



ADAPTING TO CLIMATE CHANGE

*Future Forest
Ecosystems Initiative*

**2007/08 – 2009/10
STRATEGIC PLAN**

January 2008



Ministry of
Forests and Range



Message from the Chief Forester

Conditions in B.C.'s forest ecosystems are changing in ways that weren't foreseen a decade ago. There is strong scientific evidence that climate change will significantly affect our forests and rangelands. Today's forest managers are concerned about these effects and the escalating impacts of weather events, wildfires, bark beetle infestations, and other natural disturbances.

As Chief Forester, I helped launch the Future Forest Ecosystems Initiative (FFEI) in December 2005 to start the process of adapting British Columbia's forest and range management framework to a changing climate.

Since that time, significant effort has been put into developing and refining FFEI direction, determining how best to implement the initiative over the coming years, soliciting resources to support long-term delivery of FFEI projects, and initiating high-priority projects.

I'm pleased to release the FFEI three-year strategic plan. This plan describes FFEI direction and how it will be implemented by the Ministry of Forests and Range in collaboration with our delivery partners. The strategic plan represents the efforts of a technical team and lead programs in the Ministry of Forests and Range and the Ministry of Environment, and was informed by extensive feedback from staff, other agencies, and non-government organizations and individuals during our 2006 consultations.

Over the next three years, long-term implementation planning will be carried out to identify and prioritize FFEI research, forecasting, monitoring, policy evaluation and change, and extension projects. During this period, the Ministry of Forests and Range will develop partnerships and solicit resources to support long-term delivery of FFEI projects. This process will culminate with the integration of FFEI direction and long-term implementation plans into the ministry's core business.

FFEI is one of several initiatives underway in the Ministry of Forests and Range that address climate change. The ministry is also raising awareness, making efforts to reduce our greenhouse gas emissions, developing strategies for forest carbon and bioenergy, initiating a future forest strategy with forest companies, and supporting other federal and provincial climate change initiatives. To coordinate many of these initiatives, I recently established a Climate Change and Forest Carbon Strategic Leadership Work Unit. Effective December 2007, this unit will coordinate FFEI management and delivery.

The Future Forest Ecosystems Initiative is helping guide how we maintain and enhance the resilience of our forest and rangeland ecosystems in the years and decades to come. The 2007/08 to 2009/10 Strategic Plan was prepared under my direction and I look forward to achieving its objectives.

A handwritten signature in black ink that reads "Jim Snetsinger". The signature is written in a cursive, flowing style.

Jim Snetsinger
B.C. Chief Forester

January 2008

This document describes the Future Forest Ecosystems Initiative and how it will be managed and implemented over the next three years (Spring 2007 to Spring 2010). It was informed by input from specialists and program directors within the Ministry of Forests and Range and the Ministry of Environment, as well as by consultation with a broad array of government and non-government stakeholders. For an overview of the FFEI development and consultation phase, refer to **Appendix 1**.

This strategic plan will be updated annually to reflect evolving direction and implementation guidance.

I Executive Summary

British Columbia's Chief Forester launched the Future Forest Ecosystems Initiative (FFEI) in December 2005 to start the process of adapting B.C.'s forest and range management framework¹ to a changing climate.

Adaptation is necessary to address both current and potential future management challenges posed by climate change. Climate change has already contributed to the unprecedented infestation of mountain pine beetle in B.C.'s interior forests. Beyond the current pine beetle epidemic, the implications of climate change to forest and range management are significant.

Based on current forecasts of climate change, some of the key management challenges we are likely to face over time include:

- Increased maladaptation of tree species to their environment, which would reduce their productivity and increase their susceptibility to insects and disease;
- Increased frequency and intensity of wildfires, storms, droughts, and floods, which would increase landslides, debris flow, wind throw, and variability in water quality and quantity; and,
- Encroachment of grasslands into forest ecosystems, and forests into alpine areas.

FFEI will address these and other management challenges by:

- Increasing understanding of (a) ecological processes and changes associated with climate change, and (b) associated risks to forest and range ecosystem values (through research, forecasting and monitoring); and,
- Using that knowledge to adapt the forest and range management framework to changing ecological conditions (through policy evaluation and change).

Over time, adaptation of the management framework will:

- Help maintain and enhance the resilience of B.C.'s forest and rangeland ecosystems to ecological changes associated with climate change; and,
- Help ensure ecosystems continue to provide the basic services, products, and benefits society depends on and values.

¹ *The forest and range management framework includes legislation, policies, procedures and systems under or supporting the Ministry of Forests Act, the Forest Act, the Range Act, the Forest and Range Practices Act, and the Wildfire Act. FFEI focuses on aspects of this framework that support: biogeoclimatic classification; timber supply planning; and, management and conservation of ecosystem services, biodiversity, wildlife, fish, riparian, water, soil, terrain, tree species and genes, forage and rangeland plant communities, biotic and abiotic agents, exotic and invasive species, and fire.*

The scope of FFEI is limited to the legislation and land base under the Ministry of Forests and Range's jurisdiction, and is further limited to environmental and ecological aspects of forest and range management. Although FFEI does not directly address social and economic objectives, adaptation of environmental and ecological aspects of the management framework will be essential to achieving B.C.'s long-term social and economic objectives for forest and rangeland management. Furthermore, any proposed changes to legislation and policy under FFEI will be subject to the ministry's rigorous policy review process that ensures full consideration of social, economic and environmental costs and benefits before policy changes are approved.

Over time, FFEI outcomes will help inform other ministry programs (e.g., tenure administration, pricing, and revenue), as well as the land management initiatives of other agencies (e.g., land use planning, management of parks and protected areas, recreation management). The Chief Forester will encourage other agencies to implement complementary initiatives to adapt their land management policy frameworks to climate change.

To implement FFEI, responsible programs in the Ministry of Forests and Range will work in collaboration with external partners and will utilize and adapt existing delivery mechanisms. Lead ministry programs include: Forest Science Program, Forest Practices Branch, Tree Improvement Branch, Forest Analysis and Inventory Branch, Protection Program, and Range Branch.

The Ministry of Forests and Range's primary partner in FFEI delivery will be the Ministry of Environment. The Ministry of Environment will lead or participate in the delivery of FFEI projects related to ecosystem services, biodiversity, wildlife, fish, riparian, and water. Other key external partners are expected to include the Canadian Forest Service, the Integrated Land Management Bureau, the Department of Fisheries and Oceans, universities and research institutions, the Pacific Climate Impacts Consortium, the Forest Science Board, FORREX, the Forest Genetics Council, First Nations, forest and range industries, and professional associations.

FFEI will be implemented through or in collaboration with the ministry's other climate change initiatives, as well as directly related resource management initiatives and programs such as the FIA Forest Science Program, the Forest Health Program, the Mountain Pine Beetle Action Plan, the Forest and Range Evaluation Program, the BC Wildland Fire Strategy, the Gene Resource Management Strategy, Ecosystem Restoration, Forests for Tomorrow, and the Future Forest Strategy. Other delivery mechanisms that will be utilized and adapted to deliver FFEI include research installations and projects, monitoring and inventory initiatives, resource information systems, adaptive management (operational trials), policy review and approval processes, and extension programs.

FFEI projects will be phased in on a priority basis as resources allow, and a resource strategy will be implemented over the next three years to support long-term delivery of FFEI direction.

FFEI activities will be managed, coordinated and reported for three years to give sufficient time to: build and maintain profile for climate change adaptation; complete implementation planning; develop partnerships and solicit resources to support delivery; and, integrate FFEI direction and implementation plans into core business. The Ministry of Forests and Range's goal is to integrate FFEI into its core business by Spring 2010.

II Direction

The following table outlines the purpose, objectives, desired outcomes and scope of FFEI.

Purpose	To adapt BC's forest and range management framework* to a changing climate.
Objective 1	Understand the functional constraints* for key species* and ecological processes* to establish a baseline of information for forecasting and monitoring ecosystem changes.
Objective 2	Forecast how a range of climate change scenarios might alter key species and ecological processes over time.
Objective 3	Monitor key species and ecological processes to detect changes over time, and determine the agents of change*.
Objective 4	Evaluate a range of existing and new approaches to forest and range management for their ability to maintain and enhance ecological resilience* and ecosystem services*, products* and benefits* under changing ecological conditions.
Objective 5	Adapt the forest and range management framework to maintain and enhance ecological resilience and ecosystem services, products and benefits under changing ecological conditions.
Objective 6	Communicate knowledge gained and changes to the forest and range management framework.
Desired outcomes	<ol style="list-style-type: none"> 1. Ecosystems remain resilient to stress caused by climate change, human activity, and other agents of change. 2. Ecosystems continue to provide the basic services, products, and benefits society depends on and values.
Scope	<ol style="list-style-type: none"> 1. Ecosystems within the land base subject to the Forest Act and the Range Act 2. Incremental changes to the existing forest and range management framework 3. Environmental and ecological aspects of forest and range management 4. Projects for which the MFR is the lead or partner agency

Appendix 2 includes a glossary of key terms (those noted with an * above) within the FFEI purpose, objectives, and desired outcomes, as well as a detailed explanation of each component of the FFEI scope. Key terms and explanations will be updated as necessary to reflect evolving direction.

Appendix 3 includes a list of high-level strategies to achieve each of the six objectives. The strategies and an integrated cross-program approach to implementing them will guide responsible programs in preparing and integrating discipline-specific implementation plans into their business plans.

The following products are being developed to help clarify FFEI direction and guide implementation planning over the next three years. These products are expected to be completed between Fall 2007 and Spring 2008.

1. Scientific Foundation. This paper will provide a scientific basis for management policies and practices that achieve the FFEI desired outcomes (ecological resilience and productivity).
2. Future Climate Scenarios. This paper will: (a) describe a range of possible future climate scenarios and corresponding ecological changes that may occur; (b) provide a preliminary assessment of risks to and opportunities for forest and range resources; and, (c) provide a structure for analysing risks to key disciplines and policy areas that may require adaptation to future ecological conditions.
3. Business Process Map. This document will map inter-dependent business processes and decision sequences associated with the disciplines, programs, and policy areas subject to FFEI research, forecasting, monitoring, and evaluation.

III Implementation Strategy

1) FFEI Management

Over the next three years, FFEI implementation will be overseen by the Chief Forester, the Director of Climate Change and Forest Carbon, a project manager, a management team, and a technical team. The management structure will: set strategic priorities; provide cross-program guidance on management and technical issues associated with implementation planning and delivery; coordinate, track and report FFEI progress and outcomes; coordinate development of partnerships and solicitation of resources to support long-term delivery; and, facilitate integration of FFEI direction and long-term implementation plans into core business.

The following table provides a high level summary of FFEI management roles and responsibilities. **Appendix 4** provides a flow chart of the management structure supporting FFEI delivery, and **Appendices 5 and 6** provide terms of reference for the management and technical teams.

Chief Forester	<ol style="list-style-type: none"> 1. Solicits external advice as needed on FFEI direction and implementation. 2. Provides direction to project manager and management team. 3. Works with ADM, Operations to ensure consistent direction to Operations Division.
Project manager	<ol style="list-style-type: none"> 1. Helps Chief Forester establish direction and guidance on FFEI implementation. 2. Acts as secretariat to management and technical teams. 3. Develops annual FFEI business plan, and helps Chief Forester develop partnerships and solicit resources. 4. Tracks and reports FFEI progress and outcomes, and coordinates communications and consultations. 5. Organizes periodic workshops and seminars to share FFEI progress and outcomes and to refine FFEI objectives, strategies and project priorities.
Management team	<ol style="list-style-type: none"> 1. Provides guidance to Chief Forester on management aspects of implementation. 2. Provides guidance to programs on project planning, management, tracking and reporting, as well as integration of FFEI direction into core program business. 3. Provides direction to technical team on its terms of reference, including development of cross-program technical guidance and resolution of issues. 4. Members: Chief Forester (chair); directors of responsible programs; deputy Chief Forester; director of Forest Stewardship Division operations; MoE representative; and, senior regional operations representative.
Technical team	<ol style="list-style-type: none"> 1. Acts as inter-disciplinary, cross-program sounding board on technical aspects. 2. Makes recommendations to management team on technical issues that cross disciplines and programs, and require operational perspectives. 3. Develops integrated cross-program approach to FFEI research, forecasting, monitoring and evaluation. 4. Develops long-term strategy for monitoring the effectiveness of FFEI objectives, strategies and projects in meeting their desired outcomes. 5. Liaises with discipline and program counterparts to ensure technical recommendations consider broader discipline and program implications. 6. Liaises with Climate Change Community of Practice, which provides scientific data and guidance on climate change, and establishes FFEI Community of Practice to facilitate collaboration and information-sharing. 7. Members: program and discipline specialists from responsible programs, as well as field operations representatives.

Team meetings and conference calls will be held only as necessary to address implementation matters. Regularly scheduled Forest Stewardship Division Management Team meetings will be the primary venue for management team meetings, whereas workshops and conference calls will be used by the technical team. The FFEI management structure will conclude once FFEI has been fully integrated into the Ministry of Forests and Range's core business.

2) FFEI Delivery

Delivery of FFEI research, forecasting, monitoring, policy evaluation and change, and extension projects will be led by responsible programs in collaboration with external partners. FFEI responsible programs include: Forest Science Program; Tree Improvement Branch; Forest Analysis & Inventory Branch; Forest Practices Branch; Protection Program; and, Range Branch.

The Ministry of Environment will lead or participate in the delivery of FFEI projects related to ecosystem services, biodiversity, wildlife, fish, riparian, and water. Other resource agencies, agency-stakeholder committees, and non-government organizations will participate in FFEI project delivery where their interests, expertise and capacity support their involvement.

Existing delivery mechanisms within and external to the ministry will be used and adapted as needed to deliver FFEI. The following table describes expected delivery mechanisms for each project category; actual delivery mechanisms will be determined as part of FFEI implementation planning (Section 3).

Research	Research projects will be led by the Forest Science Program. FFEI research – especially topics not traditionally addressed by the program such as biotic agents, invasive plants, and fire – will be carried out in collaboration with other programs (e.g., Forest Practices, Range, and Protection) and external delivery agents such as the Canadian Forest Service, universities, and research institutions. As well, the Forest Science Board will set FIA-Forest Science Program (FIA-FSP) research priorities consistent with FFEI research objectives, strategies and priorities.
Forecasting	Climate forecasting projects will be led by the Forest Science Program, with help from external experts such as the Pacific Climate Impacts Consortium. Ecosystem response forecasting will be carried out by responsible programs (especially Forest Science, Range, and Protection) in collaboration with external partners such as universities.
Monitoring	Monitoring projects are expected to involve all of the responsible programs with support from external partners. The primary delivery mechanisms for monitoring (that will be adapted as needed) include: the Forest and Range Evaluation Program; agency monitoring and inventory programs; National Forest Inventory; research installations, plots and projects; adaptive management trials; and, resource information systems.
Policy evaluation	Policy evaluation projects are expected to involve all of the responsible programs with support from external partners. Policy evaluation will rely heavily on (and be integrated with) research, forecasting and monitoring projects. The primary delivery mechanism for policy evaluation is expected to be experimental (operational) testing of existing and new management approaches through adaptive management trials.
Policy change	Policy change projects are expected to involve all of the responsible programs with help from external partners, using existing committee structures and processes for policy review and approval. For example, the process for FRPA policy changes utilizes several committees.
Extension	Extension projects will be led by the responsible programs with significant assistance from external delivery agents such as FORREX.

Role of Responsible Programs

Responsible programs will be involved in FFEI implementation planning and delivery through:

- Representative participation on the management and technical teams;
- Support to the development of an integrated, cross-program approach to FFEI delivery;
- Development of discipline implementation plans, and integration of those plans into program business plans, to support phased-in, sequenced and prioritized delivery of FFEI projects; and,
- Implementation of research, forecasting, monitoring, policy evaluation and change, and extension projects, in collaboration with partners.

Role of Operations Division

Operations Division will participate in FFEI implementation planning and delivery through:

- Representation on the FFEI management and technical teams;
- Participation of Forest Science, Range, and Protection program staff in delivery of projects;
- Voluntary participation of other operations representatives in policy evaluation and change projects led by responsible programs (e.g., experimental testing, analysis and adaptation of the legislation, policies, procedures and systems governing management / conservation of biodiversity, wildlife, fish, riparian, water, soil, terrain, tree species, forest health, forage, invasive species, and fire); and,
- Ongoing participation in provincial programs and initiatives that will be adapted over time to incorporate FFEI objectives (e.g., Forest and Range Evaluation Program).

Role of External Partners

Collaboration with other agencies and non-government organizations on FFEI project delivery will be essential to successful implementation of FFEI direction. The following agencies and organizations have expressed interest in assisting the Ministry of Forests and Range in project delivery through financial support, technical support, and/or consultation on draft plans and products.

Category	Organization	Anticipated Involvement*
Gov't Groups and Agencies	Ministry of Environment	<ul style="list-style-type: none"> • Primary partner in FFEI delivery • Leads or participates in projects related to ecosystem services, biodiversity, wildlife, fish, riparian, water
	Canadian Forest Service	<ul style="list-style-type: none"> • May provide funding support for FFEI projects that support their forest health and climate change adaptation programs • Technical support for projects related to biotic agents, fire, carbon management, and other topics within its mandate
	Integrated Land Management Bureau	<ul style="list-style-type: none"> • Technical support for projects related to landscape level planning, subject to capacity constraints
	Department of Fisheries and Oceans	<ul style="list-style-type: none"> • Technical support for projects related to fish, riparian and water
	Water Survey of Canada	<ul style="list-style-type: none"> • Technical support for projects related to water
	First Nations	<ul style="list-style-type: none"> • Technical support for projects of interest to First Nations • Will be consulted on draft plans and products, especially as they relate to First Nations interests
Boards and Councils	Forest Science Board (FIA-Forest Science Program)	<ul style="list-style-type: none"> • Primary partner in FFEI research delivery • Sets FIA-Forest Science Program (FSP) priorities consistent with FFEI research needs so that FIA-FSP funded projects contribute to FFEI research delivery • Will be consulted on all aspects of FFEI implementation to ensure effective coordination with the FIA-FSP

Category	Organization	Anticipated involvement*
Boards and Councils	Forest Genetics Council	<ul style="list-style-type: none"> • Technical support and funding for forest genetics projects • Will be consulted on draft plans and products, especially as they relate to forest genetics
	Forest & Range Practices Advisory Council	<ul style="list-style-type: none"> • Will be consulted on draft plans and products, especially as they relate to implementation and evolution of FRPA
	Forest Practices Board	<ul style="list-style-type: none"> • Will be consulted on draft plans and products, especially as they relate to implementation and evolution of FRPA
NGOs	Pacific Climate Impacts Consortium	<ul style="list-style-type: none"> • Technical support for climate change modelling projects
	Universities and research institutions	<ul style="list-style-type: none"> • Primary partners in delivery of research, forecasting, monitoring and evaluation projects
	Forest and range industry associations	<ul style="list-style-type: none"> • Technical support for projects of interest, especially policy evaluation and change projects • Will be consulted on draft plans and products, especially as they relate to policy evaluation and change
	Professional associations	<ul style="list-style-type: none"> • Technical support for projects of interest, especially policy evaluation and change projects • Will be consulted on draft plans and products, especially as they relate to role of professionals
	Environmental organisations	<ul style="list-style-type: none"> • Technical support for projects of interest • Will be consulted on draft plans and products
	FORREX	<ul style="list-style-type: none"> • Primary partner in extension of FFEI research projects • Will be consulted on draft plans and products, especially as they relate to extension of project outcomes

**Actual participation of other agencies, boards, councils and non-government organizations in FFEI projects will be determined as part of the project planning carried out by lead programs.*

Partnership agreements will be prepared where other agencies or government-sponsored organizations provide funding or technical services to the Ministry of Forests and Range to support FFEI delivery.

3) Implementation Planning

Implementation Guidance

The Chief Forester and ADM, Operations will communicate the FFEI strategic plan, appendices, and associated guidance (scientific foundation, future climate scenarios, business process map) to FFEI-responsible programs, ministry staff, other agencies and non-government organizations over Fall 2007. These documents will guide implementation planning and delivery over the next three fiscal years.

An Integrated Cross-Program Approach to Delivery

One of the priority tasks for 2007/08 will be development of an integrated cross-program / discipline approach to FFEI research, forecasting, monitoring and evaluation. This approach will establish a cross-program / discipline process and priorities for implementing FFEI objectives and strategies.

The technical team will develop a draft approach for the consideration of the management team. Each member of the technical team will establish an informal working group within their discipline or program area to ensure the team's recommendations consider broader discipline and program implications.

To support the approach developed by the technical team, FFEI-responsible programs will identify and assess the utility of existing delivery mechanisms to deliver desired activities, and develop action plans to address gaps and adapt the delivery mechanisms as needed. As well, they will identify implementation roles and responsibilities of programs and partners.

Long-Term Discipline Implementation Plans and Program Business Plans

In 2008/09, responsible programs will use the approach to FFEI delivery and their supporting action plans to develop long-term discipline implementation plans and program business plans to phase-in delivery of FFEI projects and integrate FFEI direction into the Ministry of Forests and Range’s core business.

Implementation Schedule

The following table summarizes the schedule for FFEI implementation planning and delivery over the next three years. **Appendix 7** provides a more detailed three year implementation schedule.

2007/08	<ol style="list-style-type: none"> 1. FFEI implementation planning <ul style="list-style-type: none"> ○ Finalise 3-year strategic plan and appendices ○ Publish scientific foundation, future climate scenarios, and business process map ○ Solicit new resources from internal programs, other agencies and organisations, and Treasury Board ○ Develop cross-program approach to research, forecasting, monitoring and evaluation ○ Develop action plans to adapt delivery mechanisms and define roles/responsibilities 2. Implementation of priority projects based on annual prioritized FFEI project list
2008/09	<ol style="list-style-type: none"> 1. FFEI implementation planning <ul style="list-style-type: none"> ○ Develop long-term FFEI discipline implementation plans (to guide phased-in delivery of FFEI research, forecasting, monitoring and evaluation for each discipline) ○ Develop long-term FFEI program business plans (to guide phased-in delivery of discipline implementation plans by programs) ○ Develop strategy to support integration of FFEI into core business 2. Implementation of priority projects based on annual prioritized FFEI project list
2009/10	<ol style="list-style-type: none"> 1. Implementation of program business plans 2. Full integration of FFEI direction and implementation plans into MFR’s core business 3. FFEI management structure concludes once full integration is achieved (Spring 2010)

Integration into Core Business

In 2008-09, the Director of Climate Change and Forest Carbon and the FFEI project manager will develop a strategy for integrating FFEI direction into core business, for consideration by the management team. The strategy will clarify how the Ministry of Forests and Range’s core business (vision and mission, strategic priorities, service plan, business plans, program plans, policies, procedures, systems, and staff culture) will be adapted to integrate FFEI direction and implementation plans into normal ministry business.

After the three-year implementation period of FFEI, the Chief Forester will continue to periodically communicate (a) progress and outcomes of projects that inform effective adaptation of the forest and range management framework to climate change, and (b) any changes to the objectives, strategies, and desired outcomes that guide those projects.

4) Resources

To support long-term delivery of FFEI, a resource strategy will be implemented over the next three years that includes: (1) soliciting resources from other agencies and NGOs; (2) soliciting new resources from Treasury Board; and (3) re-prioritizing existing MFR resources to support FFEI delivery. The following table describes the three elements of the resource strategy.

#	Component	Strategy
1	Solicit resources from other agencies and organisations	<ul style="list-style-type: none"> Solicit new funds from other agencies and NGOs that wish to collaborate with the MFR on FFEI delivery. Efforts to date have focussed on soliciting funds from the CFS and the FIA Forest Science Program.
2	Request resources from Treasury Board	<ul style="list-style-type: none"> Develop a Treasury Board submission in 2007 for new core resources to support phased-in delivery of FFEI. Identify linkages between FFEI and other federal and provincial climate change initiatives to increase the profile of FFEI within the broader government priority to respond to climate change.
3	Re-prioritize existing resources	<ul style="list-style-type: none"> Formalise existing base capacity and funding within MFR and partner agencies that can support FFEI project delivery over the long term. Reprioritise existing base budgets and staff assignments within MFR programs to meet FFEI priorities. This may be achieved through Executive priority setting, business planning, performance measures, direction from the Chief Forester and ADM, Operations to responsible programs, and incorporating FFEI priorities into staff performance plans. This approach may be the most realistic strategy for long-term integration of FFEI direction into core business; in the short-term, this approach may work best for FFEI projects that are already underway or easily integrated into existing program priorities; this approach may not work well for activities that require significant new resources over the long term (e.g., forecasting and monitoring).

Funding for External Complementary Projects

The Ministry of Forests and Range will not fund externally-led projects that support FFEI objectives. Those soliciting funding for complementary externally-led forest science projects will be referred to the Forest Investment Account-Forest Science Program (annual call for proposals).

5) Project Planning, Tracking and Reporting

For the 2007/08 and 2008/09 fiscal years, proposed FFEI projects will be identified and prioritised by the responsible programs on an annual basis, for collation by the project manager and consideration by the management team. Proposed projects not already resourced by programs or partners will be funded on a priority basis as new FFEI funds become available.

To facilitate a consistent approach to project identification and prioritisation among the responsible programs, the Chief Forester and project manager will provide guidance and a template for project submissions, as well as timelines for completing the templates.

High-level project submissions will require the following basic information:

- High-level project description and explanation of how project supports FFEI objectives;
- Lead program, project contact, and collaborating programs and partners;
- Existing resources allocated to project, and estimated project funding required for fiscal year; and,
- Estimated timeline of project.

The FFEI project manager will collate completed templates into an annual prioritized FFEI project list that will rationalize and guide allocation of FFEI funds as they become available.

Lead programs will be responsible for managing FFEI projects by carrying out project planning, business planning and budgeting, establishing program and staff priorities and performance targets, reporting progress and outcomes to the FFEI project manager, raising unresolved issues through the FFEI management structure, and requesting incremental resources as necessary.

To facilitate periodic reporting of FFEI project progress and outcomes, the FFEI project manager will provide programs with guidance and a template for a project tracking ledger.

2009/10 and Beyond

In 2009/10, FFEI discipline implementation plans completed the year prior will be integrated into program business plans. From this point onward, FFEI project planning and prioritization will no longer need to be coordinated through the FFEI management structure. The expectation will be that responsible programs will prepare annual business plans that support phased-in, long-term delivery of FFEI implementation plans. Although the FFEI management structure will likely conclude by March 31, 2010, the Chief Forester will continue to ask programs to report progress and outcomes of projects that inform effective adaptation of the forest and range management framework to climate change.

6) Quality Assurance and Effectiveness

Quality Assurance

FFEI quality assurance will be dealt with through the business planning process. This will necessitate establishment of corporate and internal performance measures, strategies, and deliverables linked to FFEI direction, as well as monitoring and reporting performance. Programs will carry out business planning relative to their FFEI projects and, to the extent necessary, the FFEI project manager will coordinate FFEI business planning and reporting on behalf of the Chief Forester.

The FFEI integration strategy, which will be developed in 2008/09, will address how FFEI direction and implementation plans will be integrated into ministry business planning over the long term.

FFEI Effectiveness

Successful achievement of FFEI desired outcomes over the long term will necessitate the development of indicators for achieving the desired outcomes, as well as periodic evaluation of the effectiveness of FFEI objectives, strategies, and projects in working towards the desired outcomes.

In 2009/10, the FFEI technical committee will develop a report with recommendations to guide monitoring of the effectiveness of FFEI objectives, strategies and projects in achieving the desired outcomes, and for integrating periodic effectiveness monitoring into existing programs. Outcomes of the evaluations will be used by the Chief Forester to adjust FFEI direction over time.

7) Communication and Extension

FFEI Progress Reports

The FFEI project manager will prepare summaries of FFEI progress on a quarterly or bi-annual basis, or whenever important new products are completed. These updates will be communicated broadly through communiqués from the Chief Forester to Ministry of Forests and Range staff, other agencies and non-government organizations, and through postings to the FFEI web site. Wherever feasible, FFEI communiqués will be coordinated with the communications of directly related initiatives.

Presentations, Workshops and Seminars

Whenever possible, FFEI direction, progress and outcomes will be communicated via presentations to Ministry of Forests and Range staff, other agencies and non-government organizations by the Chief Forester, Director of Climate Change and Forest Carbon, FFEI project manager, and responsible program representatives. As well, periodic workshops and seminars will be held to report on FFEI direction and progress, and to hear feedback that will assist in refining FFEI direction over time.

FFEI Web Site

The FFEI web site will be a repository for all publishable FFEI products, including: this strategic plan and associated appendices; the scientific foundation; the future climate scenarios paper; the business process map; implementation planning products (i.e., integrated cross-program approach to delivery, discipline implementation plans, program business plans); the FFEI project tracking ledger; agendas and products of workshops and seminars; key presentations; communiqués and progress reports; and, other FFEI products. The FFEI web site www.for.gov.bc.ca/hts/Future_Forests will also include links to related initiatives (Section 8).

Communications Plan

A three-year FFEI communications plan has been prepared to support this strategic plan. The communications plan includes communications objectives; key messages; a description of how FFEI fits within the broader framework of the Ministry of Forests and Range's climate change initiatives; a communications calendar for the next three years; and, a comprehensive distribution list. The communications plan does not address extension of FFEI project outcomes.

Extension Strategy

An extension strategy to support FFEI delivery, especially Objective 6 – “communicate knowledge gained and changes to the forest and range management framework” – will be completed in 2008/09 in conjunction with the development of discipline implementation plans. The FFEI project manager and responsible programs will work with FORREX to develop the extension strategy.

8) Links to Related Initiatives

FFEI projects will be delivered through or in collaboration with closely related initiatives and programs wherever feasible to ensure efficient use of resources, collaboration, and information sharing on related topics. Some directly related initiatives the Ministry of Forests and Range is involved in include:

- *Climate change initiatives:* raising awareness of climate change; reducing greenhouse gas emissions through improvement of ministry operations; developing strategies for forest carbon management and bioenergy in collaboration with other agencies; and, supporting federal initiatives such as assessing the vulnerability of the Canadian forest sector and B.C. communities to climate change.

- *Resource management initiatives and programs:* the FIA Forest Science Program, the Forest Health Program, the Mountain Pine Beetle Action Plan, the Forest and Range Evaluation Program, the BC Wildland Fire Strategy, the Gene Resource Management Strategy, Ecosystem Restoration, Forests for Tomorrow, and the Future Forest Strategy.

In addition to collaborative opportunities, FFEI outcomes will likely inform other aspects of forest and range management, including land use planning, management of parks and protected areas, recreation management, licensee management planning (timber supply area or tree farm licence planning), revenue, and tenure administration.

In Spring 2008, a review of related initiatives in B.C. and other jurisdictions will be conducted, with the intent to: (a) incorporate other desired approaches and helpful information into FFEI implementation guidance and planning; (b) establish linkages and information-sharing networks with contacts from related initiatives; and, (c) solicit opportunities to collaborate on FFEI delivery.

9) Appendices

1	<i>Summary of FFEI development and consultation:</i> a chronology of FFEI development and consultation activities between December 2005 and June 2007, as well as consultation themes and responses
2	<i>FFEI Glossary:</i> a glossary of key terms within the FFEI purpose, objectives and desired outcomes, and an explanation of the four FFEI scope elements
3	<i>FFEI Strategies:</i> high level strategies for achieving each FFEI objective
4	<i>FFEI Management and Delivery Structure:</i> a graphic description of the management and delivery structure supporting FFEI implementation
5	<i>FFEI Management Team Terms of Reference</i>
6	<i>FFEI Technical Team Terms of Reference</i>
7	<i>3-year Implementation Schedule:</i> 3-year schedule for phased-in delivery and integration of FFEI into core business

10) Contact for Further Information

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 E-mail Kristine.Weese@gov.bc.ca

FFEI web site: http://www.for.gov.bc.ca/hts/Future_Forests

Appendix 1

Summary of FFEI Development and Consultation

Introductory Symposium / Workshop, December 2005

In December 2005, the Chief Forester hosted a symposium and workshop at the University of Northern British Columbia, entitled *The Future Forest Ecosystems of BC: Exploring the Opportunities*. The two-day session was attended by representatives of federal and provincial agencies, universities, First Nations, forest and range industries, environmental organizations, and resource professionals.

On day one, participants explored current and potential future changes to B.C.'s forest ecosystems as a result of climate change, and the implications of those changes to forest management. On day two, participants brainstormed strategies for adapting the forest management framework to address the challenges climate change poses to forest management. Key topics of discussion included: natural disturbances, fire, biotic agents, biogeoclimatic classification as a scientific foundation, species composition and genetics, and alternative management paradigms.

The theme that emerged from the two-day session was 'to effectively respond to future environmental and ecological changes, B.C. needs to adopt ecological resilience as a goal of forest management'. All written products from the symposium / workshop are posted at www.for.gov.bc.ca/hts/Future_Forests.

Establishment of FFEI Technical Team, Early 2006

In early 2006, the Chief Forester established a technical team within the Ministry of Forests and Range to analyze the strategies resulting from the symposium / workshop, and to incorporate key themes into a purpose, objectives, scientific foundation, and draft recommended projects under a new ministry initiative – Future Forest Ecosystems. The team comprised ministry specialists with expertise in climate change, natural disturbance regimes, fire ecology, biotic agents, species composition and genetics, the biogeoclimatic classification (BEC) system, and forest management operations. The (2006) terms of reference and membership of the technical team is posted on the FFEI web site.

Over summer and fall 2006, the technical team was expanded to include expertise in rangeland ecosystems, as well as expertise in wildlife, biodiversity, fish, riparian, and water from the Ministry of Environment. Under the FFEI three year strategic plan, the terms of reference and membership of the technical team has been updated again (effective September 2007 to March 2010) to support implementation of FFEI. Refer to Appendix 6 for the current technical team terms of reference.

Recommendations Report, June 2006

In June 2006, the Chief Forester released a recommendations report setting out the proposed FFEI purpose, objectives and 46 recommended projects:

- *Future Forest Ecosystems of BC: Draft Recommendations for Review and Comment*
- Appendix 1 – *Managing B.C.'s Forest and Rangeland Ecosystems to Achieve Ecological Resilience*
- Appendix 2 – *Related and Complementary Initiatives*
- Appendix 3 – *Recommended Projects*

The recommendations report and three appendices are posted on the FFEI web site. The report was broadly released June 7 to MFR staff, other agencies, First Nations, and non-government organizations and individuals via e-mail communiqués with a web site link to the documents.

Consultation Period, June to September 2006

Between June and September 2006, the Chief Forester and FFEI project manager held 12 consultation sessions, as follows:

1. FRPA Joint Steering Committee (multi-agency), June 16
2. Forest and Range Practices Advisory Committee (agency-stakeholder), June 22
3. MFR senior managers and staff at headquarters, July 5
4. Non-government stakeholders (Victoria), July 5
5. MFR Timber Sales Leadership Team, July 11
6. Council of Forest Industries and Coast Forest and Lumber Association, July 20
7. Non-government stakeholders (Vancouver), July 20
8. MFR Operations Leadership Team, July 27
9. Forest Science Board (FIA-Forest Science Program), August 29
10. First Nations (Kamloops), September 6
11. First Nations (Nanaimo), September 19
12. First Nations (Prince George), September 22

Also, between June and September, the FFEI project manager received 47 written submissions from resource agency staff (Ministry of Forests and Range, Ministry of Environment, Ministry of Agriculture and Lands, Integrated Land Management Bureau, and Canadian Forest Service), universities, professional associations, consulting professionals, the Forest Practices Board, the Forest Genetics Council, environmental organisations, the Royal BC Museum, and the public.

The feedback received through the consultation sessions and written responses helped the Chief Forester and technical team in evaluating and refining FFEI direction and project priorities.

Consultation Themes and Responses

1. *Theme:* The majority of respondents supported FFEI as timely and important; however, some were sceptical its purpose could be achieved with limited government capacity to carry out the necessary research, forecasting, monitoring, and policy evaluation.

Response: The Ministry of Forests and Range is implementing a resource strategy to support FFEI delivery that includes (a) soliciting resources from other agencies and organizations, (b) soliciting resources from Treasury Board, and (c) reprioritizing resources within the ministry. The ministry is confident existing and new resources will be sufficient to phase-in implementation of priority projects, and that adapting existing delivery mechanisms, collaborating with partners, and integrating FFEI direction into our ministry's core business will facilitate effective implementation of FFEI direction over time.

2. *Theme:* Many respondents expressed concern that managing for or attaining ecological resilience as defined under FFEI ("maintaining ecosystem components within their range of natural variation or stability domains") is not realistic in the face of climate change, because climate change will likely move ecosystems into alternate domains.

Response: Revisions to the FFEI purpose, objectives, and desired outcomes have addressed this concern. Instead of focussing the intent of FFEI on managing to maintain ecosystems within their current range of natural variability, the overall intent of FFEI will be to gain a better understanding of how ecosystems will respond to climate change, and to use that knowledge to adapt the forest and range management framework to changing ecological conditions.

Maintaining and enhancing ecological resilience will remain a desired outcome of FFEI, and will be discussed in the updated FFEI scientific foundation. The scientific foundation will describe management principles and approaches that achieve this desired outcome, as well as the ongoing flow of ecosystem services, products and benefits to society, under a changing climate.

3. *Theme:* Some respondents thought the scope of FFEI should be expanded to include land use planning, management of parks and protected areas, and other related land management initiatives of the Ministry of Environment and the Integrated Land Management Bureau.

Response: The Ministry of Forests and Range acknowledges the strong linkages between the forest and range management framework and related land management frameworks of other agencies. While our intent is to keep the scope of FFEI within the ministry's jurisdiction, we plan to collaborate closely with the Ministry of Environment on FFEI projects related to its responsibilities under the Forest and Range Practices Act (biodiversity, wildlife, fish, riparian and water), as well as with the Integrated Land Management Bureau, the Canadian Forest Service and other resource agencies on FFEI projects where their interests, expertise and resources support their involvement.

Outcomes of FFEI projects that could inform the land management frameworks of other agencies will be shared with those agencies so they can respond accordingly. As well, the Chief Forester is actively encouraging other agencies to implement complementary initiatives to adapt their land management frameworks to climate change.

4. *Theme:* Many respondents raised concerns about the absence of economic and social objectives under the scope of FFEI, noting: the importance of economic considerations in policy change; the potential increases to the cost of doing business for industry; the apparent contradiction between achieving ecological resilience and not impacting resource productivity and revenue; and, the inherent link between ecological, social and economic resilience.

Response: Although FFEI does not directly address social and economic objectives, adaptation of environmental and ecological aspects of the management framework will be essential to achieving B.C.'s long-term social and economic objectives for forest and rangeland management. This is because resilience of forest and rangeland ecosystems to climate change will be essential to achieving continued productivity of the natural resources provided by those ecosystems.

Furthermore, any proposed changes to legislation and policy under FFEI will be subject to the Ministry of Forests and Range's rigorous policy review process that ensures full consideration of social, economic and environmental costs and benefits before policy changes are approved.

The Ministry of Forests and Range will determine how to address the implications of climate change to other aspects of the management framework not addressed under FFEI, such as tenure administration, pricing and revenue, marketing and exporting of forest products, and administration of BC Timber Sales. Over time, FFEI outcomes will help inform these other ministry programs.

5. *Theme:* Several respondents recommended rangeland ecosystems be incorporated into FFEI.

Response: This concern has been addressed through an expansion of the scope of FFEI to include rangeland ecosystems.

6. *Theme:* Many respondents said “incremental change” to the current management framework is not enough and too slow to enable ecological resilience in the face of climate change.

Response: The MFR believes the current management framework, which includes the legislation, policies, procedures and systems under or supporting the Ministry of Forests Act, the Forest Act, the Forest and Range Practices Act, and the Wildfire Act, is a suitable framework for adapting to address the impacts of climate change. Incremental change will strengthen the existing framework over time so that it is better able to maintain and enhance ecological resilience and ecosystem services, products and benefits under changing ecological conditions.

7. *Theme:* Some agencies and organisations (Ministry of Environment, Integrate Land Management Bureau, Canadian Forest Service, Forest Genetics Council, Forest Science Board) expressed an interest in being involved in FFEI implementation.

Response: Collaboration with other agencies and non-government organizations on FFEI project delivery will be essential to successful implementation of FFEI. These and other organisations have expressed interest in assisting the Ministry of Forests and Range in project delivery through financial support, technical support, consultation on draft plans and products, or a combination of the three. The ministry is actively pursuing partnerships with these and other organisations.

Feedback Analysis and Changes, October 2006 to February 2007

Over Fall 2006 and early 2007, the FFEI technical team analysed the consultation feedback and used it to refine FFEI direction – the refined purpose, objectives, desired outcomes, scope, and strategies to achieve the objectives, are outlined in the FFEI three-year strategic plan.

The original list of 46 recommended FFEI projects has evolved and expanded based on consultation outcomes and further technical analysis. The current list will remain “interim” until implementation planning under FFEI has been completed (March 2009). A project tracking ledger that itemizes and describes current projects and their status will be posted on the FFEI web site in February 2008. The ledger will be updated periodically. Of note, about 40 per cent of the projects on the original list were underway or planned for start up as of Fall 2007.

Implementation Strategy and Planning, November 2006 to July 2007

Over Fall 2006 and early 2007, the FFEI project manager worked with the technical team, responsible program directors, and others to develop an FFEI implementation strategy. This work has since been folded into the FFEI three-year strategic plan and supporting appendices.

Outstanding FFEI Direction, January 2007 to March 2008

The following products will provide essential guidance for FFEI implementation planning over the next three years.

1. Scientific foundation. This paper will provide a scientific basis for management policies and practices that achieve the FFEI desired outcomes (ecological resilience and productivity).
2. Future climate scenarios. This paper will: (a) describe a range of possible future climate scenarios and corresponding ecological changes that may occur; (b) provide a preliminary assessment of risks to and opportunities for forest and range resources; and, (c) provide a structure for analysing risks to key disciplines and policy areas that may require adaptation to future ecological conditions.
3. Business process map. This document will map inter-dependent business processes and decision sequences associated with the disciplines, programs, and policy areas subject to FFEI research, forecasting, monitoring, and evaluation.

Appendix 2

FFEI Glossary

Forest and range management framework

The legislation, regulations, policies, procedures and systems under or supporting the Ministry of Forests Act, Forest Act, Range Act, Forest and Range Practices Act, and Wildfire Act.

Functional constraints

The limited capacity of species characteristics (e.g., morphology, phenology, genetics) to facilitate adaptation to changing environmental conditions.

Key species

Species that have a disproportionate influence on determining the composition and structure of ecosystems; their loss would cause a greater than average change in the populations of other species and ecosystem processes.

Ecological processes

Continuous actions that operate directly or indirectly, and in concert, to determine the composition and structure of ecosystems. Examples of ecosystem processes include: vegetation succession following disturbance; nutrient cycling, such as the redistribution of carbon; soil development; and hydrological cycling.

Agents of change

Includes (but may not be limited to) climate change, changes to natural disturbance regimes and geochemical cycling, habitat loss and fragmentation, invasive species, forest and range management, and other human activities.

Ecological resilience

Ecological resilience is the capacity of an ecosystem to absorb, recover from, and adapt to disturbance or stress caused by agents of change. Principles and approaches to managing for ecological resilience under a changing climate will be explored in the FFEI scientific foundation.

Ecosystem services

Ecosystem services include (but may not be limited to): nutrient cycling; carbon storage; soil formation; climate, disease, fire and flood mitigation; and, water purification.

Ecosystem products

Ecosystem products include (but may not be limited to): water, timber, non-timber forest products, forage, and fuel.

Ecosystem benefits

Ecosystem benefits include (but may not be limited to): recreation; spiritual, aesthetic, and educational values; worker and public safety and security.

Elements and Explanations of Scope

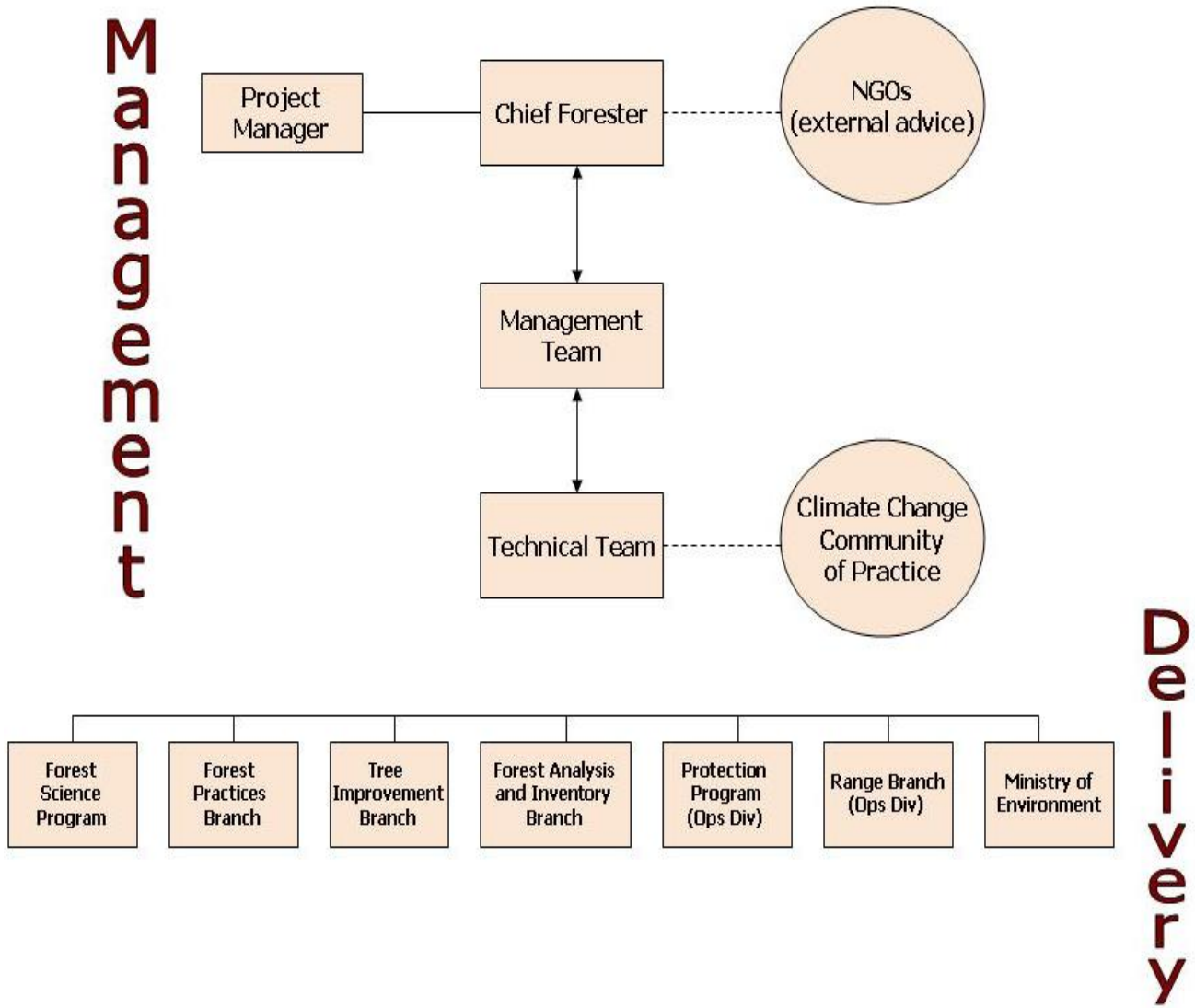
Ecosystems within land base subject to Forest Act and Range Act	Ecosystems subject to FFEI includes forest and rangeland ecosystems, as well as other ecosystems within or associated with lands subject to the Forest Act and the Range Act. These lands include Provincial forests, Crown range, and private land in tree farm licence areas, community forest areas, and woodlot licence areas.
Incremental changes to existing forest & range mgmt framework	Incremental change means adapting the current forest and range management framework over time to address knowledge gained and evaluated under FFEI, rather than developing a new management framework.
Environmental and ecological aspects of forest & range management	<p>Environmental and ecological aspects of forest and range management addressed under FFEI include:</p> <ol style="list-style-type: none"> 1. biogeoclimatic classification; 2. timber supply planning; 3. management and conservation of ecosystem services; and, 4. management and conservation of biodiversity, wildlife, fish, riparian, water, soil, terrain, timber and forest plant species and their genetics, forage and rangeland plant communities, biotic and abiotic agents, exotic and invasive species and their bio-control agents, and fire.
Projects for which MoFR is lead or partner agency	<p>FFEI projects will be limited to activities within the mandate of the MFR. FFEI projects will not address activities solely within the jurisdiction of other resource agencies (e.g., land management subject to other acts such as the Land Act, the Wildlife Act, the Park Act, or the Species at Risk Act).</p> <p>FFEI outcomes that could inform other-agency land management legislation, programs, and initiatives will be shared with the responsible agencies.</p>
Out of scope	<p>Aspects of the forest and range management framework outside the scope of FFEI include:</p> <ul style="list-style-type: none"> • tenure administration, licensee management planning, pricing, revenue, marketing and exporting forest products, and related economic aspects of forest and range management; • administration of BC Timber Sales; • enforcement of the Forest Act, the Range Act, the Forest and Range Practices Act, and the Wildfire Act; • on-the-ground practices, treatments, restoration, or development activities carried out by agencies, industries or other land managers; • other climate change initiatives (e.g., reducing greenhouse gas emissions, bio-energy, carbon sequestration, assessing forest sector and community vulnerability to climate change); • public health, safety and security; and, • recreation management, management of parks and protected areas, land use planning, and other land and resource management activities governed by other resource agencies under their legislation. <p>FFEI outcomes that could inform these other aspects of forest and range management will be shared with the responsible programs or agencies. In some cases, FFEI project work will be integrated with related initiatives to ensure efficient use of resources, collaboration, and information-sharing.</p>

Appendix 3 FFEI Objectives

#	FFEI Objective	Strategies to Achieve
1	Understand the functional constraints for key species and ecological processes to establish a baseline of information for forecasting and monitoring ecosystem changes	<ol style="list-style-type: none"> 1. Identify the key species most likely to be impacted by climate change. 2. Identify the key ecological processes most likely to be impacted by climate change. 3. Determine how identified key species and ecological processes will respond to a changing climate, and the controlling variables causing the responses.
2	Forecast how a range of climate change scenarios might alter key species and ecological processes over time	<ol style="list-style-type: none"> 4. Forecast climate changes for BC (by regional area and BEC unit) and include explicit descriptions of the level of confidence in the forecasts. 5. Determine the expected probability and magnitude of climate change impacts on B.C.'s forest and range resources. 6. Determine the risks and benefits associated with implementing climate change adaptation strategies and practices, and determine who will assume the risks and reap the benefits.
3	Monitor key species and ecological processes to detect changes over time, and determine the agents of change	<ol style="list-style-type: none"> 7. Determine the indicators or measures to be used to monitor climate change and changes to identified key species and ecological processes. 8. Determine an appropriate monitoring design to detect climate changes, and the responses of species, processes and agents of change to climate change and to management activities implemented in response to climate change. 9. Determine whether the current monitoring framework (e.g., programs, systems, and network of monitoring sites) is adequate to meet FFEI objectives, and adapt it as necessary to meet FFEI objectives.
4	Evaluate a range of existing and new approaches to forest and range management for their ability to maintain and enhance ecological resilience and ecosystem services, products and benefits under changing ecological conditions	<ol style="list-style-type: none"> 10. Determine how the BEC system will be impacted by climate change and what can be done to adapt the system so it continues to support management decisions. 11. Determine how future timber supply will be impacted by climate change, and what can be done to maintain the supply of timber. 12. Determine how management of ecological services can be adapted to incorporate effective responses to changing climate and associated ecological changes. 13. Determine how biodiversity management can be adapted to incorporate effective responses to changing climate and associated ecological changes. 14. Determine how wildlife management can be adapted to incorporate effective responses to changing climate and associated ecological changes. <p style="text-align: right;"><i>(continued next page)</i></p>

		<p style="text-align: center;"><i>(from previous page)</i></p> <ol style="list-style-type: none"> 15. Determine how fish management can be adapted for effective responses to changing climate and associated ecological changes. 16. Determine how riparian management can be adapted to incorporate effective responses to changing climate and associated ecological changes. 17. Determine how watershed management can be adapted to incorporate effective responses to changing climate and associated ecological changes. 18. Determine how soil and terrain management can be adapted to incorporate effective responses to changing climate and associated ecological changes. 19. Determine how the management of timber species and their genetics can be adapted to incorporate effective responses to changing climate and associated ecological changes. 20. Determine how the conservation of forest plant species and their genetics can be adapted to incorporate effective responses to changing climate and associated ecological changes. 21. Determine how the management of forage and associated plant communities can be adapted to incorporate effective responses to changing climate and associated ecological changes. 22. Determine how the management of biotic and abiotic agents can be adapted to incorporate effective responses to changing climate and associated ecological changes. 23. Determine how the management of exotic and invasive species, and their bio-control agents, can be adapted to incorporate effective responses to changing climate and associated ecological changes. 24. Determine how fire management can be adapted to incorporate effective responses to changing climate and associated ecological changes. 25. Determine what can be done to integrate prompt adaptive management into forest and range management in response to climate change.
5	Adapt the forest and range management framework to maintain and enhance ecological resilience and ecosystem services, products and benefits under changing ecological conditions	26. Determine which aspects of forest and range management framework should be adapted, and how, in response to climate change.
6	Communicate knowledge gained and changes to the forest and range management framework	<ol style="list-style-type: none"> 27. Determine how land managers, partners and stakeholders can be kept informed of climate change-related forest and range management adaptation issues and responses. 28. Develop tools to facilitate understanding and implementation of changes to the forest and range management framework by land managers, partners and stakeholders.

Appendix 4 FFEI Management and Delivery Structure



Appendix 5

Terms of Reference

FFEI Management Team

A. Background

The Future Forest Ecosystems Initiative (FFEI) originated at a symposium / workshop hosted by the Chief Forester in December 2005 that explored the implications of climate change to forest ecosystems and forest management. The event involved participants from government agencies, universities, First Nations, forest and range industries, and environmental organizations, and yielded numerous proposed strategies for adapting forest management policies to address climate change.

Since the original symposium / workshop, a technical team of Ministry of Forests and Range specialists, under the direction of the Chief Forester and supported by a project manager, developed, consulted on, and refined FFEI direction. That direction includes a purpose, six objectives, 28 strategies to achieve the objectives, two desired outcomes, a scope, and an evolving list of recommended projects designed to achieve FFEI objectives and strategies. In addition to this work, specific members of the technical team are currently developing products designed to clarify and facilitate implementation of FFEI direction – these products (expected to be completed between Fall 2007 and Spring 2008) include the scientific foundation for FFEI, a paper on future climate scenarios, and a business process map.

FFEI is currently entering the implementation phase. A three-year strategic plan and implementation schedule, supported by a management and delivery structure and terms of reference that support the management structure, have been prepared to support FFEI implementation. As well, resources are being sought from internal programs, other agencies and organisations, and Treasury Board to enable long-term delivery and integration of FFEI direction into the ministry's core business.

It is now time to formalize the FFEI management team for a term ending March 2010, to provide cross-program direction on the implementation of FFEI. The following terms of reference and membership will support the team's activities during the implementation phase of FFEI.

B. Guidance Documents

The FFEI three-year strategic plan describes the purpose, objectives, strategies, desired outcomes and scope of FFEI, and how it will be managed and implemented over a three-year period (Spring 2007 to Spring 2010). The strategic plan is supported by seven appendices (development and consultation summary, glossary, strategies, management and delivery structure, management team terms of reference, technical team terms of reference, and three-year implementation schedule).

The strategic plan and appendices provide broad guidance on FFEI direction and implementation. As well, the scientific foundation, future climate scenarios, and business process map will help clarify FFEI direction and facilitate implementation planning. All of these documents will assist the management team in developing FFEI implementation direction and guidance.

C. Guiding Principles of Team

During the implementation phase of FFEI, the management team will provide direction on cross-program implementation of FFEI by:

1. Providing cross-program advice to the Chief Forester on management aspects of FFEI delivery;
2. Making decisions on recommendations brought forward by the technical team, programs, and the project manager on FFEI implementation;
3. Providing direction to the technical team on its terms of reference; and,
4. Providing guidance to responsible programs on FFEI implementation.

D. Scope of Activities Relative to Technical Team and Programs

Management Team	<p>Makes cross-program decisions regarding the management and delivery of FFEI, including:</p> <ul style="list-style-type: none"> • scope and focus of FFEI implementation activities • partnerships and resources to support long-term delivery of FFEI • roles and responsibilities of responsible programs and partners • prioritization of projects and allocation of resources to projects • initiative-level consultation and communication priorities • project planning, management, tracking and reporting requirements • integration of FFEI into core business
Technical Team	<p>Makes recommendations to management team on technical questions and issues that cross disciplines and programs, and influence the direction and focus of FFEI implementation activities, including:</p> <ul style="list-style-type: none"> • priority ecosystem vulnerabilities and key questions • land base and policy area priorities within FFEI scope • policy change considerations (e.g., barriers, risks, costs, benefits) • information management needs • sequencing and priorities for research, forecasting, monitoring and evaluation • other technical matters identified by the management team
Programs	<ul style="list-style-type: none"> • Evaluate existing delivery mechanisms (programs, initiatives, systems, indicators, sites, other information sources, committee structures) for their utility in enabling delivery of desired work • Adapt existing delivery mechanisms to address identified gaps and enable full delivery of desired work, and define roles/responsibilities of programs and partners • Develop discipline implementation plans and program business plans that identify how FFEI will be delivered and integrated into core business • Plan, implement, track and report on FFEI projects, consistent with guidance set by the management team

E. Objectives of Management Team

During the implementation phase of FFEI, the objectives of the FFEI management team are to make cross-program decisions on:

1. Review, approval and publication of FFEI foundation documents (scientific foundation, future climate scenarios paper, and business process map).
2. Recommendations brought forward by the FFEI technical team regarding:
 - a. An integrated cross-program approach to FFEI research, forecasting, monitoring and evaluation;
 - b. Integrating guidance and delivery mechanisms under other initiatives into FFEI delivery;
 - c. Cross-program monitoring of the effectiveness of FFEI objectives, strategies and projects in meeting desired outcomes; and,
 - d. Cross-program technical questions and issues raised by the management team.
3. Recommendations brought forward by responsible programs regarding:
 - a. Identification of external partners, delivery mechanisms, and resources necessary to support long-term delivery of FFEI;
 - b. Roles and responsibilities of responsible programs and partners;
 - c. Discipline implementation plans; and,
 - d. Identification and prioritization of FFEI projects, and allocation of resources to programs to support project delivery.
4. Strategies, work plans, and other implementation planning products prepared by the FFEI project manager to guide:
 - a. Solicitation of resources from internal programs, other agencies and organisations, and Treasury Board to support long-term delivery of FFEI;
 - b. Identification, prioritization, tracking and reporting on FFEI projects;
 - c. Initiative-level consultation and communications on FFEI activities; and,
 - d. Integration of FFEI into core business.
5. Annual updates of the FFEI 3-year strategic plan (including updates to the purpose, objectives, desired outcomes, or scope of FFEI, or to FFEI implementation planning guidance), based on recommendations of the technical team and/or responsible programs.

F. Reporting and Secretariat Support

The management team will be chaired by the Chief Forester, who reports to the Deputy Minister. The management team chair will liaise with the chair of the technical team and the FFEI project manager. The FFEI project manager will provide secretariat support to the management team.

Publishable products of the management team will be communicated broadly through: presentations and discussions with FFEI-responsible programs and partners; Chief Forester communiqués to Ministry of Forests and Range staff, other agencies and non-government organizations; and, web site postings.

G. Meeting Frequency

The management team will address FFEI management issues using regularly scheduled meetings of the Forest Stewardship Division Management Team, with attendance expanded to include the full team membership, and will hold conference calls as needed during the implementation phase.

H. Funding

The management team will not have a budget for its activities. Any costs incurred by the management team will be funded through the Chief Forester's office. Each team member's responsibility centre will pay for the travel costs they incur.

I. Duration

The management team's term will begin in November 1, 2007 and end March 31, 2010.

J. Team Membership

Role	Member	Title and Office
<i>Chair</i>		
Chair	Jim Snetsinger	Chief Forester, ADM, Forest Stewardship Division, MoFR
Deputy Chair	Craig Sutherland	Deputy Chief Forester, Forest Stewardship Division, MoFR
Strategic Advisor	Brian Storey	Director, Forest Stewardship Division Operations, MoFR
<i>Programs</i>		
Forest Science	Gerry Still	Director, Research Branch, MoFR
Forest Practices	Diane Medves	Director, Forest Practices Branch, MoFR
Tree Improvement	Brian Barber	A/Director, Tree Improvement Branch, MoFR
Forest Analysis and Inventory	Melanie Boyce	Director, Forest Analysis and Inventory Branch, MoFR
Climate change and carbon	Dale Draper	A/Director, Climate Change and Forest Carbon Strategic Leadership Work Unit, MoFR
Protection	Brian Simpson	A/Director, Protection Branch, MoFR
Range	David Borth	Director, Range Branch, MoFR
Ministry of Environment	Rod Davis	Representative, Ministry of Environment
<i>Operations Division</i>		
Operations perspective	Dan Peterson	Stewardship Officer, Southern Interior Forest Region, MoFR

Appendix 6

Terms of Reference – FFEI Technical Team

A. Background

The Future Forest Ecosystems Initiative (FFEI) originated at a symposium / workshop hosted by the Chief Forester in December 2005 that explored the implications of climate change to forest ecosystems and forest management. The event involved participants from government agencies, universities, First Nations, forest and range industries, and environmental organizations, and yielded numerous proposed strategies for adapting forest management policies to address climate change.

Since the original symposium / workshop, a technical team of Ministry of Forests and Range specialists, under the direction of the Chief Forester and supported by a project manager, developed, consulted on, and refined FFEI direction. That direction includes a purpose, six objectives, 28 strategies to achieve the objectives, two desired outcomes, a scope, and an evolving list of recommended projects designed to achieve FFEI objectives and strategies. In addition to this work, specific members of the technical team are currently developing products designed to clarify and facilitate implementation of FFEI direction – these products (expected to be completed between Fall 2007 and Spring 2008) include the scientific foundation for FFEI, a paper on future climate scenarios, and a business process map. The bulk of the technical team's work during the FFEI development phase was completed over the 2006/07 fiscal year.

FFEI is currently entering the implementation phase. A three-year strategic plan and implementation schedule, supported by a management and delivery structure and terms of reference that support the management structure, have been prepared to support FFEI implementation. As well, resources are being sought from internal programs, other agencies and organisations, and Treasury Board to enable long-term delivery and integration of FFEI direction into the ministry's core business.

It is now time to re-establish the technical team for a term ending March 2010, to facilitate effective, cross-program implementation of FFEI. The following terms of reference and updated membership will support the team's activities during the implementation phase of FFEI.

B. Guidance Documents

The FFEI three-year strategic plan describes the purpose, objectives, strategies, desired outcomes and scope of FFEI, and how it will be managed and implemented over a three year period (Spring 2007 to Spring 2010). The strategic plan is supported by seven appendices (development and consultation summary, glossary, strategies, management and delivery structure, management team terms of reference, technical team terms of reference, and three-year implementation schedule).

The strategic plan and appendices provide broad guidance on FFEI direction and implementation. As well, the scientific foundation, future climate scenarios, and business process map are being prepared to clarify and facilitate implementation of FFEI direction. All of these documents will provide useful background and guidance to the technical team as it develops technical implementation guidance.

C. Guiding Principles of Team

During the implementation phase of FFEI, the technical team will facilitate effective, cross-program implementation of FFEI by:

1. Acting as an inter-disciplinary cross-program sounding board on technical aspects of FFEI implementation;
2. Providing technical guidance to the management team on technical issues that cross disciplines and programs, and require operational perspectives;
3. Liaising with discipline and program counterparts to ensure technical recommendations consider broader discipline and program implications; and,
4. Liaising with the Climate Change Community of Practice to ensure technical recommendations consider current scientific data and guidance on climate change.

D. Scope of Activities Relative to Management Team and Programs

Technical Team	<p>Makes recommendations to management team on technical questions and issues that cross disciplines and programs, and influence the direction and focus of FFEI implementation activities, including:</p> <ul style="list-style-type: none"> • Priority ecosystem vulnerabilities and key questions • land base and policy area priorities within FFEI scope • policy change considerations (e.g., barriers, risks, costs, benefits) • information management needs • sequencing and priorities for research, forecasting, monitoring and evaluation • other technical matters identified by the management team
Management Team	<p>Makes cross-program decisions regarding the management and delivery of FFEI, including:</p> <ul style="list-style-type: none"> • scope and focus of FFEI implementation activities • partnerships and resources to support long-term delivery of FFEI • roles and responsibilities of programs and partners • prioritization of projects and allocation of resources • initiative-level consultation and communication priorities • project planning, management, tracking and reporting requirements • integration of FFEI into core business
Programs	<ul style="list-style-type: none"> • Evaluate existing delivery mechanisms (programs, initiatives, systems, indicators, sites, other information sources, committee structures) for their utility in enabling delivery of desired work • Adapt existing delivery mechanisms to address identified gaps and enable full delivery of desired work, and define roles/responsibilities of programs and partners • Develop discipline implementation plans and program business plans that identify how FFEI will be delivered and integrated into core business • Plan, implement, track and report on FFEI projects consistent with guidance set by the management team

E. Objectives of Technical Team

During the implementation phase of FFEI, the objectives of the FFEI technical team are to develop or establish the following for the consideration of the management team:

1. Develop a report with recommendations on an integrated cross-program / discipline approach to FFEI research, forecasting, monitoring and evaluation.
2. Develop a report with recommendations on the utility of related initiatives (within the Ministry of Forests and Range, other agencies and non-government organizations, and other jurisdictions) in providing technical guidance and delivery mechanisms that can help achieve FFEI objectives.
3. Develop a report with recommendations to guide monitoring the effectiveness of FFEI objectives, strategies and projects in meeting desired outcomes, and for integrating ongoing effectiveness monitoring and evolution to existing programs.
4. Establish an FFEI community of practice and information-sharing network to facilitate ongoing dialogue and information-sharing on technical aspects of 'managing for climate change' after the technical committee stands down.
5. Develop recommendations on any other technical matters identified by the management team.

F. Reporting and Secretariat Support

The technical team will be chaired by Evelyn Hamilton of Research Branch, who will liaise with the FFEI project manager and report directly to the management team. The FFEI project manager will provide secretariat support to the technical team.

Publishable products of the technical team will be communicated broadly through: presentations and discussions with FFEI-responsible programs; Chief Forester communiqués to Ministry of Forests and Range staff, other agencies and non-government organizations; and, postings on the FFEI web site.

G. Meeting Frequency

The technical team will have a minimum of two workshops between November 2007 and March 2008, and will hold conference calls and sub-team meetings as needed during that timeframe. For the remainder of its term, the team will meet as needed to resolve technical issues and develop products under its terms of reference.

H. Funding

For the period of November 2007 to March 2008, the technical team will have a budget of \$30,000 for contractor support and workshops to facilitate completion of the integrated cross-program approach to FFEI research, forecasting, monitoring and evaluation. This amount may increase if needed and if new funds become available for FFEI implementation over the 2007/08 year.

Each team member's responsibility centre will pay for the travel costs they incur.

I. Duration

The technical team's term will begin November 1, 2007 and end March 31, 2010.

J. Team Membership

Role	Member	Title and Office
Chair	Evelyn Hamilton	Manager, Ecology and Earth Sciences Section, Research Branch
<i>Disciplines</i>		
BEC	Elizabeth Campbell	Research Ecologist, Research Branch
Timber Supply	Christine Fletcher	Manager, Development and Policy, Forest Analysis and Inventory Branch
Ecosystem services, biodiversity, wildlife	Rod Davis	FFEI representative of Ministry of Environment
Fish and riparian	Peter Tschaplinski	Research Scientist – Fish-forestry Interactions, Research Branch
Water	George Butcher	Water Quality Biologist, Science and Information Branch, Ministry of Environment
Soil	Shannon Berch	Research Scientist – Soils, Research Branch
Terrain	David Campbell	Research Geomorphologist / Hydrologist, Coast Forest Region
Tree species	Pat Martin	Stand Development Specialist, Forest Practices Branch
Genetics	Leslie McAuley	Seed Policy and Planning Officer, Tree Improvement Branch
Forage and plant communities	Francis Njenga	Range Agrologist, Range Branch
Exotic and invasive species	Val Miller	Invasive Plant Officer, Range Branch
Biotic and abiotic agents	Lorraine Maclauchlan	Entomologist, Southern Interior Forest Region
Fire	Judi Beck	Manager of Fire Management, Protection Branch
Climate	Dave Spittlehouse	Climatologist, Research Branch
<i>Programs / Initiatives</i>		
Climate Change Initiatives	Kathy Hopkins	Climate Change Technical Advisor, Climate Change and Forest Carbon Strategic Leadership Work Unit
Monitoring (Inventory)	Xiaoping Yuan	Forest Spatial Statistician, Forest Analysis and Inventory Branch
Monitoring (FREP)	Peter Bradford	Forest Stewardship Officer, Forest Practices Branch
Adaptive management	Alanya Smith	Research Officer, Forest Practices Branch
<i>Operations Perspective</i>		
Operations (CFR)	Jennifer Barolet	Stewardship Officer, North Island-Central Coast Forest District
Operations (SIR)	Tara DeCourcy	Stewardship Officer, Arrow Forest District
Operations (NIR)	Dave Coates	Research Silviculturist, Northern Interior Forest Region

Appendix 7 – FFEI Three-Year Implementation Schedule

#	Year	High-Level Activity	Key Components	Lead	Collaborators	Timing
COMPLETED – HIGH LEVEL DIRECTION						
√	2006/07	High-level direction	<ul style="list-style-type: none"> Purpose, objectives, strategies, desired outcomes, scope 	Technical team	FFEI programs	Done
YEAR 1 – IMPLEMENTATION PLANNING PHASE 1						
1	2007/08	Management activities	<ul style="list-style-type: none"> Solicitation of resources (internal programs, other agencies and organizations, Treasury Board) to support long-term FFEI delivery Annual FFEI project list and allocation of resources to priority projects Communications and consultations (e.g., communiqués, presentations, seminar) 	Management team	FFEI programs	Ongoing
2	2007/08	3 year strategic plan	<ul style="list-style-type: none"> 3-year strategic plan and implementation schedule Terms of reference for management and technical teams Project tracking ledger Communications plan 	FFEI project manager	FFEI programs	Fall 2007 – Early 2008
3	2007/08	Outstanding direction	<ul style="list-style-type: none"> Future climate scenarios paper Scientific foundation Business process map 	D Spittlehouse D Meidinger K Weese	FFEI programs, external peers	Fall 2007 – Spring 2008
4	2007/08	FFEI seminar	<ul style="list-style-type: none"> FFEI progress report to participants and external partners Solicitation of feedback on implementation priorities and partnerships 	FFEI project manager	Management and technical teams	Spring 2008
5	2007/08	Related initiatives review	Review of related initiatives and other jurisdictions (e.g., incorporate helpful guidance, information sharing, collaboration opportunities)	Technical team	Broad external consultation	Spring 2008
6	2007/08	Integrated, cross-program approach to implementation	This approach will establish a cross-program / discipline process and priorities for implementing FFEI objectives and strategies, and will guide the development of discipline and program business plans in 2008/09.	Technical team	FFEI programs	Spring 2008
7	2007/08	Program activities to support approach	<ol style="list-style-type: none"> Assess utility of existing delivery mechanisms to enable FFEI delivery, and develop action plans to fill gaps/adapt mechanisms: <i>(continued next page)</i> 	FFEI programs	Partners	Spring 2008

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			<ul style="list-style-type: none"> a. Research installations and projects b. National Forest Inventory c. Inventory and monitoring initiatives d. Forest and Range Evaluation Program e. Adaptive Management Program f. External (other agency, university, NGO) programs <p>2. Training on adaptive management trials (overview and expert)</p> <p>3. Clarify delivery roles/responsibilities of FFEI programs and partners</p>			
8	2007/08	Priority projects (funded)	<p><i>Research and monitoring</i></p> <ul style="list-style-type: none"> • Vulnerability assessment framework • Research and monitoring strategy for biotic agents • Fire-climate and fuel model research strategies • Range TRIM-C review to establish forage production baseline <p><i>Forecasting</i></p> <ul style="list-style-type: none"> • Review of climate station data • Creation of user-friendly access to climate models (some work) <p><i>Policy evaluation/change</i></p> <ul style="list-style-type: none"> • Update of BEC guides and maps (and some work on TEM and PEM) • Growth and yield evaluations (timber supply impacts, TASS adaptation) • Tree seed evaluations (adaptation, selection, diversity, transfer) • Species selection guidelines update (species diversity and resilience) • Fire management strategy and planning guidance • Exploration of fire management objectives in legislation 	FFEI programs	Partners	Ongoing

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YEAR 2 – IMPLEMENTATION PLANNING PHASE 2						
9	2008/09	Ongoing FFEI management	<ul style="list-style-type: none"> Ongoing FFEI management activities (e.g., develop guidance, resolve cross-program implementation issues, solicit resources, allocate new resources to priority projects, communicate progress and outcomes) 	Management and technical teams	FFEI programs	Ongoing
10	2008/09	Discipline implementation plans	<ul style="list-style-type: none"> Long term (3-5 year) implementation plan for each FFEI disciplineⁱ that addresses research, forecasting, monitoring and evaluation needs 	FFEI programs	Partners	Oct 2008
11	2008/09	Program business plans	<ul style="list-style-type: none"> Long-term (3-5 year) business plan for each program that outlines how discipline implementation plans will be phased-in by programs 	FFEI programs	Partners	Mar 2009
12	2008/09	Integration strategy	<ul style="list-style-type: none"> Strategy for integrating FFEI direction, implementation plans, and ongoing projects into MFR's core business 	Management team	FFEI programs	Mar 2009
13	2008/09	Priority projects ⁱⁱ	<p><i>Research</i></p> <ul style="list-style-type: none"> Vulnerability assessments for priority ecosystem components (and identification of BC ecosystems at risk) Literature reviews on priority ecosystem components Functional analysis for priority ecosystem components <p><i>Forecasting</i></p> <ul style="list-style-type: none"> Evaluation and expansion of ClimateBC Ecosystem response models for priority ecosystem components <p><i>Monitoring and evaluation/change</i></p> <ul style="list-style-type: none"> Develop monitoring strategy (indicators, measures, scale, design, reporting, delivery mechanisms) Initiate near-term priority policy evaluation/change projects Develop strategy for adaptive management trials Identify institutional and policy barriers to effective adaptation <p><i>Extension</i></p> <ul style="list-style-type: none"> Develop strategy & partnerships to deliver extension of project outcomes, with help from FORREX 	FFEI programs	Partners	Ongoing

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YEAR 3 – RAMP UP TO FULL INTEGRATION INTO CORE BUSINESS						
14	2009/10	Ongoing FFEI management	<ul style="list-style-type: none"> Ongoing FFEI management activities (e.g., develop guidance, resolve cross-program implementation issues, solicit and allocate new resources to lead programs, communicate progress and outcomes) 	Management and technical teams	FFEI programs	March 2010
15	2009/10	Establish FFEI COP	<ul style="list-style-type: none"> Establish FFEI community of practice and information-sharing network 	Technical team	FFEI programs and partners	March 2010
16	2009/10	FFEI effectiveness monitoring strategy	<ul style="list-style-type: none"> Develop cross-program strategy to monitor effectiveness of FFEI objectives, strategies and projects in meeting desired outcomes 	Technical team	FFEI programs and partners	March 2010
17	2009/10	Ramp-up to full integration into core business	<ul style="list-style-type: none"> Integrate long-term FFEI program business plans into annual program business plans Integrate FFEI direction and implementation plans into MFR vision, mission, service plan, business plans, staff performance plans, and staff culture Conclude FFEI management structure upon full integration of FFEI into core business Continue existing and initiate new priority research, forecasting, monitoring and evaluation projects, as per program business plans 	FFEI programs	Partners	March 2010

ⁱ FFEI disciplines include climate, BEC, timber supply, ecosystem services, biodiversity, wildlife, fish, riparian, water, soil, terrain, tree species, genetics, forage and associated plant communities, biotic and abiotic agents, exotic and invasive plant species, and fire.

ⁱⁱ Funding for 2008/09 priority projects is still being solicited; as of October 2, 2007, \$383,000 has been secured from the FIA Forest Science Program to support delivery of selected collaborative research projects (operational measures of resilience; upgrades, improvement and expansion of Climate BC; estimates of forest carbon balance in response to climate change; framework for developing climate-based seed transfer system; and, multi-species Class A seedlot adaptation trial); as well, for 2008/09, the FIA Forest Science Program has agreed to fund up to \$575,000 worth of approved research proposals (through its competitive process) that support FFEI objectives.