



Forests for Tomorrow

**Effectiveness Evaluations and Research
Working Group**

2008/2009

Strategy

DRAFT

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1.0 Introduction

In March 2005, the provincial government created Forests for Tomorrow (FFT), a reforestation program to address the increasing not-satisfactorily restocked (NSR) crown landbase. The program is designed to improve the future timber supply, initially focusing on areas affected by recent wildfires and the mountain pine beetle epidemic. Forests for Tomorrow activities will also reduce risks to biodiversity, water, fish, wildlife, and habitat.

The purpose of the Forests for Tomorrow (FFT) Effectiveness Evaluation and Research Working Group is to *develop the framework and strategy for adaptive management and continuous improvement, and coordinate effectiveness evaluations to provide guidance to Forests for Tomorrow activities on areas impacted by fire and the mountain pine beetle.*

This document outlines the goals, priorities and performance measures for the FFT Effectiveness Evaluation and Research Working Group with a focus on the next 3 years. It combines the *Effectiveness Evaluation and Monitoring Strategy* (2006), and the *FFT Research Strategy* (2006) to form an updated, combined approach for knowledge acquisition and sharing.

2.0 Purpose of this Strategy

The FFT Effectiveness Evaluation and Research Strategy sets strategic direction for the Effectiveness Evaluation and Research Working Group and outlines the priorities and performance measures with a focus on the next 3 years. This document will be re-examined annually to ensure it remains relevant and reflective of current and emerging priorities and issues.

The purpose of this Strategy is to:

- Focus on reducing management uncertainties and risks at the strategic to operational-level;
- Align with, and contribute to, FFT program goal, objectives, desired outcomes, and tasks including those carried out by various FFT working groups;
- Recognize the practical realities of the FFT timeframe and the need for timely information and knowledge wherever possible; and
- Capitalize on and build upon existing and anticipated related activities and investments in research and extension, including communication, to promote awareness and use of research findings, effectiveness evaluations and monitoring.

3.0 Working Group Mandate

The mandate of the Working Group is based on the vision and mission of the Ministry of Forests and Range and the goals and guiding principles of the Forests for Tomorrow Program.

MOFR Service Plan Goal 1 - “Sustainable forest and range resources, under which lie eight objectives, the fourth of which is that forest resources are restored or improved.”

Forest Stewardship Objective 4 - “Forest resources are restored or improved.”

The stewardship framework includes three components: policy and strategy planning; operational planning and management, and knowledge, monitoring and reporting

FFT Goals - Improve the future timber supply impacted by MPB, and wildfire, and reduce the risk of damage to biodiversity, fish, and habitat thorough the strategic selection of treatment areas

Apply up-to-date and accurate forest and range resource information and best research and analysis to inform resource management

Full implementation feedback loop through adaptive management and continuous improvement

Forests for Tomorrow Guiding Principle 8 - Science-based information is important in light of the non-traditional approaches to mitigation of the extensive reforestation and restoration after mountain pine beetle infestations and wildfires. Both research and the results of feedback from planned effectiveness evaluations will improve the selection of treatments, risk analyses, and implementation of Forests for Tomorrow

4.0 Objectives of the Effectiveness Evaluation and Research Working Group

The overall objective of the Working Group is to *develop the framework and strategy for adaptive management and continuous improvement, and coordinate effectiveness evaluations to provide guidance to Forests for Tomorrow activities on areas impacted by fire and the mountain pine beetle*. The Working Group is responsible for:

- Identifying gaps and questions in operational knowledge, research or effectiveness evaluations for FFT management through a defined and inclusive process
- Providing strategic direction and a work plan that identifies issues, priorities and options to address them

- Developing a list and priority ranking of potential projects (to be updated yearly with recommendations obtained from FFT staff, recipients, research staff, MOE and FFT management)¹
- Identifying and implementing research projects and/or effectiveness evaluations each year (some projects may require multi-year commitments)
- Developing an adaptive management framework and implementing field trials to address major uncertainties and questions regarding operations in MPB-impacted areas
- Develop, pilot and implement a monitoring program of selected indicators on a random sample of FFT sites to assess the effectiveness of activities over time and potential implications for other resource values or the Program delivery. Long-term monitoring will be needed and therefore these plots will require protection.
- Providing guidance to Forests for Tomorrow based on the outcomes of projects
- Communicating the results of the projects²

5.0 Scope

5.1 In

The following in-scope items are provided here to help clarify the scope boundaries of the Working Group

- Designing and implementing a Monitoring Program to collect indicator data of program activity effectiveness
- Conducting effectiveness evaluations of field activities will be used to develop a knowledge base related to issues affecting candidate forest stands.
- Funding research projects that seek to answer questions relevant to the program
- Designing and implementing adaptive management trials to test management options

5.2 Out

The following out-of-scope items are provided here to help clarify the scope boundaries of the Working Group

- Auditing the expenditures of the FFT Program.
- Conducting projects outside of the FFT management units or irrelevant to FFT work.

¹ See Appendix A for the latest version of priority questions/ issues under consideration by the working group.

² See the Working Group Terms of Reference (Website)

6.0 Achievements

The current status of the Working Group provides the foundation for the achievement of the goals for the next 3 years. As of January, 2007 some of the achievements of the Working Group are:

- Report on the ‘Complete, Active and Proposed Research/Monitoring Projects Related Mountain Pine Beetle and Fire Killed Stands’ - 2005
- FFT Effectiveness Evaluation and Monitoring Strategy Document (2006)
- FFT Research Strategy Document (2006)
- Peer-reviewed and inclusive annual process and criteria for prioritizing and selecting monitoring, research and evaluation projects
- List of priority questions developed based on feedback and advice from regional staff, Recipients, MOE staff, academics and other sources.
- Report - Assessment of current wildlife/danger tree assessment procedures
- Report - Stand-level biodiversity study – Large MPB Harvest Blocks – Quesnel
- Multiple Accounts Decision Analysis Report (Proposed Approach)
- FFT Riparian Evaluation Protocol and Riparian Guidance Document (Draft)
- FFT MPB reforestation strategies Adaptive Management project (development and Pilot)

7.0 Important Considerations for FFT Reforestation Strategies and Decisions

The following considerations influence reforestation decisions on FFT areas and have implications for FFT research and evaluation needs and priorities.³

Landscape-level context: FFT reforestation strategies and decisions should assist in the attainment of landscape and forest-level targets.

Climate change: FFT reforestation strategies and decisions should look beyond the traditional ‘free to grow’ time horizon to anticipate probable impacts of climate change on young plantations in relation to longer time frames 25 years and beyond. This may suggest planting species beyond their current natural range today (like Douglas-fir), but within their expected range later on in the rotation period due to climate change. The working group will communicate and collaborate where appropriate with the Future Forest Ecosystems Initiative Technical Team and the MFR Climate Change Group.

³ From the FFT Research Strategy (2006)
(http://www.for.gov.bc.ca/hfp/fft/fftreports/FFT_4051090_P_030906%20FFT%20Research%20Strategy%20v5.pdf)

Forest health: FFT reforestation decisions should consider impacts of current and new forest health agents that might occur in the future on young plantations, particularly in light of the anticipated migration of agents with changing forest and climate conditions.

Resilience: Tied to the first points, FFT reforestation decisions should consider the reforestation efforts made in the surrounding landscape (e.g. following salvage harvesting) so that FFT plans and investments are designed consciously to promote landscape, tree species, and genetic diversity and thus resilience in future forests. This is particularly important given the uncertainty and risk with climate change, potential impacts due to insects and disease, fires and other change agents that will undoubtedly impact future forests;

Hydrology: FFT reforestation decisions need to consider hydrological changes associated with the MPB epidemic now and in the future. Where will re-establishing a forest quicker than natural regeneration lead to hydrologic recovery?

Unique Conditions: FFT reforestation strategies and decisions made following extensive natural disturbances such as the MPB or fire face unusually complex and unfamiliar reforestation challenges. Conditions vary from those normally associated with just salvage harvesting. For example, forest floor (or duff) may be thicker. More standing dead trees influence micro-site conditions in terms of shading and small mammal populations. In some cases an immature forest plantation may have been affected. All of these different and often unfamiliar conditions need to be characterized and then factored into FFT restoration strategies and practices.

Retention: What ecological legacies (e.g., wildlife trees, coarse woody debris) should be accommodated in FFT reforestation strategies and decisions for non-timber values in catastrophically disturbed areas?

8.0 Key Components of Knowledge Acquisition

The Working Group mandate and program objectives will be achieved through attaining excellence in the following key components of knowledge acquisition – monitoring, evaluation, research, and adaptive management. The following section describes the current state, objectives, and strategy for each of the key components under responsibility of the Working Group. Priority knowledge gaps and suggested project topics will be updated annually and are summarized in Appendix A.

The selection of projects to implement will depend on an evaluation based on defined criteria, designed to meet the needs identified by the Program Managers, and given the budget. (Appendix B)

8.1 Monitoring

Currently the Recipient, administrator and FFT regional staff conduct random monitoring and audits of FFT activities to check that the work is being done and that standards adhered to. See the document *FFT Recipient/PWC/MFR Monitoring Matrix*⁴ for a description of the monitoring roles and activities in the FFT Program. Key program metrics are being developed to report out on. Some of these will be the responsibility of the working group.

⁴ Monitoring Matrix (Nigel Fletcher, MFR)

Objective: a) Develop, pilot and implement monitoring of selected indicators on a random sample of FFT sites to assess the effectiveness of Program activities over time and the potential implications for other resource values or Program delivery. This may be part of an adaptive management framework and may involve district staff, and b) Track and report out of key program metrics/ performance measures

Strategy: Identify what program activities or outcomes need to be monitored over time to demonstrate activity and program effectiveness. Identify what monitoring activity is currently done and by whom. Ensure that the metrics are consistent and measurable and can be tied directly back to goals, objectives, the mission and vision statements. Use data that is currently collected and recorded through surveys as much as possible to answer monitoring questions. Choose specific and measurable indicators; Protocols; Sampling methodology developed; Roles defined for who will do data collection [FFT staff/ recipient/ PWC/ Districts/ MOE/ other]; data analysis and tracking; reporting out

8.2 Evaluations

Effectiveness Evaluations means measuring the extent to which targets are being met, and detecting the factors that hinder or facilitate their realization. It also involves establishing cause-effect relationships about the extent to which a particular policy (or a set of policies) produces the desired outcome. Evaluations of Forests for Tomorrow programs that are within the scope of this working group are conducted at two levels:

Effectiveness evaluations of field activities will be used to inform the Program of whether the activities are producing the desired outcome of improving the timber supply and providing benefit to non-timber resource values.

The second level is to assess the effects of the natural disturbances on non-timber values and ecological functioning. Results of this type of monitoring are essential input to silviculture planning and decisions at the landscape and stand levels, to help evaluate the achievement of sustainable forest management.

Objective: Identify priority evaluation questions with staff and partner input and implement 2-3 projects per year depending on the needs and the capacity.

Strategy: Stakeholder participation to identify priority evaluation questions; Projects managed by FPB or Research Branch staff and implemented by contactor and/or in-house research staff. May form part of an overall FFT adaptive management approach.

8.3 Research

Research may be conducted at three levels⁵:

1. *Knowledge synthesis* including the targeted development and extension of tools and techniques (best practices) from this knowledge;

⁵ From the FFT Research Strategy, 2006

(http://www.for.gov.bc.ca/hfp/fft/reports/FFT_4051090_P_030906%20FFT%20Research%20Strategy%20v5.pdf)

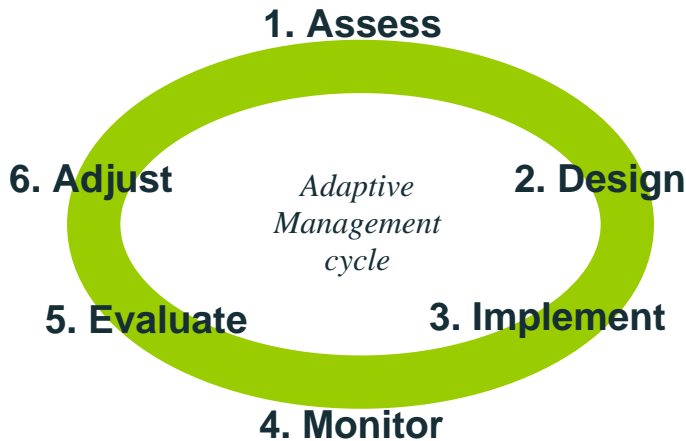
2. *Supplementary research* that builds on existing research projects and operational trials, as well as new inventory (including growth and yield) ground sampling and permanent sample plot (PSP) re-measurements undertaken as part of the *MPB Inventory and Monitoring Action Plan*; and
3. *New research* that is done in an applied and expedited manner with focus on identified FFT knowledge gaps.

Objective: Identify priority research questions with staff and partner input and implement 2-3 projects per year (synthesis, supplementary or new depending on availability of existing information or projects to address question)

Strategy: Staff and partner participation to identify priority evaluation and research questions; Projects managed by FPB or Research Branch and implemented by contactor and/or in-house research staff.

8.4 Adaptive Management Trials

Adaptive Management is a formal process for continually improving management practices by learning from the outcomes of operational and experimental practices. (Bunnell et al., 2003)



Adaptive Management Cycle

Currently, field trials have been done as needed in the course of regular FFT activity in the regions. Largely, they have not been conducted in a coordinated way that ensures comparison of results. The information gathered in these one-off projects must be effectively and consistently communicated to others.

Where future field trials have the potential to address specific operational and policy questions for FFT, a more formalized adaptive management trial can be designed for improved understanding.

Objective: (A) Synthesize results and Key Learning obtained through existing or informally documented activities or trials and post online to share with others;
 (B) Plan and implement formalized adaptive management trials to address key uncertainties of operating in MPB-impacted areas.

Strategy: FFT staff and recipients to identify the priority uncertainties facing them in operations on MPB-impacted stands; Contract an Adaptive Management expert to help Working Group design and implement trials, FFT regional staff and recipients work together with the AM expert to plan, develop and implement trials. Communicate key learning and results.

9.0 Linkages for knowledge acquisition

The Working Group is conscientious of other agencies that are involved in collecting data and delivering projects and products of use to FFT. The Working Group will ensure that communication occurs with these agencies:

- Forest Analysis and Inventory Branch
- Research Branch
- University Researchers (UBC; UNBC etc.)
- Federally funded Researchers (CFS)
- FIA
- FSP
- Future Forest Ecosystems Initiative Technical Team
- Future Forest Strategy
- Forest Health
- Tree Species Working Group

10.0 Business Process

To achieve the objectives defined in this strategy, the following business processes will be used:

1. Identify knowledge gaps and prioritize information needs with input and advice from a range of FFT staff, partners, stakeholders and experts
2. Invite researchers to submit project plans for FFT funding (See Appendix C)
3. Use defined criteria to evaluate and select project proposals
4. Present recommendations for projects to FFT Strategic Planning Committee for final approvals
5. Implement timely and appropriate projects based on the identified needs and budget
6. Ensure that peer-reviews are conducted for each project report
7. Make recommendations on policies and practices within FFT as new insights, knowledge and research findings become known
8. Manage the information and data generated from the projects; and
9. Communicate the results and recommendations from projects in a timely and appropriate manner.

See Appendix D for a business process map.

11.0 Working Group Performance Measures

Annual workplans will detail implementation of this strategic plan, including specific tasks to meet performance measures. The working group will conduct an annual review of the workplan, accomplishments, and progress made towards achieving the performance indicators. Progress will be reported to FFT managers and a summary included in the FFT Annual Report, posted on the FFT website.

The following performance measures (deliverables) were developed in the context of achieving FFT and the Effectiveness Evaluations and Research Working Group's mandate and objectives. Over the next 3 years, the working group will focus its resources and energy on achieving the following:

- Well-defined and appropriate Strategy, reviewed annually and signed off by FFT managers
- Annual work plan that identifies specific tasks to achieve the working group's objectives
- Scientific credibility by following standards of quality, employing qualified contractors and requiring peer and scientific review of all research, evaluation and adaptive management project reports before publication
- Identify and rank key knowledge gaps and questions through a defined and inclusive process to guide selection of evaluation, research and adaptive management projects each year
- Achieve research or evaluation projects committed to in the annual work plan, subject to funding and capacity.
- Plan and implement adaptive management trials (with assistance from a contracted adaptive management expert)
- Broadly communicate the results of projects to Forests for Tomorrow and others in a timely manner
- Continue to develop partnerships and build support from stakeholders
- Deliver well-planned and executed projects on time and on budget

12.0 Performance Indicators – Measures of Success

The Effectiveness Evaluations and Research working group will measure success through:

- Accomplishments under the key components of knowledge acquisition of the Strategy (Sec 8.0)
- Credibility of work carried out by the working group

- Working group performance measures (Sec 11.0)

13.0 FFT Effectiveness Evaluations and Research Working Group 3 Years from Now

By 2010:

- Effective partnerships with Districts, Regions and other programs result in well-designed and implemented AM trials, research or evaluation projects.
- Monitoring established in 2008 continues as planned and early analyses yield results
- The Working Group effectively draws on expertise from other working groups, Regional and District field expertise and experts outside the program to achieve results and avoid duplication
- All performance measures are attained
- FFT demonstrates that good knowledge is being applied in delivering an effective and efficient program
- Excellent communication and extension materials

Document Control

Date	Version	Change Reference	Edits by
August 17, 2005	0.1	Original document	
January 3, 2008	0.7	Revised	Alanya Smith
Feb 14, 2008	0.8	Revisions from WG; JB	Alanya Smith

14.0 Appendix A - FFT Management issues and questions guiding working group projects (last updated Jan 2008)

This summary of issues and questions is a consolidation of responses from a survey of all FFT staff and recipients conducted in November 2007 and key knowledge gaps and priorities identified by the Research Strategy (2006).

The following overarching question encapsulates many of the questions submitted:

What are the effects of different silvicultural systems treatments and untreated areas on tree regeneration, understory, vegetation, forest structure and non-timber values?

Table 1: FFT Knowledge Gaps/ Opportunities and Potential Approaches

Gaps/ Opportunities
1. Minimizing small mammal (Vole/ Hare) damage – correlation between the population of voles or hares and the survival of seedlings grown under conditions - UBC
2. Predicting natural regeneration - wait time/ reliable information/ survey requirement - Location, extent, spatial distribution, stocking, height, age of all understory beneath MPB killed overstory (complex stands work under way)
3. Success of underplanting - rate of ingress/ survival/ safety Growth and mortality of natural and planted tree species under managed or unmanaged dead standing mature or immature stands and live overstory of various levels as well as in salvaged Pli or fire stands.
4. Appropriate choice of site prep method - effective - cost/ benefit
5. Seed supply/ Stock types How much "A" class pine seed will be available to FFT and when? How long will pine seed be viable on dead trees? What are the implications of picking the seed after the trees have died? What stock types are best (cost/ benefit)?
6. Climate change GRM knowledge gaps, risk management and the need for innovative practices through implementation of an adaptive mgmt project to support a climate-based seed deployment system; including assessment of 'interim measures' for implementation (during the next 3-5 years while the science/research is undergoing development (design & build). Species Selection Carbon Sequestration – incremental treatments Does replanting repressed pine increase net C sequestration?
7. Hydrological impacts a) What can FFT do to mitigate the risks of surface erosion, landslides, soil displacement, and changes in natural surface drainage patterns? b) Are retention strategies actually effective in moderating hydrologic change at the stand scale (various university groups are dealing with watershed scale questions).
8. Other forest health agents Unmanaged mpb killed stands left to regenerate on their own will most likely be riddled with Mistletoe from intermediate and understorey stems left in the stand. Losses in future volume could be as high as 30 - 40%, or even possibly higher.

Criteria for questions:

1. Is the question specific? (Focused, bound, tied to specific deliverables and have forest management application)
2. Is the question measurable? (tied to specific deliverables, measurable indicators)
3. Is the question agreed to? (internal and external stakeholder involvement, link to corporate performance measures,)
4. Is the question realistic? (cost and funding, expertise available, timeframe)
5. Is the question timebound (start and end date for completion of all deliverables?)

15.0 Appendix B – Project Evaluation Criteria

	Points	Proposals																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
A Compatibility with government priorities (Maximum 30 points)	Sub-total																	
1. Link to FFT objectives ⁶ and Regional priorities	1-10																	
2. Subject area(s) of highest public concern	1-10																	
3. Will lead to practice and planning improvements	1-10																	
B Benefits to FFT (Maximum 30 points)	Sub-total																	
1. Quick successes and deliverables (i.e.1 or 2-yr project)	1-10																	
2. Opportunity for multi-value indicators and/or evaluations or research projects	1-10																	
3. Improved partnerships and/or external linkages	1-10																	
C Risks to delivery (Maximum 30 points)	Sub-total																	
1. Available expertise	1-10																	
2. Stakeholder support	1-10																	
3. Cost	1-10																	

Points – For each proposal assign a number of 1 – 10 for each criterion. The projects with the highest scores may be first priority for funding. Other considerations may influence the final decision.

Other considerations:

Technical

- Are indicators in place or easily developed?
- Is there sufficient information to develop accepted project designs?
- Is the spatial and timescale appropriate?

Funding -- Is there enough support for the project to ensure funding for the duration of the project?

Management Feasibility

- Is someone else already doing (or responsible for) this?
- Is this a unique opportunity?

⁶ As defined in the FFT Program Plan (<http://www.for.gov.bc.ca/hfp/fft/programplan.htm>).

16.0 Appendix C - Project Plan Template for Submitting Proposals

Project Title		
Project Lead	<i>Agency and contact person</i>	Phone No.
		Email
Project Team/ Collaborators		
Project Purpose	Statement of the project's purpose/ rationale	
FFT question(s)/ research question(s) project will attempt to answer	Specific questions the project will answer	
Objective(s)	The strategic level objectives of the project, focusing on how the project will make a difference for FFT. The objectives are clearly stated, specific, attainable, and measurable.	
Background Situation	Brief discussion of the need for the project, its customers or users, and their interest in its completion. This section includes relevant historical background information.	
Scope	Describe the project boundaries in terms of activities and the work to be performed. The scope should relate to the project goals and objectives, and cover all the work and only the work to be undertaken	

<p>Method/ Actions</p>	<p>Include a description of the direction being taken and activities that will be performed to achieve the project’s objectives.</p>	
<p>Data Management/ Analysis</p>	<p><i>Describe the data management strategy and analysis that will be performed to achieve the project’s objectives.</i></p>	
<p>Key Deliverables/ Milestones and Timelines (Attach more detailed workplan if known) I.e.: work plan, Communication plan, field data, draft reports, peer review, final publication</p>	<p>Deliverable/ Milestone</p>	<p>Timeline</p>
	<p><i>List key deliverables/ milestones</i></p>	<p><i>Estimated timeline</i></p>
<p>Estimated Cost (Total and breakdown)</p>	<p>Provide the overall estimated cost and a breakdown of costs for the project (i.e. Consulting Fees, installation, data collection, analysis, writing)</p>	
<p>Stakeholder Involvement</p>	<p>List key stakeholders, their level of involvement in the project, and specific communication needs.</p>	
<p>Quality Management</p>	<p>The processes required to ensure that the project will satisfy the needs for which it was undertaken. How will quality be assured for the project? (Review Testing process, Data completeness, Data Quality Objectives, Accuracy, Precision, Data Validation Procedures etc.)</p>	

16.1.1 Other

(e.g. related initiatives or considerations of note)

FFT Approval	Name:	Date:
Comment:		
Project Team Commitment and sign-off		

17.0 Appendix D - Effectiveness Evaluation and Research Working Group Process Map

FFT Effectiveness Evaluation and Research Working Group Process Map
February 2008

