

# **Adaptive Management Framework for the Central and North Coast of British Columbia**

## **Overview**

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Final report  
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# Adaptive Management Framework for the Central and North Coast of British Columbia – Overview

## 1. Why Adaptive Management?

In 2006, the provincial and First Nations governments announced land-use decisions for the Central and North Coasts of British Columbia that included an initial suite of land management and socioeconomic objectives and a commitment to fully implement Ecosystem Based Management (EBM) by March 31, 2009. Ecological and cultural objectives from these agreements are now reflected in ministerial orders specifying legally-enforceable land use objectives.

The definitions of ecosystem-based management and adaptive management (AM) found in the 2006 Government-to-Government agreements and related documents, provide the context for this framework:

*Ecosystem-Based Management... means an adaptive, systematic approach to managing human activities, guided by the Coast Information Team EBM Handbook, that seeks to ensure the co-existence of healthy, fully functioning ecosystems and human communities.*

*"Adaptive Management" means a systematic approach to resource management that engages the Parties and stakeholders in structured, collaborative research and monitoring with the goal of improving land and resource management policies, objectives and practices over time...<sup>1,2</sup>*

*Full implementation of EBM [includes establishing]... a governance framework that provides an adaptive land use and resource management regime... [that includes]... Government-to-Government collaborative arrangements... and structures and processes for ongoing... stakeholder involvement...<sup>3</sup>*

These definitions state 1) that participants in coastal resource planning processes have agreed to adaptive management as an integral part of EBM; 2) that adaptive

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<sup>1</sup> Land and resource protocol agreement between Gitga'at First Nation, Haisla Nation, Heiltsuk Nation, Kitasoo/Xaixais First Nation, Metlakatla First Nation, Wuikinuxv First Nation, (collectively the "Coastal First Nations" or a "Party") and Her Majesty the Queen in Right of the Province of British Columbia..

<sup>2</sup> Land use planning agreement-in-principle (AIP) between Mamalilikulla-Qwe'Qwa'Sot'Em First Nation, 'Namgis First Nation, Tlowitsis First Nation, Da'naxda'xw Awaetlatla First Nation, Gwa'sala-'Nakwaxda'xw First Nation, We Wai Kai First Nation, We Wai Kum First Nation and, Kwiakah First Nation (collectively, the "KNT First Nations" or a "Party") and the Province of British Columbia.

<sup>3</sup> Joint Land and Resource Forums. 2007. Definition of "Full Implementation of Ecosystem Based Management ("EBM") by March 31, 2009". [http://www.ilmb.gov.bc.ca/slrp/lrmp/nanaimo/central\\_north\\_coast/docs/Full\\_Implementation\\_\(Final%20July%2010%202007\).pdf](http://www.ilmb.gov.bc.ca/slrp/lrmp/nanaimo/central_north_coast/docs/Full_Implementation_(Final%20July%2010%202007).pdf)

management, in this context, is broad in scope because EBM is broad in scope, aiming to both maintain ecological integrity and promote human well being; and 3) that adaptive management is to be undertaken collaboratively.

## 2. What is Adaptive Management?

The idea of Adaptive Management is to reduce uncertainties and improve Ecosystem Based Management through shared learning about the effects of management strategies. Adaptive management starts with careful land use and development planning that establishes consensus-based management objectives and implementable strategies. It requires systematic assembly of existing technical knowledge, experience and traditional knowledge related to these objectives and strategies. Then it uses monitoring studies to generate new knowledge to improve management (see Figure 1).

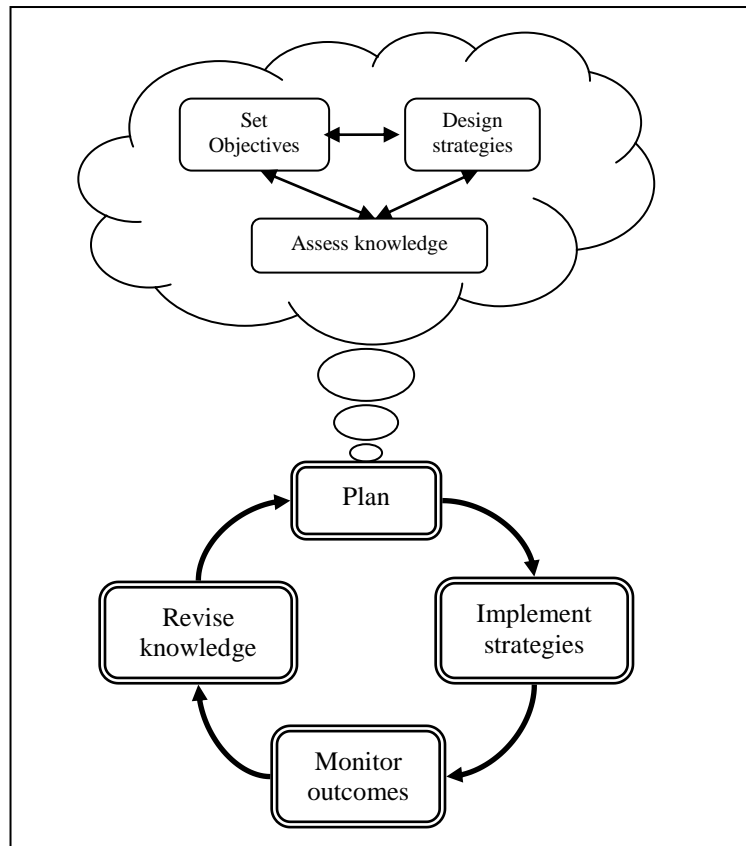


Figure 1: Adaptive Management cycle with planning activities highlighted

The basic concept of adaptive management is simple – to learn how to manage better from the experience of implementing plans. But the practice of adaptive management is made difficult by many complicating factors: planning is often fragmentary or incomplete; problems are hard to define and measure; data are scarce and costly to

acquire; data collection by itself has limited explanatory power to improve understanding; different groups have different interests and disagree on what is important; human and financial resources are scarce; and learning is most effective when it is collaborative and interactive rather than isolated and individual. For these reasons, an adaptive management program for the Central and North Coast should address several tasks:

- ensure planning provides clear objectives and implementable strategies for managers.
- identify priorities for adaptive management based on information from plans and from existing knowledge.
- define specific adaptive management questions.
- determine what kinds of monitoring, data collection and study design can effectively address those questions.
- organize and fund adaptive management studies.
- share knowledge and build on the experience of others.
- build productive interaction and shared learning among different players in relation to all of these tasks (including provincial and First Nations governments, managers, resource licensees, community leaders, scientists, and environmental organizations).

Adaptive management can be undertaken at multiple scales, but there are efficiencies to sharing both the knowledge base and the information generated among managers who face similar issues. Accordingly, priority setting should be undertaken at the scale corresponding to planning and management action: where objectives and strategies are intended to be consistent across the region, knowledge and priorities should be shared regionally. Where management objectives and plans differ between locations or sub-regions, adaptive management priorities should be determined at the relevant scale based on the best available knowledge.

The task of collecting, sharing, validating and organizing *knowledge* about management strategies is central to adaptive management. This task can be time-consuming, but generally leads to other benefits, such as better understanding of the management task, clarity about knowledge and where it can be found, insights into controllable and uncontrollable factors influencing the objective, and greater capacity for collaboration.<sup>4</sup>

Adaptive management is not an *ad hoc* or short-term activity. Without a systematic approach, learning progresses slowly and haphazardly and consequently important management issues may not be addressed. In both ecosystems and social systems, it can take years to be able to measure and interpret meaningful change with confidence. Adaptive management requires that organizations make a long-term commitment to

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<sup>4</sup> Feedback from pilot users on the coast (BCTS workshop, Bella Coola Community Forest pilots supported by EBM Working Group) and from the Babine Watershed Trust adaptive management processes.

monitoring management strategies and to critically reviewing and adjusting management practices as a result of lessons learned. But an adaptive management approach does not have to be comprehensive or massive. It can start with small and simple measures at different levels. The supporting documents provide examples and tools to get started.

### **3. What is the Adaptive Management Framework<sup>5</sup>?**

Adaptive management for the Central and North Coast is a new and ambitious endeavour. There is very limited experience anywhere with formal systems of adaptive management that address both ecosystem integrity and human well being objectives across multiple spatial scales, from the regional level to the community level, and include multiple decision-making organizations. Any framework developed for the Coast will be experimental, and will need to be tested, evaluated and modified with experience.

The proposed framework links various *organizations* involved in resource management on the Coast and includes *guidance documents* that can help the organizations to implement adaptive management.

The framework proposes a stylized knowledge summary to assess gaps and learning priorities, combined with a transparent and replicable project prioritization process that ranks the value of new knowledge. Managers can choose the most cost-effective monitoring or research studies from among many possible issues of interest.

Figure 2 shows a schematic of the various elements of the framework, including key organizations and documents. Sections below briefly describe the guidance documents and organizations shown in this figure. For additional information, the reader is referred to these more detailed guidance documents.

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<sup>5</sup> See Appendix 1 for consultant Terms of Reference

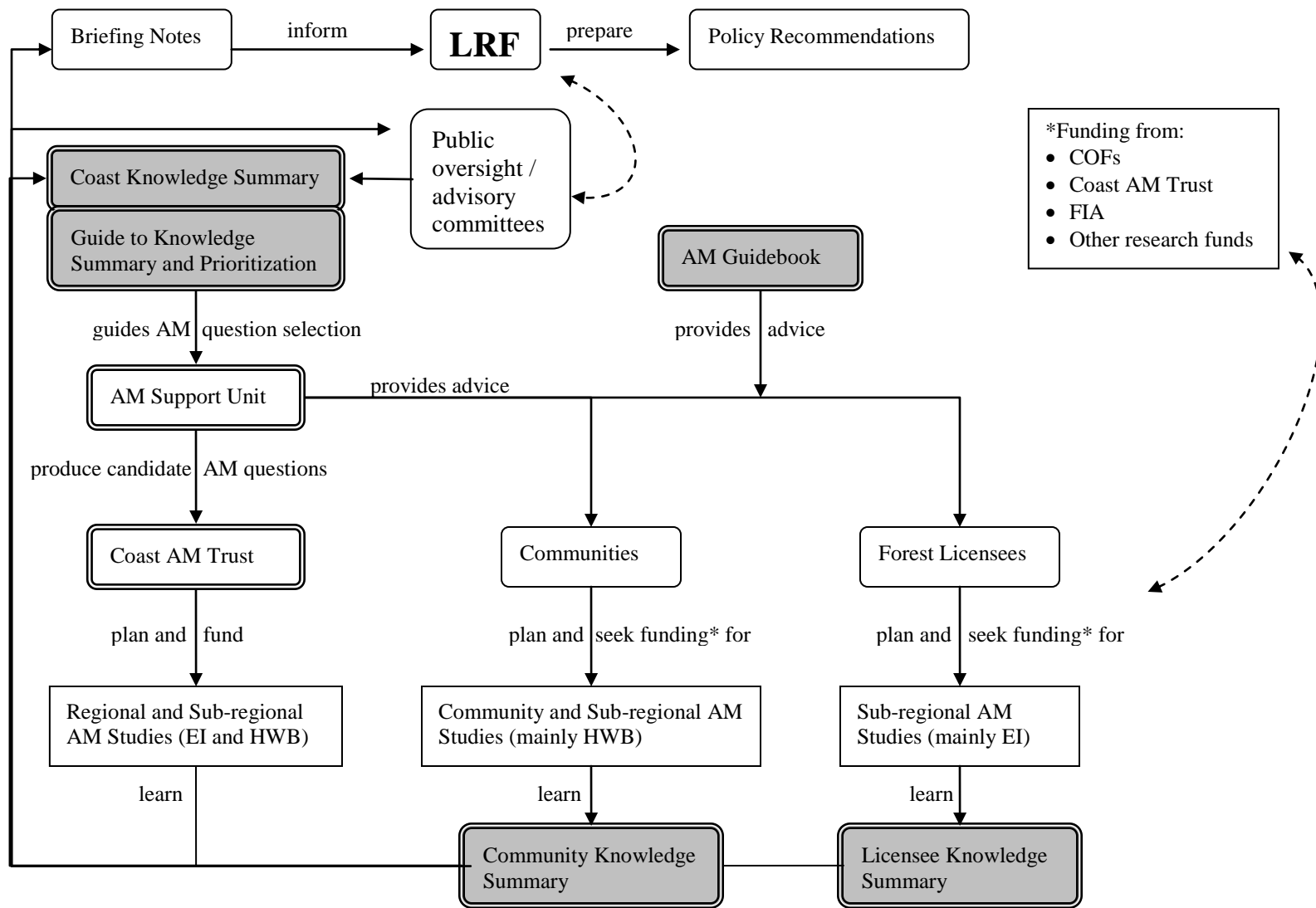


Figure 2. Components (organisations and documents) and linkages that make up the Central and North Coast Adaptive Management Framework. Double-lined boxes show new components; single-lined boxes show existing components; shaded boxes show supporting documents (community and licensee knowledge summaries to be created as required).

## 2. Key guidance documents

### 2.1 Coast Adaptive Management Guidebook

This document supports activities of *Community and Forestry Adaptive Management Teams* (see description below in Section 3). It is intended for a broad professional and lay audience as an introduction and general background to undertaking adaptive management on the Coast. The Guidebook:

- introduces adaptive management concepts and terminology
- describes when to use adaptive management, because it is not appropriate under all conditions
- outlines the general methods for implementing the adaptive management cycle
- provides specific guidance for the application of adaptive management to different situations or audiences
- includes references to additional literature, helpful websites and other resources.

### 2.2 Coast Knowledge Summary

This is a stylized outline of the key information needed to decide what kinds of adaptive management activities should be undertaken. It helps identify knowledge gaps, and to determine priorities for adaptive management activities. It is intended for experienced and knowledgeable managers. The knowledge summary is **not** a data base, or a repository, or collection of all knowledge about EBM issues on the coast. It outlines what is known about how management strategies are expected to lead to desired results as expressed in planning objectives. Many other kinds and forms of knowledge are important, but are not needed to choose adaptive management activities, so they are not addressed in the knowledge summary.

The content of the knowledge summary is generated from experience, expert workshops, preparatory studies, scientific research and published sources that guide planning and decision-making. This is knowledge that exists already in people's heads or in cumulative studies, and forms the foundation of the planning processes that have already identified objectives and management strategies. This means that planning must begin *before* a knowledge summary can be compiled. The main effort involved in formalizing the knowledge summary is capturing knowledge from others, documenting it in a specific format, sharing and verifying it. Much of this is accomplished through the planning process.

The format of the knowledge summary is key to its utility. Its structure follows the objectives agreed to in the planning phase. The knowledge summary describes what is already known about the effects of management—in terms of the likelihood that strategies will achieve the intended objectives (risk) and confidence about that likelihood (uncertainty). These are factors that are intuitively understood already by managers, but the knowledge summary makes them explicit to help identify the most important information gaps, and consequently the adaptive management activities that will provide the most useful knowledge.



Currently, the Coast Knowledge Summary focuses on region-scale ecological integrity knowledge<sup>6</sup>, and also includes illustrative examples of human well being knowledge at a community scale. The Knowledge Summary is intended to be regularly and simply updated as part of the adaptive management process (see Figure 2). In this sense, it is always a draft document and should undergo frequent revision.

### 2.3 Guide to the Coast Knowledge Summary and Prioritization Procedure

This guide is mainly intended to be used by the proposed *Adaptive Management Support Unit* (see Figure 2 and description below), but can also be used by others to formally record knowledge and set monitoring priorities. The guide:

- describes the stylized format for recording knowledge related to management objectives and strategies in the ***Coast Knowledge Summary***
- describes a transparent and replicable procedure to use this stylized information to prioritize needs for adaptive management investments in monitoring and research
- explains how the knowledge summary and prioritization procedure are constructed in relation to concepts of risk and uncertainty, and how managers can use these concepts rigorously without worrying about the theoretical background.
- describes a process for updating the ***Coast Knowledge Summary***

## 3. Organizations involved in the Adaptive Management Framework<sup>7</sup>

Some of the organizations shown in Figure 2 already exist; others must be created. Existing organizations may need to take on new roles. New organizations may build on existing ones. Although the most visible elements of the framework are these organizations, it is the adaptive management tasks that have fundamental importance. Thus, organizations may change provided that tasks are redistributed to other bodies that can do them effectively.

### 3.1. Land and Resource Forums (existing)

AM Role: influence provincial EBM-related policy based on knowledge provided by *Coast Adaptive Management Trust* and ***Coast Knowledge Summary***.

Scope: ecological integrity and human well-being at the regional scale

AM Tasks:

- review briefing notes and clarify ambiguities with *Coast Adaptive Management Trust*, in order to recommend changes to provincial EBM policy.

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<sup>6</sup> Not all ecological integrity objectives are included at this point in time.

<sup>7</sup> Details reported in ***Adaptive Management Framework Institutional Design final report***, Sept. 30, 2008.

AM Relationships:

- request and receive information from the *Coast Adaptive Management Trust* about EBM implementation
- inform the *Trust* about new EBM policies or related issues

**3.2. Public Oversight or Advisory Committees (new or built on existing)**

AM Role: Public Advisory Committees, such as the Plan Implementation Monitoring Committees (PIMCs), have a potentially valuable consultative and information-sharing role, connecting to key public stakeholder groups in coastal communities. Members or stakeholders can contribute to the ***Coast Knowledge Summary*** through public workshops, review new knowledge generated by adaptive management studies, and provide feedback to the provincial and First Nations governments.

Scope: ecological integrity and human well-being at the regional scale

AM Tasks:

- review knowledge summaries and adaptive management study results with *Adaptive Management Support Unit*, in order to provide comments and feedback.

AM Relationships:

- request and receive information from the *Adaptive Management Support Unit* about EBM implementation
- provide feedback to the Land and Resources Forum (LRF) about new EBM policies or related issues

**3.3. Coast Adaptive Management Trust (new)**

Role: supported by the *Adaptive Management Support Unit*, this is a mechanism for impartially and transparently identifying adaptive management investment priorities; funding high priority adaptive management projects (studies and learning activities) that cannot be funded by other sources; and for communicating new management knowledge to *Land and Resource Forums*.

Scope: ecological integrity and human well-being at the regional scale

Tasks:

- Decide which regional scale adaptive management projects to fund
- Prepare briefing notes for the *LRF*

Relationships:

- Receive requests for information from *LRF*
- Receive recommendations for regional high priority research and monitoring projects from *Support Unit*
- Guide activities of *Support Unit*

### 3.4. Adaptive Management Support Unit (new)

Role: uses the **Coast Knowledge Summary** and **Prioritization Procedure** to support the *Coastal AM Trust* and *Community and Forestry AM Teams*

Scope: mainly ecological integrity and human well-being at the regional scale, but also supporting community and sub-regional scale activities

Tasks:

- use **Prioritization Procedure** and **Coast Knowledge Summary** to help the *Coast AM Trust*
  - Identify candidate monitoring and research priorities
  - Assess technical and financial feasibility of priority research
  - Coordinate delivery of research and monitoring projects
  - Maintain and share resulting knowledge by updating the **Coast Knowledge Summary**
- provide adaptive management support as needed (e.g., advice, referrals to experts, information on synergies) to *Community and Forestry AM Teams*
- help interpret and lead good practice in adaptive management for the Coast, in collaboration with other agencies

Relationships:

- Receive requests for information from *Coast AM Trust* and from *Community and Forestry AM Teams*
- Receive knowledge summaries from *Community and Forestry AM Teams*
- Receive study results from *Community and Forestry AM Teams* and from regional research projects
- Inform *Community and Forestry AM Teams* about new relevant knowledge
- provide candidate monitoring and research questions to the *Coast AM Trust*

### 3.5. Community Adaptive Management Teams (build on existing organizations)

Role: undertake adaptive management using **Coast AM Guide**, and possibly the **Coast Knowledge Summary** and **Prioritization Procedure** for guidance.

Scope: economic development, resource management issues at the community scale. Several communities may collaborate in areas of mutual interest.

Tasks:

- implement the entire adaptive management cycle; likely they will focus initially on documenting plans (vision, objectives, strategies and available knowledge) before beginning adaptive management studies.

Relationships:

- Provide *AM Support Unit* with copies of Knowledge Summaries and Adaptive Management Project results when appropriate
- Seek procedural advice from *AM Support Unit* as required
- Seek referrals to topic experts from *AM Support Unit*
- Seek funding from various sources including, Coast Opportunity fund and *Coast AM Trust*

### 3.6. Forestry Adaptive Management Teams (build on existing organizations)

Role: undertake adaptive management, possibly using ***Coast AM Guide***, ***Coast Knowledge Summary*** and ***Prioritisation Procedure*** for guidance (note that practitioners already collaborate to address regional and district-scale forest management issues)

Scope: mainly forest management issues (regional policy, local policy, best practices, EBM implementation challenges) at the district scale.

Tasks:

- teams will implement the entire adaptive management cycle, using existing plans and documenting knowledge; teams will probably focus on adaptive management studies.

Relationships:

- Provide *AM Support Unit* with copies of Knowledge Summaries and Adaptive Management Project results when appropriate
- Seek general advice from *AM Support Unit*
- Seek referrals to topic experts from *AM Support Unit*
- Seek funding from various sources including FIA and *Coast AM Trust*

### 3.7. Supporting activities

Other activities and organizations can serve either as sources of information for users of the framework on the Central and North Coast, or as beneficiaries of the knowledge generated by the framework, or both.

Information management: Adaptive management requires access to existing resource inventories. Studies also generate new information that needs to be stored and made available to a broad audience. Accessing data in the Central and North Coast is currently challenging due to inconsistent standards and variable degrees of accessibility and maintenance. A forthcoming EBM Working Group study report will recommend a collaborative, user-driven approach to develop consolidated formats for unified data storage and simplified access. This function will be an important element of adaptive management.

Ministry of Forests and Range, Forest and Range Evaluation Program: FREP has several years experience with implementation monitoring and has more recently begun

effectiveness monitoring. FREP monitors the eleven resource values listed in the *Forest and Range Practices Act* in forestry operations across the province. These values overlap considerably with ecological values found in EBM objectives, so some of the information generated by FREP in coastal ecosystems will be relevant to managers implementing EBM, and can be applied directly to adaptive management. Similarly, some areas of monitoring and research on the Coast that are tied to EBM implementation will also provide information relevant to FREP.

Forestry certification schemes: In certification schemes, companies develop indicators for criteria specified in certification standards and then monitor the indicators. The schemes usually outline appropriate planning and quality control processes. Thus, certification schemes follow a similar approach to adaptive management. There should be opportunities for identifying adaptive management projects of interest both for a company's management decisions and for documenting certification compliance.

#### **4. Using the Adaptive Management Framework**

The framework is a proposal. It lays out a direction for collaborative adaptive management and provides tools that have had limited testing by resource managers. Linking the various organizational pieces, further testing tools and building a common understanding of how to use them will take several years. To get started, we suggest:

- Regardless of the institutional structures eventually adopted, some kind of *Adaptive Management Support Unit*, with functions as described above, is needed to provide regional leadership and advice. Without this measure, it is very unlikely that adaptive management will be implemented.
- An early responsibility for an *Adaptive Management Support Unit* should be to review the documentation from this project and determine which, if any, products should be prepared for broader public use (editing, layout, production).
- The value and functionality of adaptive management tools should be tested in pilot activities at different scales. Engage multiple organizations, build experience, and consider modifications.
- Inclusiveness and consultation are as important as scientific rigour in the adaptive management process, to ensure relevance and to build local engagement and commitment.
- First Nations have growing authority and responsibility for *de facto* resource management and for community economic development decision-making. Building their capacity to oversee good practices should be a central task in implementing adaptive management. First Nations communities should be able to seek external support and technical assistance on their own terms (e.g. through development of research protocols).
- A variety of unanticipated EBM implementation issues that may have little to do with adaptive management are likely to arise at the operational level. Consultative and collaborative processes to address these should be put in place.

- Regional monitoring and reporting responsibilities should be identified for ecological integrity indicators identified in the Knowledge Summary. This can tie into baseline monitoring activities already undertaken.
- An information management infrastructure will be needed to implement adaptive management.

## **Appendix 1 – Consultant Terms of Reference for AMF project**

*“The purpose of this project is to develop an Adaptive Management Framework that will apply to both human well-being (HWB) and ecological integrity (EI) and support the ongoing implementation of EBM.*

*Key elements of the framework include:*

- 1. A recommended institutional framework for collaborative implementation of Adaptive Management (AM) in the Central and North Coast that meaningfully involves Provincial agencies, First Nations, local communities and stakeholders in AM planning, project design and implementation. The institutional Framework should also provide for collecting, delivering and disseminating AM information to relevant parties including First Nation and other local communities, resource managers, and Provincial and First Nation decision makers so that AM results are translated into improved knowledge, better management practices and appropriate policy changes.*
- 2. Guidance for practitioners, including:*
  - a. A summary description, with examples, of the types of monitoring and research that could be applied on the North/Central Coast. This description should distinguish between types of monitoring and research questions (for example, implementation, effectiveness, and validation monitoring)<sup>8</sup> and monitoring and research delivery methods (for example, participatory action research, community-based monitoring, active adaptive management experiments, policy experimentation);*
  - b. Standards, best practices, and existing tools for application of the types of research and monitoring identified;*
  - c. Guidance for forest licensees considering how adaptive management plans and projects could be implemented collaboratively by several licensees coast-wide to create implementation efficiencies and a coordinated approach across the region.*
- 3. A transparent methodology for allocating HWB and EI objectives and strategies to appropriate types of research and monitoring and ranking them in order of priority, based on criteria such as risk, uncertainty, cost, resolvability of uncertainty, influence of the objective on the goal, influence of the goal on other objectives, and other relevant factors;*

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<sup>8</sup> Implementation monitoring assesses whether identified strategies have been implemented. Effectiveness monitoring considers whether the strategies implemented have had the desired outcome. Validation monitoring is monitoring to reduce uncertainty regarding the relationship between an objective and a strategy, and often takes the form of active adaptive management experimentation.

4. *A “current knowledge” summary describing hypothesized relationships between land use planning objectives and strategies. This summary will be a living document that provides hypotheses for testing through adaptive management and enables prioritization of objectives and strategies for research and monitoring. It will be updated over time to reflect new information resulting from AM projects.”*

[note: item #2 was subsequently modified by the EBM Working Group steering committee]