FPR. Again, the work of Dr. Kenefic in evaluating two iterative draft versions of the SGEM is a good example of this point. Without her expertise in the silviculture of ecological forestry, our team could not have been able to carry out the qualitative analysis of this crucial document that allowed us to judge if it would result in ecological forestry if adopted. Such expertise in the evaluation team is critical if evaluation is to go beyond the kind of simplistic evaluation that tracks how many recommendations the Department has implemented. What is required is evaluation that can grapple with more-important questions, such as:

- Is implementation consistent with the rationale of each recommendation and the priority the FPR says should be placed on protecting and enhancing ecosystems and biodiversity?

- Is implementation likely to protect and enhance ecosystems and biodiversity given what is known or reasonably expected about what their protection and enhancement requires?

Holistic Evaluation

Future evaluations should be framed not only as evaluations of progress on the implementation of a list of discrete recommendations but as evaluations of implementation of the FPR as a whole, and of the outputs and outcomes its holistic implementation is intended to achieve. This means not only assessment of what has and has not been done, but also a focus on what has been, is likely to be, or may not be accomplished, given what has or has not been done.

The framework for future evaluations should therefore include a more-robust implementation plan developed by the Department. It should also, however, address the big picture of the future that the FPR intended to create. To do that, it must have greater clarity than was provided by the FPR on at least the following questions:

- Is the triad, including the intensive forestry leg, part of or something distinct from ecological forestry?
- What are the interconnections between recommendations for Crown and private lands?
- How can the FPR and its 45 recommendations be visualized in an integrated and holistic way; i.e., as more than the sum of its parts?
- What is the logic (or logic model) that connects implementation of specific recommendations and of all the recommendations to the FPR's overall objectives?

The Triad and Ecological Forestry⁵⁰

The triad approach to the management of forests is a core element of the FPR. It is not an end in itself, but a crucial means to the end. It is the overriding framework within which all of the more specific recommendations are intended to operate. It is crucial to our overall ability, within an ecological paradigm, to concentrate intensive forestry geographically and to dedicate a growing percentage of the working forest to ecological forestry while ensuring, in both the short and the long terms, a wood supply that can support a forest industry of meaningful scale.

During the evaluation process, this question arose: Given that the FPR calls for an ecological paradigm in forestry, how can it also recommend adoption of the triad approach to forest management, which includes a zone of forested lands managed solely for high-production intensive forestry, including by clearcutting? Sometimes the question was posed as follows: Is

⁵⁰ Dr. Graham Forbes, "Triad – A New Vision" (Undated) <https://novascotia.ca/ecological-forestry/Triad-A-New-Vision-for-NS-Forests.pdf>. Dr. Forbes wrote this paper for the Department in the wake of the FPR. It is a useful analysis of the recommendations of the FPR.

the triad, or more specifically its high-production leg, part of the ecological forestry paradigm, or is it separate from that paradigm?

The high-production leg of the triad is not part of ecological forestry in the sense that forestry in this leg of the triad is itself ecological. Instead, this leg of the triad and its focus on growing of commercial trees helps to enable the practice of ecological forestry where forestry is conducted in the larger percentage of the working forest that is dedicated under the triad to ecological forestry. It does this if the supply of wood from high-production zones underpins the economic viability of industry even as the methods of intensive forestry are largely excluded from the triad's ecological forestry leg, and as both intensive and ecological forestry are excluded from the triad's conservation leg.

The triad is therefore unequivocally part of the ecological forestry paradigm in calling for forestry in the ecological matrix leg that is designed and conducted to maintain and enhance ecosystems. More broadly, it is ecological in that two of its three legs, and the majority of the land base managed under the triad, give ecological objectives priority over production and short-term economic objectives. The high-production leg enables the two legs that are directly ecological, and is in that way also part of the shift to ecological forestry within a paradigm that gives priority to ecosystems and biodiversity.⁵¹

The degree to which the production and ecological legs of the triad are integral to each other in achieving the high-level outcomes of the report, and to each other's success, means that recommendations that are connected to specific legs of the triad are of equal importance to the overall implementation of the FPR and to the adoption of the ecological paradigm.

Interconnections between Recommendations for Crown and Private Lands

The FPR made three categories of recommendations: for Crown lands, for private land, and for both Crown and private lands. The recommendations were explicitly presented as falling into these three categories. This created a danger of the recommendations for Crown lands and the recommendations for private land as being viewed as two distinct sets of recommendations calling for two distinct processes of implementation to achieve different objectives. It opened the possibility that the common purpose of the two sets of recommendations would be overlooked in the focus on which were for Crown lands and which were for private land.

It may therefore be useful to emphasize that the FPR did not make different recommendations for Crown and private lands because the forest practice issues were different on Crown and private lands. Rather, the report concluded that the questions about forestry practices were the same on Crown and private lands. On both, too much of the harvesting within ecosystems of

⁵¹ The efficacy of high-production zones in doing this depends on how they are managed and may also benefit from the combined contribution that the ecological and conservations legs make to healthier and more productive forests.

mixed- and multi-aged forests is being conducted by clearcutting that violates the natural disturbance regimes applicable to those ecosystems. The report concluded that this should be addressed on both Crown and private lands, but in different ways with different kinds of measures for pragmatic reasons. Most importantly, it was to respect landowner rights and to prevent progress on forestry practices from becoming entangled in a debate over those rights and government's authority over them.

For that reason, the report emphasized recommendations for private land that would encourage and support landowners to actively manage their lands within the triad model to achieve similar outcomes as called for on Crown lands with more prescriptive recommendations. But this in no way was meant to suggest that the recommendations for private land were less important. It must instead be clearly understood that the recommendations for private land are of equal importance as the Crown lands recommendations, given these considerations: private land makes up roughly 70 per cent of forested land, a higher percentage of harvesting on private land is by clearcutting, and a non-prescriptive approach can be expected to work more gradually than a prescriptive one.

In addition, the operational interconnectedness of the recommendations for Crown and private lands needs to be stressed. Because ecosystems and the plant and animal life they support cut across the boundaries between Crown and private lands, measures to protect and enhance them on Crown lands will be less effective if they are not matched by comparable efforts on private land. In particular, the health of the forest across the boundary between Crown and private lands is crucial to the connectivity and continuity of the forests across the landscape that is vital to wildlife. Also, if the recommendations for Crown lands are effectively implemented, the health and productivity of forests on private land could become of crucial importance to industry as the amount of Crown land it can manage intensively for high production is reduced. To some extent, the long-term, sustainable opportunity available to private landowners to benefit from the shift of forest management on Crown lands from industrial production to ecological production and conservation will depend on the health and productivity of the forests on their lands.

The different approach for implementing the FPR on Crown and private lands are interconnected in another way that requires emphasis. Given the importance of protecting ecosystems and biodiversity on private lands if they are to be the priority in forest practices at a provincial scale, a non-prescriptive approach to their protection on private lands can be acceptable only if the predominant objective in the management of Crown land is the protection of ecosystems and biodiversity through rapid implementation of a triad on Crown land that allocates a substantial majority of those lands to the two ecological legs of the triad. There is no other way, as long as a non-prescriptive approach is taken to the triad's implementation on private lands, to achieve a substantial increase in the health of Nova Scotia's ecosystems and biodiversity on a provincial scale and in an acceptable time frame.

In sum, the interconnection and interdependency of the recommendations for Crown and for private land is not incidental or minor. It is integral to their mutual functionality and to the successful implementation of the FPR on a provincial scale.

Visualizing the FPR as More Than the Sum of Its Parts

A difficulty facing implementation of the FPR, and therefore evaluation of its implementation, is that the FPR is exclusively structured as a sequential list of conclusions and recommendations. To some extent, this was a result of time constraints, but it was also intentional: the ecological imperative for action on changing how forestry is conducted, especially on Crown lands, the history of the Department's response to the Natural Resources Strategy, and widespread lack of trust in the Department, all pointed toward the need for and the value of a blunt directional, "get on with it" approach. In addition, a directional approach aligned with an underlying conclusion that, to a considerable extent, the Department needed to actually do what it said it would do when it started down the path of "ecosystem-based forestry" roughly ten years before I was asked to review forest practices. Rather than arguing for that approach, the FPR asserted the need for it, identified an overall strategy for its implementation at a landscape scale (the triad) and otherwise focused on the specific actions that should be taken to implement it seriously.

The result was a report that gave more attention to what should be done than to why it should be done. This leaves the FPR open to being read as a list of recommendations that is only, or less than, the sum of its parts – especially without the background context of the Department's previously stated intention to move to ecosystems-based forestry and the Natural Resources Strategy. I have seen evidence of this in how it is being implemented from the Department and in how it is discussed by those concerned with its implementation. The FPR is not as helpful as it could have been in avoiding this. Particularly, it does not provide extensive explanations of how its 45 recommendations are connected to each other or how they are designed to work together to create the overall change in forestry and forests the report endorses and says is required.

This leaves room for uncertainty and debate about the future state that implementation of the recommendations is intended to achieve, about the rationale for and relative importance of various recommendations, and about how individual recommendations should be implemented to accomplish not just their individual rationale but also to achieve the systemic changes called for in the FPR. Among other things, this lends itself to an approach to implementation that focuses on specific recommendations without a clear understanding of how each recommendation is related to the larger paradigm shift called for in the report or an appreciation for how the efficacy of the work done on any particular recommendation or group of recommendations may depend on or be necessary to the effective implementation of other recommendations.

This situation also pertains to evaluation if the intent is to examine not only the implementation of particular recommendations but also progress toward achievement of the report's high-level goals.

It is for the Department to develop and articulate its approach to implementation. My job is to propose the evaluation framework that will be used to evaluate the adequacy and robustness of the Department's approach. At the same time, I realize that as the author of the FPR, I have the opportunity, with the assistance of the evaluation team, to offer some of the further guidance I might have provided in the original report on the overall outcomes that all of the specific recommendations were designed to achieve through their cumulative effect and on how the FPR should accordingly be implemented – not as a list of discrete recommendations, but as parts of an integrated plan for changing forestry and improving forests.

Figure 1 is an effort to depict the overall outcome that implementation must strive for and how it is connected to each of the three categories of recommendations set out in the FPR; i.e., for Crown lands, for private land, and for both Crown and private lands. It illustrates how the implementation of each of these separate but overlapping and interconnected categories of recommendations, within the framework of the triad approach to forest management, is intended over time to achieve an overall forest management outcome on a provincial scale.

In this outcome, a majority of Crown lands are managed for conservation or ecological production through a rapid shift in emphasis in the management of Crown lands from industrial production to conservation and ecological production. On private land, a growing percentage of private land that is now passively managed becomes more actively managed for higher production, ecological production, conservation, or for some combination of these objectives, as decided by landowners.

The circle represents all the forested land in Nova Scotia and the percentage of that land owned publicly and privately. The blue part of the circle represents the roughly 30 per cent of the forested land that is Crown land. It is subdivided into the three legs of the triad in *rough* proportion to their anticipated relative size. This shows public land being fully managed under the triad, reflecting the ability of the Crown, as landholder on behalf of the public, to implement the triad both comprehensively and rapidly. It also shows the expected allocation of a high percentage of Crown lands to conservation or the ecological matrix, where forestry will be limited largely to ecological forestry, which gives primacy to ecological and biodiversity objectives. This allows Crown lands to act primarily as a reservoir of ecological protection while ecological forestry and conservation are more incrementally advanced on private land and while a large and potentially growing amount of private land is either managed for high production or continues to be available for clearcut harvesting.

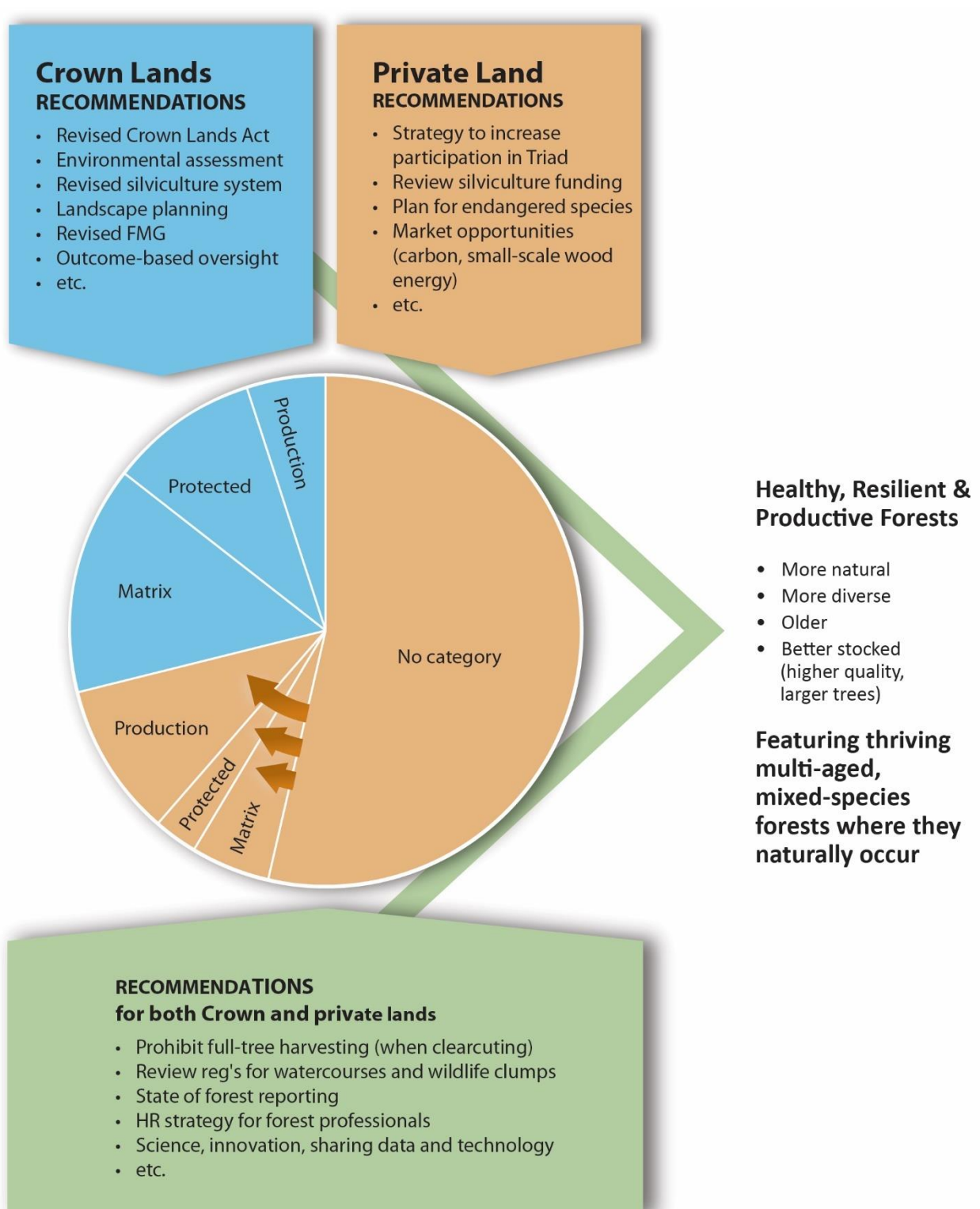


Figure 1 Visualizing the FPR as an integrated whole

The blue text box lists FPR recommendations for Crown lands that target implementation of ecological forestry in the matrix, or aim to ensure that the intensive forestry that continues to happen on Crown lands is subject to better accountability for ecological outcomes. These recommendations include the recommendation to make environmental assessment part of the forestry management process (20), proposed changes to the Crown Lands Act (19), proposed review of the silviculture system for Crown lands (22), landscape-level forest planning that the Department continues to work on (13), a revised Forest Management Guide (10), and the shift to outcomes-based oversight of forestry activities (15, 21). These and other recommendations for Crown lands have specific and disparate objectives. But they also have shared objectives. One of them is greatly enhanced transparency and accountability, partly through expanded opportunities for the public to participate in the forest management planning process through a new EA process. This transparency and accountability, in turn, is intended to ensure that Crown land is managed in accordance with a triad that gives priority to ecosystems and biodiversity.

The orange part of the circle represents the roughly 70 per cent of the forested land that is privately owned. It is shown as being divided between each of the triad zones in rough approximation to what is known about how private land is currently managed. Roughly 15 per cent of it is classified as “industrial,” meaning it is owned by licensed mill owners. For the purposes of this illustration, we have equated these lands with the high-production leg of the triad, recognizing that some of these lands may not be managed for high production and that other lands not designated as industrial lands are under high-production management. We also know that a small percentage of private land is being protected for conservation by its owners, including the Nova Scotia Nature Trust and other conservation organizations. We further know that private land is being managed in ways that would bring it within the ecological matrix leg of the triad – but we have no way of knowing how much private land is being managed in this way. In Figure 1, we assume that the amount of land that is being managed in this way is less than the land being managed for high production and more than is being owned for conservation.

This leaves a fourth “no category” zone on private land to reflect the reality that a large but uncertain percentage of private land is currently not managed in ways that would bring it under any of the three legs of the triad. The primary goal of the FPR recommendations for private land is to increase the percentage of private land that is managed under the triad, while leaving this – and the choice between the triad’s legs – to landowners.

In Figure 1, the arrows from the “no category” part of private land to each of the legs of the triad on private land are intended to convey how implementation of the recommendations for private land – and other measures – will result in a growing percentage of private land being managed under one of the legs of the triad in a process that will be gradual and incremental, given that its pace is decided by the decision making of thousands of landowners. The intent is to reduce over time the amount of “no category” land and to maximize the amount of land

managed in one of the legs of the triad, ultimately in proportions that result in a majority or a large percentage of private land being managed under the triad. To ensure that forest practices overall give priority to ecosystems and biodiversity, a significant percentage of private lands managed under the triad should eventually be managed either in the triad's ecological matrix or conservation legs.

The orange text box for private land lists a number of recommendations that were made to influence how private forested land is managed and how forestry is conducted on private land to ensure that an increasing percentage of private land is effectively managed in one or more of the legs of the triad. These recommendations rely to a large extent on creating incentives and providing support, rather than regulation and include: a strategy and actions to achieve widespread participation in ecological forestry and the triad (27, 31), review of the silvicultural funding system for private land (30), creating a framework for maximizing access to carbon credit trading opportunities (33), and supporting and enabling small-scale wood energy projects (35). But these recommendations also address the need to ensure that all forestry on private land addresses pressing ecological concerns, the leading example being recommendation 29, which calls for implementation of the Endangered Species Act on private as well as Crown lands.

The green text box at the bottom of the circle references the recommendations that apply to both Crown and private lands. Some are intended to ensure that all forestry meets basic ecological standards, which includes the recommendations to prohibit full-tree harvesting when combined with clearcutting (24), to review and improve efficacy of riparian zone protection regulations (25), and to review "wildlife clumps" regulations (26). Others are broader in focus and relate to the effectiveness of forestry in both its productivity and ecological impacts, including the recommendations for strengthening of state of the forest reporting (5), development of a human resource strategy for forest professionals (43), and increasing reliance on science, innovation, and sharing of data and technology (39, 40, 41).

Listed to the right of Figure 1 are central shared goals of all the FPR recommendations, which we summarize as "Healthy, Resilient, and Productive Forests." In contrast to the degraded forests of today, a growing percentage of our forests, including those that are multi-aged and mixed species in their natural state, would be more natural and diverse, older, and better stocked with higher quality, larger trees. This is the holistic and overriding outcome that implementation of the FPR and all of its recommendations, working in tandem, is intended to move us toward. While this outcome depends most directly on how implementation of the FPR will result in a much higher percentage of our forests being managed either solely for conservation or for a combination of conservation and production objectives with ecological forestry practices, it also depends on how the implementation of the FPR creates space in the forest landscape for concentrated high-production forestry. And although the outcome is primarily an ecological one, it also has important economic and social dimensions to the extent that a healthy forestry sector depends in the long term on healthy forests.

In sum, Figure 1 illustrates how various recommendations of the FPR collectively work together to achieve the common overall outcome of healthy, resilient, and productive forests that support a forestry sector of scale composed of diverse forest-related businesses. It is important to emphasize that the Department must not rely solely on these recommendations alone to achieve this outcome. There are many existing policies and practices that already support this outcome, and they should continue and be administered and applied to ensure they optimally contribute. Further, gaps may be identified in the FPR's recommendations as implementation proceeds, and new policies and practices that the FPR had not considered may need to be developed.

The FPR's Logic Model

When clarity on the intended outcomes of implementation is achieved, the question becomes how the individual recommendations of the FPR, supplemented with other measures as required, can be implemented to achieve those outcomes of healthy, resilient, and productive forests. This raises the question of the FPR's logic model.

According to Rob Assels,

Logic models are visual illustrations of a program's resources (inputs), activities, outputs, and outcomes. They help in showing how these often-complex components lead to the eventual goal of the program. They tend to be based on a Theory of Change, which is the narrative explanation of why the program is necessary and how it will result in the desired change.

In our case the Theory of Change is your report.

Figure 2 depicts a logic model for implementing the FPR to achieve healthy, resilient, and productive forests based on progressive changes in forest governance, planning, forest practices, and the forest sector. Whether or not this model is used to guide implementation, it is the model I recommend for use in future evaluations. The model illustrates the conceptual implementation phases that implementation should follow to achieve the overall transition to healthier, more resilient, and productive forests depicted in Figure 1.

In the FPR, systemic change in forest practices in the ecological matrix leg of the triad is posited to be the crucial mechanism for changing Nova Scotia's forests. Many FPR recommendations are directed directly to these forest practices, the primary one being the new SGEM. The question becomes how to ensure the success of these recommendations by creating the conditions for their success. The core logic of the FPR is that for forest practices to be changed systematically and on the scale called for, fundamental changes have to be immediately made in how forestry is governed and how forestry planning happens on Crown lands and, over a longer time frame, on a significant percentage of private land as well.

The logic model depicted in Figure 2 therefore starts with FPR recommendations that address the governance of forestry to reflect their role in creating the conditions for a systematic

change in forest practices within the matrix and for reducing the adverse ecological impact of forestry outside the matrix. These are the recommendations that set the direction or objective of policy on forests and forestry in Nova Scotia. They should be put into action in the early stages of implementation. The core of these recommendations is the adoption of an ecological paradigm for forestry that is implemented through the triad model of forest management in which a majority of Crown lands are designated for either conservation or ecological forestry, while the province supports landowners in managing their land under the leg of the triad of their choice.

Many of the other recommendations for Crown lands are also situated at the governance end of the logic model because they concern the legislative and policy changes that set the parameters within which the detailed planning and conduct of forestry on Crown lands will occur. For example, the recommendations for changes to the Crown Lands Act to make it an act about Crown lands rather than about forestry is one of these recommendations. But these recommendations also include recommendations that call for cultural change in the Department, such as the multiple calls in the FPR for a culture of transparency and accountability.

The primary mechanism by which changes in governance – the policy architecture for forestry – are expected to affect forest practices is through forest planning processes. Recommendations that are about forest planning – about how forestry is planned, organized, and conducted in particular locations and time frames to advance provincial forest and forestry policy – are therefore in the next phase or stage of the logic model. On Crown lands, the foundational one is the application of the triad. Another is the process of land use planning proposed for western Crown lands. A third is the alignment of forestry with the revised mapping of natural disturbance regimes. A fourth is the environmental assessment process recommended for forest management plans. The land use planning process for western Crown lands also fits into this category of recommendations.

Changes in how forestry is governed and planned create the context for the operation of recommendations that apply directly to forest practices. These are the next stage of the logic model, called “forest practices change.” As mentioned above, the primary one is the operationalization of the new SGEM. Another would be the proposed outcomes-based regulatory framework for high-production zones. A third would be any changes made to regulations protecting riparian zones and wildlife clumps after these regulations are independently reviewed.

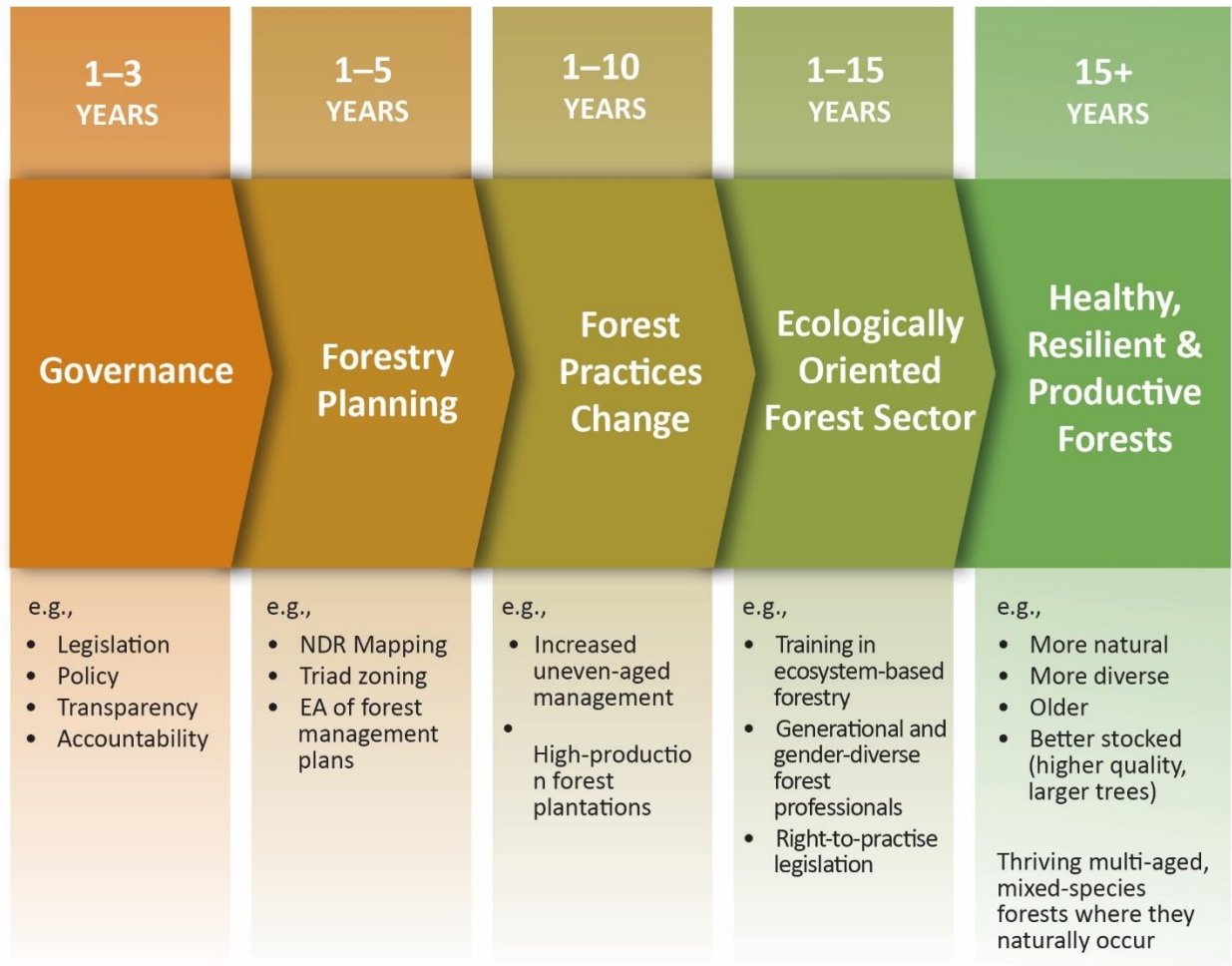


Figure 2 Logic model for implementation of the FPR

Toward the right side of Figure 2 is the cell called “ecologically oriented forest sector.” This refers to how the practice of forestry and the forestry industry is changed to operate profitably using the methods of ecological forestry, as well as those of high-production forestry. This includes the sector’s capability to conduct forestry ecologically, but also changes in its business models that will allow it to operate profitably within a triad model of forest management, which significantly restricts the use of clearcutting on Crown lands. The logic model assumes that the forest sector becomes “ecologically oriented” through (a) the cumulative effect of the adoption of ecological forestry practices, (b) implementation of recommendations that are intended to incrementally change how private land is managed, and (c) how the industry reorganizes itself to procure more wood from private land as ecological forestry is implemented on the majority of Crown lands.

The cumulative outcome of the implementation of these overlapping but conceptually sequential categories of recommendations is the change in the forests that must be the overriding objective – the guiding star – of all work on implementation of the FPR. In the logic

model, as in Figure 1, this change will mean an increase in forests that are, compared to those of today, healthier and more resilient and productive as indicated by their greater naturalness, diversity, age, stocking levels, and the increasing number of thriving multi-aged and mixed-species forests where they naturally occur.

At the top of Figure 2 are our team's estimates of how long it should reasonably take to see substantial progress (measured in outputs and outcomes) in each of the stages of the logic model. These are estimates of the time it will take, not recommendations of the amount of time that can be taken to complete implementation activities. In other words, they do not imply that change in forest practices either will not or cannot happen until the 10th year of implementation. If left to the 10th year, changes in the forest sector within the first 15 years of the process and changes in forest conditions at 15 years would both be delayed accordingly.

I should stress that achievement of meaningful change in forest conditions in a 15-year time frame depends on the initiation of work on each of the categories of recommendations in year 1. This is because most recommendations will not operate alone but in combination with others. That is why the expected time frame for each of the categories of recommendations starts at year 1. They nevertheless can be said to work sequentially in the sense that the operation and effectiveness of recommendations in each cell moving from left to right in the logic model can be expected to depend on the extent to which recommendations in earlier cells have been effectively implemented. In this sense, the relationship between recommendations in different phases of the logic model is dynamic.

Several other points about Figure 2 must be emphasized. First, the indicated implementation phases are not mutually exclusive but overlapping. This is why some recommendations will be part of two or more phases of the implementation process. For example, the SGEM and any changes to the laws or regulations that apply to forest practices are part of the governance framework for forestry. The operationalization of the SGEM relates directly to changes in forest practices that are enabled or required by the governance framework.

Second, while the logic model generally works from left to right in the diagram, it must also be understood to include a feedback loop that operates in the other direction. For example, lessons learned in changing forestry practices or creating an ecologically oriented forest sector, may call for adjustments or additional measures in the governance or planning stages of the process. Evaluation should be one of the primary elements of this feedback loop, especially as it assesses whether action on recommendations is achieving intended outputs which are in turn achieving intended outcomes.

This will be discussed at greater length below. Here, it is worth anticipating that discussion by making the point that the time scales for action, outputs, and outcomes are not independent of each other. It can be expected that the longer action takes, the longer the achievement of first the outputs and then the outcomes from that action will take. To this extent, the estimates of time presented in the logic model depend on the pace at which the FPR is implemented.

Finally, the logic model is built on several crucial assumptions. The first is that implementation of the FPR will receive sustained governmental effort over multiple political cycles. This is why the recommendation to make implementation of the triad into a legislated goal (recommendation 45), and government's action on it, are so important.

The second assumption is that the process of change laid out in the logic model is, or can be made to be, economically feasible for forest industries. The FPR strives to address this with the provision it makes for high-production forestry, the adoption of outcomes-based oversight, and the emphasis it places on the restoration and protection of forests that can support forest-based industries in the longer term. The FPR does not preclude other measures to address the economics of the shift to ecological forestry but says they must be consistent with giving priority to protecting and enhancing ecosystems and biodiversity.

In Table 2, I provide an approach to categorizing the 45 recommendations of the FPR thematically (as in Table 1) and by their places in the different phases of the logic model. The table also shows which recommendations pertain to Crown lands, private land, or to both Crown and private lands. It shows that many recommendations have a role to play in multiple stages of the logic model because many have components that pertain to one or more of the logic-model stages of governance, planning, changing forest practices, and reorienting the forest sector.

Concluding Observations on Holistic Evaluation

Future evaluations should consider whether the implementation of the FPR is being guided by an overarching understanding of the FPR and its objectives that includes a logic model by which these objectives can be achieved. It could be a version of the logic model presented in the previous section and Figure 2 and Table 2, or a better one.

Meanwhile, I hope the foregoing discussion and diagrams on the interconnectedness of the recommendations, and how that interconnectedness is designed to achieve systemic change in forestry and forests, will assist the Department in developing a more comprehensive, robust, and integrated implementation strategy.

Table 2 Summary of recommendations showing applicable logic model categories and whether recommendations apply to Crown or private lands

| | Number from Original Report | Recommendation | Different Forests | | | | | |
|----------------------------------|-----------------------------|--|-------------------|----------|------------------|--------------------|-------|---------|
| | | | Governance | Planning | Forest Practices | Ecol Forest Sector | Crown | Private |
| Endangered Species | 18 | Fully implement Endangered Species Act on Crown lands | | ● | | ● | ✓ | |
| | 29 | Work with landowners to fully implement Endangered Species Act on private land | | ● | | ● | | ✓ |
| Old Forests | 17 | Steps to increase and conserve old forests (long rotations, data collection, review area targets, old forest restoration, etc.) | ● | ● | ● | ● | ✓ | |
| Strategies for Other Values | 16 | Strategies for sensitive soils, bird populations, tourism values, outdoor recreation, operations near protected areas | ● | ● | ● | ● | ✓ | |
| Silviculture | 22 | Review Crown lands silviculture programs | ● | ● | ● | ● | ✓ | |
| | 30 | Review private land silviculture programs | ● | ● | ● | ● | | ✓ |
| | | | | | | | | |
| Outcome Based Management | 15 | Manage high-production forest areas on Crown lands to achieve outcomes similar to Maine | ● | ● | ● | | ✓ | |
| | 21 | Outcome based approach for Matrix on Crown lands (subject to Crown Lands Act changes, EA process, Endangered Species implementation, monitoring program, buy-in by the Department, licensees, professionals) | ● | ● | ● | ● | ✓ | |
| | 28 | Private industrial lands: Regulation under Forests Act to achieve outcomes similar to Maine's Outcome-based Forest Policy | ● | ● | ● | ● | | ✓ |
| Forest Sector | | | | | | | | |
| Forest Professionals | 43 | Strategy for forest professionals (human resources, professional development, diversity, right-to-practise legislation) | | | | ● | | |
| Science | 39 | Increase reliance on science | | | | ● | | |
| Innovation and Research | 40 | Encourage innovation and research across forest sector | | | | ● | | |
| | 41 | Make government data and technology (e.g., LIDAR) available to support research and innovation | | | | ● | | |
| Adaptive Management | 42 | Develop adaptive management framework | ● | ● | ● | ● | | |
| Market Access | 35 | Small-scale wood energy projects | ● | ● | | | | ✓ |
| | 32 | Independent study on carbon credits for private woodlots | | ● | | | | ✓ |
| | 33 | Maximize opportunities for access to carbon markets | ● | ● | | | | ✓ |
| | 34 | Monitor percentage of Crown/private harvest in Western Nova Scotia to confirm that private sources are primary source of timber | | ● | | | | |
| Community Forest, Mi'kmaw Forest | 37 | Support for Community Forest (longer licence, more land), Mi'kmaq Forestry Initiative | | ● | ● | ● | ✓ | |
| Analysis | 23 | Open, transparent study of economic and ecological costs/benefits, or proceed with implementation using adaptive management approach | | ● | | | | |
| Independent Evaluation | 44 | Independent committee to oversee implementation | | ● | | | | |

| | | | Healthy, Resilient & Productive Forests | | | | | |
|----------------------------------|-----------------------------|--|---|----------|------------------|--------------------|-------|---------|
| | Number from Original Report | Recommendation | Governance | Planning | Forest Practices | Ecol Forest Sector | Crown | Private |
| Endangered Species | 18 | Fully implement Endangered Species Act on Crown lands | | ● | | ● | ✓ | |
| | 29 | Work with landowners to fully implement Endangered Species Act on private land | | ● | | ● | | ✓ |
| Old Forests | 17 | Steps to increase and conserve old forests (long rotations, data collection, review area targets, old forest restoration, etc.) | ● | ● | ● | ● | ✓ | |
| Strategies for Other Values | 16 | Strategies for sensitive soils, bird populations, tourism values, outdoor recreation, operations near protected areas | ● | ● | ● | ● | ✓ | |
| Silviculture | 22 | Review Crown lands silviculture programs | ● | ● | ● | ● | ✓ | |
| | 30 | Review private land silviculture programs | ● | ● | ● | ● | | ✓ |
| | | | | | | | | |
| Outcome Based Management | 15 | Manage high-production forest areas on Crown lands to achieve outcomes similar to Maine | ● | ● | ● | | ✓ | |
| | 21 | Outcome based approach for Matrix on Crown lands (subject to Crown Lands Act changes, EA process, Endangered Species implementation, monitoring program, buy-in by the Department, licensees, professionals) | ● | ● | ● | ● | ✓ | |
| | 28 | Private industrial lands: Regulation under Forests Act to achieve outcomes similar to Maine's Outcome-based Forest Policy | ● | ● | ● | ● | | ✓ |
| Forest Sector | | | | | | | | |
| Forest Professionals | 43 | Strategy for forest professionals (human resources, professional development, diversity, right-to-practise legislation) | | | | ● | ✓ | ✓ |
| Science | 39 | Increase reliance on science | | | | ● | ✓ | ✓ |
| Innovation and Research | 40 | Encourage innovation and research across forest sector | | | | ● | ✓ | ✓ |
| | 41 | Make government data and technology (e.g., LIDAR) available to support research and innovation | | | | ● | ✓ | ✓ |
| Adaptive Management | 42 | Develop adaptive management framework | ● | ● | ● | ● | ✓ | ✓ |
| Market Access | 35 | Small-scale wood energy projects | ● | ● | | | | ✓ |
| | 32 | Independent study on carbon credits for private woodlots | | ● | | | | ✓ |
| | 33 | Maximize opportunities for access to carbon markets | ● | ● | | | | ✓ |
| | 34 | Monitor percentage of Crown/private harvest in Western Nova Scotia to confirm that private sources are primary source of timber | | ● | | | ✓ | ✓ |
| Community Forest, Mi'kmaw Forest | 37 | Support for Community Forest (longer licence, more land), Mi'kmaq Forestry Initiative | | ● | ● | ● | ✓ | |
| Analysis | 23 | Open, transparent study of economic and ecological costs/benefits, or proceed with implementation using adaptive management approach | | ● | | | ✓ | ✓ |
| Independent Evaluation | 44 | Independent committee to oversee implementation | | ● | | | ✓ | ✓ |

Levels of Evaluation

Future evaluation should include three levels of evaluation that correspond to the three different dimensions of implementation:

- **evaluation of progress** in doing what the FPR says should be done
- **evaluation of outputs** from doing what the FPR says should be done
- **evaluation of the outcomes** that are achieved from doing what the FPR says should be done.

It should be remembered that what the FPR “says should be done” is more than the 45 listed recommendations. Throughout the report, there are observations and conclusions that give context and rationale for the recommendations and that may be independently relevant to the FPR’s successful implementation. In addition, in its final paragraph, the FPR recognizes alternative measures to those it recommends may be needed. It might have also said more clearly that the need for additional or supplementary measures should be anticipated. All this is intended to be captured by the words “what the FPR says should be done.”

Progress Evaluation

The evaluation outlined in Part 2 of this report was a progress evaluation on the level of implementation achieved for each of the FPR recommendations. This level of evaluation work should continue, using a methodology as followed in Part 2 to characterize the progress made on each recommendation and to compare the progress made across recommendations.

This approach allows overall conclusions to be drawn as to where implementation is, between its starting point and its overall completion, recognizing that many important recommendations in the FPR are, by their nature, calls for permanent changes from “business as usual” that have to be maintained indefinitely. The changes they call for not only have to be made, but also maintained.

It is crucial that this level of basic evaluation should continue to include qualitative analysis as well as quantitative analysis of the percentage of recommendations at each stage of implementation. Qualitative analysis determines if the work on each recommendation addresses and is in alignment with the spirit as well as the letter of that recommendation, including its function in achievement of the FPR’s fundamental outcomes. Because the quality as well as the quantity of implementation is to be assessed, the forestry expertise of the evaluation team is really important.

A primary question for the next progress evaluation should be whether the Department has developed and followed the stronger implementation strategy and plan that I have said is needed. Evaluation at this level should also ask whether implementation is following the logic model proposed above – or the alternative and better logic model articulated by the

Department. Where there is deviation, evaluation should scrutinize the reasons for it, its consequences, and the options for its remediation.

Outputs Evaluation

Outputs evaluation goes beyond the question of whether recommendations are being implemented to address the question of whether implementation is achieving the outputs the recommendation intended. For example, has work on recommendations that require a new policy, process, or practice resulted in that policy, procedure, or practice, and is that policy, procedure, or practice being followed?

The output in question includes the instrument recommended and the consequences of its operationalization. For example, having determined that the SGEM is in substance the forest management guide that was recommended, the next question for outputs evaluation will be whether forestry in the ecological matrix is being practised in ways the SGEM says it should be.

More specifically, questions such as these would be asked at this level of evaluation:

- What percentage of prescriptions in the ecological matrix leg of the triad on Crown lands follow the SGEM?
- To what extent are forestry operations in the intensive forestry leg of the triad on Crown lands, and on industrial lands, operating in conformity with the outcomes-based regulations applicable to their operations?
- What is the percentage of prescriptions within the ecological matrix of the triad on Crown lands in each category of prescriptions provided for in the SGEM?
- What changes in harvesting patterns, including both volume and kind of harvesting, are happening on Crown and private lands?
- What changes are happening in the availability of forest products and in the cost of forest products?
- How many private landowners manage their forested lands within one or more of the legs of the triad, and what is the change in the number and percentage managing within the triad and each of its legs?⁵²
- What is the amount and percentage of private forested land managed under the triad and each leg of the triad and outside the triad, and how have these amounts and percentages changed?
- What is the percentage of forest management professionals and forestry workers who have been trained in ecological forestry?

⁵² This question, and similar questions, could also be asked in terms of hectares.

- How many recovery plans are in place for designated species at risk, what progress is being made in completing recovery plans for designated species, and what is the evidence of whether recovery plans are being implemented and followed?
- What amount and percentage of silviculture spending for Crown lands and for private land is being spent on intensive and ecological silviculture respectively?

These questions are meant to be illustrative only. The list of possible questions about outputs is much longer than this one. Much will depend on data that is available or that can be feasibly generated to allow questions to be answered empirically rather than impressionistically. It will also depend on the cost and feasibility of the data gathering and empirical analysis relative to the value the analysis will yield in understanding the outputs flowing from implementation of the FPR.

Evaluation of outputs can be important in understanding whether change – or a lack of change – is happening because of action on recommendations or, where there is a lack of change, because of an inherent weakness or inadequacy in the recommendations. In the latter case, the role of evaluation is to identify the measures that should be taken in addition to those recommended in the FPR in order to achieve the FPR's overall outcomes. This was contemplated in the FPR at paragraph 163, as follows:

In reviewing the progress of DNR, the technical committee should recognize that the experience of implementing this report may reveal that some of my conclusions were mistaken or incomplete or that some of my recommendations will not work or may not work as well as alternative measures. In those scenarios, the role of the committee should be to evaluate and report on such DNR determinations and to evaluate and report on the alternative measures that DNR has taken, or proposes to take, to implement ecological forestry, including the triad, in Nova Scotia.

This emphasizes that the value of future and recurring evaluations is not simply to evaluate the work of the Department but also of the strengths and weaknesses of the FPR relative to the outcomes it was designed to achieve.

A related point is that the outputs of implementation are the means by which outcomes are achieved. It is therefore important for evaluation to assess whether intended outputs are happening as well as the pace at which they are happening. This is particularly important given how long-term most of the outcomes will be, due to the time inherent in changing either the industry or the forests. Evaluating output in the meantime is therefore important in assessing whether implementation is on track to achieve outcomes while we wait for the evidence needed to evaluate whether they are being realized.

Outcomes Evaluation

The third level of evaluation, and associated indicators, is about outcomes. The focus shifts from the activity underway to implement the FPR and the outcomes produced by that activity, to questions such as the condition of forests and the forest products available to industry plausibly resulting from implementation. But there are also other kinds of relevant outcomes. For example, what is the level of public awareness of and approval of changes happening in how Crown lands are managed, and do the public believe that the condition of Nova Scotia's forests is healthy or unhealthy, improving or declining? It is also important to know the level of public trust and confidence in the Department relative to forestry in general and on Crown lands in particular, and with respect to the management of Crown lands more generally.

The indicators needed for this level of evaluation in relation to the condition of forests are more challenging to identify because of the relative diffuseness of the outcomes – e.g., healthier ecosystems and biodiversity – and the complexity of attributing changes in observed conditions to implementation of the FPR. There must be clarity on the required attributes of indicators to ensure their quality and utility. Indicators must be developed in advance of their application in evaluation to ensure not only the objectivity of evaluation – and therefore its reliability – but also its feasibility and efficiency.

It is anticipated that a significant number of indicators currently not in use may have to be tracked. This may mean collecting data that we do not currently collect. This raises issues about establishing the benchmark from which measurement can begin.

Measuring the condition of the forests and of the wood supply should be among the purposes of the Department's State of the Forest report. The FPR included specific recommendations (5 and 6) for improving the report – and state of the forest reporting more broadly – to ensure that it better achieves its intended purpose, as follows:

5. Whether the forests are in good, poor, improving, or declining condition – regionally and provincially, both from an ecological perspective and as an economic resource – should be the guiding question in discussions and decision making for forestry in Nova Scotia. To that end:
 - A. The State of the Forest report should include the kind of comprehensive information that is required to allow people to come to holistic conclusions on the state of the forests and forestry and to put their personal observations and opinions and those of others on the condition of the forests into a broad context of objective data.
 - B. Specifically, the State of the Forest report should aim for comprehensiveness on information that is useful in understanding and explaining the ecological condition of the forests, the forests as an economic resource, and the condition, functioning, and prospects of all forest-related industries.

- C. Tracking and reporting of the state of the forests and the forestry industry should happen at multiple scales, including provincial, regional, and landscape levels.
 - D. Nova Scotia should fully utilize Canada's Sustainable Management Criteria and Indicators (2003) and collaboratively adapt them to a Nova Scotia context.
 - E. Action must be taken to improve confidence levels in datasets about ecosystems.
 - F. The metrics tracked and reported in the State of the Forest report should include all those recommended by the Mersey Tobeatic Research Institute's report, "State of Nova Scotia Forest and Biodiversity Review," prepared for this Review.
 - G. Measures should be taken to make information on the forests and forestry-related industries easier to access and to understand, including profiling information on the most important metrics in a smaller document that focuses attention on those metrics.
6. DNR should work transparently and collaboratively with interested parties, including representatives from the academic community, in making improvements to reporting on forests and forestry, including in the State of the Forest report.

With the implementation of these recommendations, which is in early stages, State of the Forest reports should become the major data source for future outcomes evaluations. To ensure this happens, and to avoid the risk of having to create a separate process for creating indicators and gathering the data needed for outcomes evaluation, state of the forest reporting should be not only improved in accordance with recommendations 5 and 6 but also developed to address the needs of future outcomes evaluations to the extent that they go beyond the matters covered in these recommendations. Development of outcomes indicators for future evaluations should therefore be incorporated into the work on recommendations 5 and 6 of the FPR.

In doing this work, the Department and the process it creates under recommendation 6 should tap into the significant work done in multiple jurisdictions on indicators and evaluation or certification systems for sustainable forest management.⁵³ A cost-effective way for the

⁵³ Examples include the following: Canadian Council of Forest Ministers (1997), *Criteria and Indicators of Sustainable Forest Management in Canada: Technical Report* cfs.nrcan.gc.ca/pubwarehouse/pdfs/10350.pdf; The Montréal Process (2014) The Montreal Process Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests; Forest Europe (2015), *Sustainable Forest Management Criteria and Indicators* foresteurope.org/sfm-criteria-indicators/.

There is also a large academic literature: J. Peter Hall, "Criteria and Indicators of Sustainable Forest Management," *Environmental Monitoring and Assessment* 67 (2001): 109–19; Wiktor Adamowicz, "Economic indicators of sustainable forest management: Theory versus practice," *Journal of Forest Economics* 9(1) (2003): 27–40; Melanie K. Karjala, Erin E. Sherry, Stephen M. Dewhurst, "Criteria and indicators for sustainable forest planning: A framework for recording Aboriginal resource and social values," *Forest Policy and Economics* 6(2) (2004): 95–110;

Department to do this would be to retain external consulting support from experts familiar with these resources to work with staff of the Department and other participants in the process to develop indicators at all relevant scales that are appropriate for Nova Scotia and responsive to the needs of future evaluations. The supporting expertise would ideally include those with evaluation science expertise – such as the expertise received from Malatest & Associates Ltd. for this evaluation – and those with forest and forestry evaluation expertise – such as the expertise received by this evaluation from Jane Barker, Peter Duinker, Laura Kenefic, Al Gorley, and Malcolm Hunter. More broadly, experience in conducting audits under forest certification programs would be highly relevant.

The process should also include Mi'kmaq representatives, stakeholders, and independent experts from across the full range of relevant disciplines. Ideally, at least some of those likely to be involved in conducting the next evaluation should also be involved.

One of the benefits of this approach, as opposed to having the outcomes indicators developed by the next independent evaluation team, is that it is the people in the Department who have the most detailed knowledge of the data sets that are available or that could be most cost-effectively created to make alternative indicators feasible. The deeper benefit is that it could help to ensure that the outcomes indicators chosen for evaluation are incorporated proactively into how the Department proceeds with FPR implementation and, more broadly, into all of its forest related activities and its organizational culture. This is because it generally is true that organizations manage what they measure. The goal of evaluation – and of state of the forest reporting – must therefore be to encourage and enable the Department to measure the transition to ecological forestry and the widespread adoption of the triad model of forest management and its impact on forests and the forest industry. Developing and selecting indicators for evaluation through a process like the one outlined here would help to ensure that this happens and that it becomes a driving force behind the FPR's successful implementation.

Criteria for Outcomes Indicators

Evaluating outcomes requires indicators that have certain attributes. Based on the work of Dr. Peter Duinker for the evaluation team, I propose that potential indicators be chosen or developed based on the following criteria:

S.R.J. Bridge, D. Coolican, D. Dye, L. Moores, T. Nieman, R. Thompson, "Reviewing Canada's National Framework of Criteria and Indicators for Sustainable Forest Management," *The Forestry Chronicle* 81(1) (2005): 2–5; Gordon M. Hickey, John L. Innes, "Indicators for demonstrating sustainable forest management in British Columbia, Canada: An international review," *Ecological Indicators* 8(2) (2008): 131–40; Angeline D. Gough, John L. Innes, S. Denise Allen, "Development of common indicators of sustainable forest management," *Ecological Indicators* 8(5) (2002): 425–30; James W.N. Steenberg, Peter N. Duinker, Laird Van Damme, Ken Zielke, "Indicators of Sustainable Forest Management in a Changing Climate: An Evaluation of Canada's National Framework," *Journal of Sustainable Development* 6(1) (2013): 32–64.

- **Feasibility** — The process of monitoring indicators should be practical, cost-effective, and efficient.
- **Measurability** — Targets can only be set for indicators that can be measured.
- **Predictability** — Indicators whose future levels can be predicted with reasonable accuracy should be used.
- **Relevance** — Indicators should be clearly applicable to their associated values.
- **Understandability** — Indicators should be simple, clear, and easy to understand.
- **Validity** — Indicators should be consistent with the scientific understanding of the value they measure and should be technically valid (objectively obtained, documented, comparable, and reproducible).

Measurability by Ecodistricts and Ownership

In general, indicators should be measurable by ecodistrict and by ownership (Crown or private) to enable comparisons of the efficacy of implementation across and within ecodistricts and between Crown lands (where ecological forestry is used on the majority of the working forest) and private land, where it is not. The indicators should also allow comparisons to be made between Crown lands zoned for ecological and high-production forestry⁵⁴ and between private land that is classified as industrial and other private land. In time, there may be a need to differentiate private land that is managed under ecological forestry and private land that is not, assuming such a differentiation proves feasible and worthwhile.

Indicators of Forest and Ecosystem Health

At a macro level, there are two outcomes promised by the FPR and the changes in forest practices it calls for. One is protected and enhanced ecosystems and biodiversity, and the other is maintained or improved wood supply, measured by quantity, quality, availability, and diversity of timber and other forest products. The emphasis is on the former – hence, the call for an ecological paradigm for forestry.

The premise of the FPR is that ecological forestry will maintain and increase the representation of mixed-species, multi-aged stands across the landscape on which it is applied and that this will make a significant systemic contribution to the protection and enhancement of ecosystems and biodiversity within and beyond the area of application. The first part of the premise

⁵⁴ Several questions require further consideration. One is whether the indicators should either compare forested land within the ecological matrix that is or is not subject to frequent stand-replacing disturbances or exclude matrix land that is subject to these disturbances from the analysis. The issue is the inability of forest management to achieve the objectives of ecological forestry on land subject to frequent stand-replacing disturbances. I am not sure at this stage if ecological forestry can be said to be without any ecosystem-enhancing impact on lands subject to frequent stand-replacing disturbances. The other question is whether lands in the conservation leg of the triad should be set aside from the analysis. I am not clear on whether this would prevent evaluation of the benefit that replacing high-production forestry with ecological forestry may have on health of conserved forests.

requires comparative tracking of the representation of the stands that are mixed-species, multi-aged, and both mixed-species and multi-aged across ecodistricts in which the natural forests are mixed-species and multi-aged. As per the discussion of indicators above, this tracking should be by ecodistrict, by classes of ownership, and to the extent possible, by approach to forest management. Workable definitions of forests that are mixed-species and multi-aged will be needed to make this tracking possible.

In addition to tracking representation of mixed-species and multi-aged stands, evaluation should also track other indicators of forest health and vigour. It should track the representation of old forests and the extent of connectivity (or fragmentation) to the extent that it is related to forestry and how it is conducted. Evaluation should, for Crown lands, track forest conditions connected to any criteria used to allocate forests to each of the legs of the triad.

The second part of the premise is that maintaining and increasing the representation of mixed-species multi-aged stands will lead to improvements in more-specific ecological conditions, including habitat for wild species (at risk and otherwise), soil health and productivity, regulation of water yield, and carbon sequestration and storage capacity. These and other similar conditions need to be tracked to determine if they are improved through ecological forestry, whether or not ecological forestry changes the representation on the landscape of stands that are mixed-species and multi-aged. Again, the tracking needs to be across ecosystems, kinds of ownership, and forest management approach to allow the conditions in the ecological forestry leg of the triad to be compared to the conditions in the high-production leg and on lands that are managed outside of the triad.

Mi'kmaw Biocultural Indicators

Evaluation of outcomes should include biocultural outcomes that are important to the cultural identity and well-being of the Mi'kmaq, as determined through consultations with them. On June 15, 2020, I met with representatives of the Mi'kmaw Forestry Initiative, the Unama'ki Institute of Natural Resources, and the Mi'kmaw Conservation Group.⁵⁵ They explained the importance of ecological forestry to their holistic relationship with the forests and the importance of forest animals and plants to their traditional diet, medicines, material life, spiritual practices, and cultural identity. They also shared information about research on biocultural indicators based at the University of Guelph, and they related discussions underway in Newfoundland and Labrador on a project called the Indigenous Biocultural Indicators Project.⁵⁶ It is exploring “the application of Indigenous knowledge in the development of appropriate biocultural indicators to tracking and measuring progress in the qualitative

⁵⁵ The meeting included Lisa Young, Jason MacLean, Ashley Childs, Troy Robichaud, and Eric Zscheile.

⁵⁶ This research is being conducted by Jessica Lukawiecki under the supervision of Drs. Faisal Moola and Robin Roth: <https://geg.uoguelph.ca/>.

elements of Pathway to Canada Target 1.”⁵⁷ This project is guided by science and Indigenous knowledge holders in a broader initiative called the Conservation as Reconciliation Partnership, or CRP. This is led by Indigenous thought leaders and knowledge holders in collaboration with researchers at Guelph, York, McGill, and Concordia Universities.⁵⁸

The Indigenous Biocultural Indicators Project aims to co-create the knowledge, tools, and processes that will help to operationalize the concept of “two-eyed seeing” originated by Mi’kmaw elder Albert Marshall. It seeks to build the evidence case for the incorporation of Indigenous knowledge in delivering on the goals of the Pathway to Canada Target 1, as well as contributing “to the monitoring, tracking and reporting on its outcomes through the use of appropriate biocultural indicators.” Most fundamentally, it is intended to “move forward reconciliation in the conservation sector in that it directly addresses one of the main shortcomings of past conservation practice which is criticized for excluding Indigenous people and knowledge in conservation decision-making.”

There should be engagement with the Mi’kmaq about how this approach can be incorporated into evaluation of outcomes from implementation of the FPR. This would give concrete substance, like the Mi’kmaw Forestry Initiative, to the inspiration the FPR took from the Mi’kmaw wisdom that forest management should be guided by “listening to the forests” to learn what forests tell us about what they can and cannot provide and about what they need to support human and other life. It would also recognize that aligning more of forestry with the natural condition of Nova Scotia forests could contribute to, and benefit from, reconciliation with the Mi’kmaq.

It is noted that the Indigenous Biocultural Indicators Project, and the CRP, relate to indicators for conservation in conservation areas. This might be interpreted to mean its relevance is limited to tracking and evaluating forest well-being in the conservation leg of the triad. Conservation is, however, an objective not only of that leg of the triad: within the triad, conservation is a continuum across its ecological forestry and its conservation legs. It is important that Mi’kmaw knowledge be incorporated into both legs of the triad concerned

⁵⁷Canada Target 1 is one of the 2020 Biodiversity Goals and Targets for Canada. It states: “By 2020, at least 17% of terrestrial areas and inland water, and 10% of marine and coastal areas of Canada are conserved through networks of protected areas and other effective area-based measures.”

⁵⁸ <https://conservation-reconciliation.ca/>. “The **Conservation through Reconciliation Partnership** is a seven-year initiative that aims to critically investigate the state of conservation practice in Canada and support efforts to advance Indigenous-led conservation in the spirit of reconciliation and decolonization. The project is establishing a Canada-wide network to catalyze communication, coordination and reciprocal knowledge sharing amongst diverse partners, including Indigenous communities and environmental organizations working to support Indigenous-led conservation. Our collective work seeks to meet emerging research needs and build capacity to support the establishment of Indigenous Protected and Conserved Areas and the transformation of existing protected areas to better align with Indigenous governance, knowledge systems and law. This initiative builds on foundations laid by the Indigenous Circle of Experts in their 2018 report [We Rise Together](#).”

immediately and directly with conservation and to the evaluation of their respective efficacy and well-being.⁵⁹

Wood Supply Outcomes

There should also be tracking of wood supply consequences of implementing the FPR. These would cover topics such as

- wood supply available from Crown lands and private land
- diversity of forest products produced
- tree- growing productivity in the ecological and high-production legs of the triad and on land managed outside of the triad
- quality and density of merchantable trees in the ecological and high-production legs of the triad and on land managed outside of the triad

Evaluation and the Logic Model

Figure 3 reintroduces the logic model to show some of the illustrative indicators grouped with the recommendations that apply in each stage of the logic model. It depicts an expected growing focus over time on the achievement of forest outcomes as opposed to a current focus on implementation progress and an intermediate focus on outputs.

Figure 3 shows that, as we evaluate over time, we should primarily expect outputs in the first fifteen years of evaluation. This is because changes in the forest in response to changes in how forestry is conducted will take time. But even so, evaluation should, from the beginning, look for forest condition indicators because we need to better understand current conditions to understand and evaluate changes in the condition of the forest further down the road.

As implementation, guided by evaluation, progresses and is sustained, we should expect subsequent evaluation to show a growing proportion of outcomes to outputs. There will continue to be outputs to be evaluated, however, because some of the recommendations – such as those intended to bring a higher percentage of private land under active management under the triad – will only be achieved over a longer time frame.

⁵⁹ The conservation leg of the triad predates the proposed adoption of the full triad model but it is part of the triad recommended by the FPR just the same. Outcomes evaluation should therefore include indicators that permit evaluation of the health of wilderness areas and of other kinds of conservation areas, and of their contribution to the well-being of ecosystems and biodiversity, if this is not otherwise being done in state of the forest reporting.

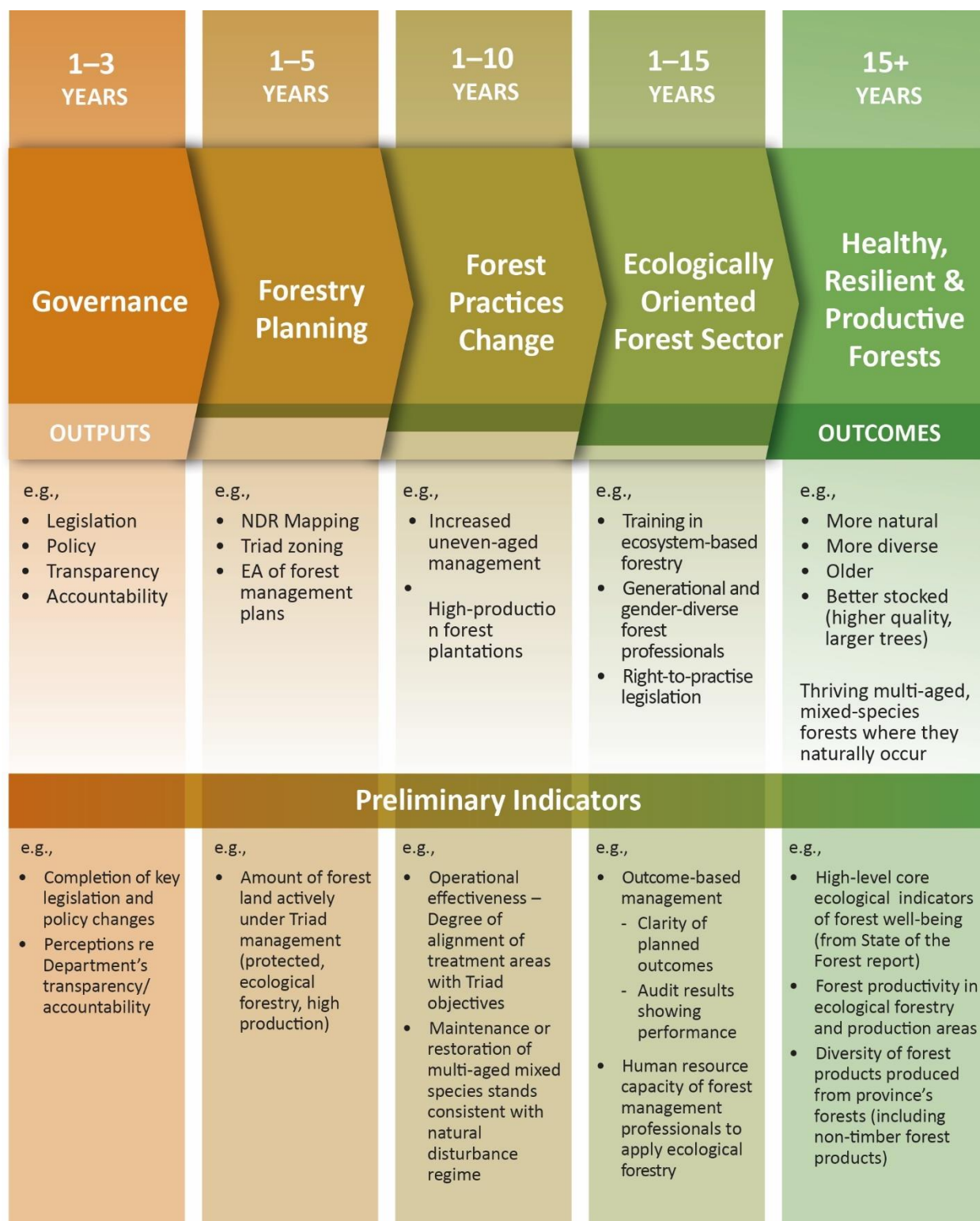


Figure 3 Logic model for the FPR, showing preliminary evaluation indicators

Frequency of Evaluations

The FPR contemplates annual evaluations by an independent committee. While I continue to think that an annual evaluation of progress makes sense and can be valuable, I believe that evaluations by an independent committee should happen less regularly. Given the time and resources inherently required for an independent evaluation if it is to be of value, I recommend the next independent evaluation of progress and outputs should be conducted to be completed three years from the completion of this evaluation. Subsequent independent evaluations of progress and outputs should be conducted every three years after that.

In the intervening years, the Department should provide an annual progress report to the public, on which the public is given the opportunity to comment. The Department should publish the comments it receives on its annual progress reports. One of the matters to be evaluated in each independent evaluation will be the conduct of the Department in providing annual progress reports.

Evaluations of outcomes are only possible when enough time has passed from implementation to when outcomes can reasonably be expected to have happened to a measurable extent. The time required varies from one kind of outcome to another. Changes in public awareness and attitudes, for example, can happen more quickly than basic changes in the conditions of the forests. But generally, the kinds of outcomes of most relevance to independent evaluation of implementation of the FPR happen over decades.

I therefore recommend that the independent evaluation of outcomes, particularly of changes in the condition of the forests, should happen on a six-year cycle, starting with the next independent evaluation, which will happen roughly six years after the completion of the FPR. The next evaluation, three years later, would focus on evaluation of further progress and outputs, and only on those outcome measures on which meaningful change in a three-year time period could be expected to be cost-effectively measured. The subsequent evaluation, in six years from the completion of this evaluation, would then deal holistically with progress, outputs, and outcomes. The next evaluation, nine years from this evaluation, would deal with progress and outcomes. The following evaluation, twelve years from this evaluation, would consider outcomes as well as progress and outputs.

This cycle of evaluations should be revisited when implementation reaches a level of substantial completion, or when the evaluation of outcomes can be fully merged in the revised process of reporting on the state of the forests, whichever comes first.



[Note: Find Attachments referred to in this report in the pdf file
Attachments_FPR_Evaluation(2021).pdf]