

Incorporating the Human Element

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Abstract

With the North and Central Coast Land and Resource Management Plans (LRMP) near completion, a new approach to sustainable development has emerged. Through Ecosystem Based Management (EBM), stakeholders have set the stage for the application of management practices that reflect the unique socio-economic and environmental conditions of these regions.

EBM requires the coexistence of healthy fully functioning ecosystems and human communities. As a result, testing the success of this strategy presents a new range of complexity: How can socio-economic and environmental factors be linked in an effective and meaningful fashion in order to reflect the balanced objectives of EBM?

A well defined set of criteria and indicators, an approach widely used within forest certification systems, appears necessary to ensure that socio-economic values accompany efforts to monitor the effectiveness of biological conservation. Similarly, adaptive management mechanisms must recognize the broader complexity of human systems in addition to delivering greater certainty surrounding ecological function. Breaking the EBM Framework into components and ranking uncertainties through a comprehensive adaptive management framework will help simplify the process.

A solid foundation for EBM has been developed through high-level strategic planning and supporting science, however, there is still a significant amount of work required to ensure its successful implementation. The intent of this report is to highlight some upcoming challenges for EBM implementation relative to balancing socio-economic and environmental values and to present some potential mechanisms to aid in addressing these challenges.

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Introduction

The Brundtland Commission defined sustainable development as a means to “meet the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland 1987). The integration of environment and economy in policy decisions was a basic recommendation of this Commission and this is increasingly becoming a societal expectation. International environmental agreements such as the Framework Convention on Climate Change, Kyoto Protocol and Convention on Biological Diversity amplify the Brundtland paradigm.

Real or perceived imbalance between biological conservation and human development often leads to landuse conflict. This was evident in the Central and North Coast of British Columbia where environmental activism spurred the onset of over a decade of debate. Although initially resulting in hostility and contention, communication between opposing interests was facilitated through Land and Resource Management Planning designed to reflect the values of all stakeholders.

The desire to achieve sustainable development is evident within the recommendations of the Central and North Coast Land and Resource Management Plans (LRMPs). Through the application of Ecosystem Based Management the framework for an “...adaptive approach to managing human activities that seeks to ensure the coexistence of healthy, fully functioning ecosystems and human communities” has been established (Coast Information Team 2004a).

By integrating economy and environment when making landuse decisions, the premise is that both biological conservation and human wellbeing will be better off in the long-term. In order to determine whether measures taken for biological conservation are successful, monitoring human wellbeing is essential and vice versa.

Linking biological and socio-economic values in a meaningful way is not a simple task. An abundance of uncertainly clouds this process, including assessment of risks. Uncertainty can create additional socio-political barriers for implementation of innovative approaches. Examples include the unwillingness of agencies to try new unlegislated strategies or to risk short-term losses for possible long-term gains, or to change in response to new scientific information (Johnson 1999, Walters 1997, Bunnell and Dunsworth 2004).

There are a variety of tools available that work to reduce uncertainty and facilitate the balancing of objectives. Utilizing tools, such as criteria and indicators, will help create a common understanding of values and their distribution across landscapes and communities. This in turn reduces the volatility of negotiations on issues of social choice. The following discussion describes some potential mechanisms to aid the successful integration of environment and economy within policy decisions as they pertain to the Central and North Coast of British Columbia.

The Road to Ecosystem Based Management

Combined, the Central and North Coast of British Columbia cover over six million hectares³. This vast area incorporates globally significant forests and unique ecological values and supports human communities both inside and outside of its boundaries based on activities such as forestry, fisheries and tourism.

Approximately 5,000 people live within the Central Coast and 20,000 within the North. First Nations, with cultural and traditional ties to these regions, make up a large percentage of this population.

Over a decade ago conservation groups began to refer to the region encompassed by the Central and North Coast as the Great Bear Rainforest. Conflict over land use escalated through protest demonstrations and by 1997 environmental campaigns abroad started to significantly impact the market access of forest companies. In response, international customers of coastal wood products, government, First Nations, local communities and environmental groups began voicing the need for resolution of this conflict.

In order to facilitate communication and break the stalemate between opposing interests, major forest companies within the region agreed to extend harvest deferrals and in turn environmental groups committed to suspend market campaigns against coastal forest products. Together these groups proposed a new form of planning based on the principles of Ecosystem Based Management (EBM) with the intention of balancing environmental, social, economic and cultural values within landuse decisions.

In April 2001 a framework for EBM took shape with an agreement on its definition, principles and goals. In response, the provincial government promised to further define and implement EBM through the Coast Sustainability Strategy. This strategy was the start of a coordinated effort to complete the Central and North Coast LRMPs and a planning process for Haida Gwaii/ Queen Charlotte Islands.

In 2002, the Coast Information Team (CIT), a multi-disciplinary science body, began its mandate to provide information and analysis to the LRMP tables for consideration when making landuse decisions under an EBM Framework. The CIT completed its work in March 2004.

Although there is a single Framework for EBM, the landuse recommendations associated with each of the LRMPs are unique and directly linked to the environmental and socio-economic conditions of the region. Currently each plan is at a different stage of completion. The Central Coast LRMP recommendations were finalized within a consensus report submitted to government in May 2004. Whereas, the North Coast LRMP reached a preliminary agreement in June with further work underway to finalize the plan. The LRMP process in Haida Gwaii/Queen Charlotte Islands is ongoing. The North and Central Coast LRMPs recommend a network of existing and new Protection Areas and Biodiversity Areas⁴. Together, these landscapes act as a coarse filter strategy for maintaining biological diversity. Development activities concentrated

³ See the following website for regional maps <http://srmwww.gov.bc.ca/rmd/lrmp/>

⁴ Biodiversity Areas: Prohibit forestry and hydroelectric development.

outside of these areas are guided by the principles of the EBM Framework, which aim to achieve an equilibrium of socio-economic and environmental values.

In July 2004, the government of British Columbia announced an initiative to create a Spirit Bear Conservancy and utilize the LRMP Table recommendations as the basis for formal land use negotiations between the Province and the governments of Central Coast and North Coast First Nations. Once government to government discussions are finalized, the high-level strategic planning phase of these LRMPs will be complete. Based on this foundation, the landuse recommendations will require further refinement through more detailed strategic planning. However, the transition to EBM has begun. Ecosystem Based Management is designed to be an adaptive process, implemented in stages through continuous and structured learning. The transition to full implementation is expected to take place over a five year time frame.

Effectiveness Monitoring in the Context of EBM

Monitoring the effectiveness of management strategies designed to achieve the two parallel objectives of EBM is not an easy task. A system must be established which links both value sets. This must be done in a way that overcomes the unintended complexity expressed below:

cultural, economic, or business planning usually relates to transportation, political, or administrative boundaries that rarely coincide with ecological boundaries, which typically relate to biophysical features. Overlapping jurisdictions and mandates make it difficult to generalize relationships between socio-economic and ecological planning boundaries within particular planning scale. (Coast Information Team 2004b).

The question remains what are the most appropriate ways to link ecological options with associated economic impacts and opportunities? This question was posed at a Socio-economic Workshop for the Central and North Coast in 2000 and was later addressed through the CIT⁵.

They attempted to answer this question by defining the ecological and socio-economic conditions of the LRMP areas. The EBM Planning Handbook, a key product of the CIT, recommends mechanisms for assessment and planning pertaining to considerations for biological conservation and to a lesser extent human wellbeing. The primary focus of this document is on thresholds and management targets designed to reflect an ecologically precautionary approach to forest management. With this approach socio-economic targets are then integrated through systematic trade-offs guided by social choice.

Social choice is a key mechanism to integrate socio-economic and environmental values into policy. Choice must be informed, grounded in the best information and based on balanced perspective. Without a structured process to inform stakeholder decisions, negotiations could prove volatile and prohibit the success of EBM. Targets guiding management practices under EBM must be based on a clear understanding of how

⁵ Dovetail Consulting, unpublished data, 2000, Joint Solutions Project, Richmond BC. Online: <http://www.coastforestconservationinitiative.com/pdf/SoEcSummarynov00.pdf>

these practices must work to achieve the coexistence of healthy fully functioning ecosystems and human communities in the short and long-term.

Translation of the high-level strategic objectives of the Central and North Coast LRMP into reality in a way that achieves the two core goals of EBM, is a task that should not be taken lightly. Add-hock approaches that role out a series of independent targets without integration of ecological integrity and human wellbeing do not lend themselves to the system of EBM.

Alternatively, the implementation of EBM as a system should be tied to a smaller geographic region than the Central or North Coast as a whole, such as a community or First Nations Traditional Territory. In this manner detailed strategic planning can utilize the LRMP direction to forecast both the short and long-term outcome of various planning options or scenarios. This process will enable those most directly impacted by resource use within the region, in conjunction with input from other stakeholders, to select the scenario that best achieves both the core goals of EBM.

Due to the complexity associated with human well being and ecological integrity as a whole, it is not possible to predict the impact of various planning scenarios on either of these two goals directly. The use of criteria and indicators within forest certification systems have provided an effective mechanism for informing decisions related to sustainable forest management practices. Following this learning, appropriately selected criteria and indicators may provide the foundation for adaptive management which is a fundamental component of EBM.

Criteria and Indicators

Since the advent of the Brundtland Commission and the Montreal Process, the Canadian Council of Forest Ministers (CCFM) has developed and revised its recommendations for Criteria and Indicators of Sustainable Forest Management. Criteria and Indicators are recognized in over 145 countries as an effective means in which to monitor, assess and report the state of forest resources (Natural Resources Canada 2003).

There are six criteria recommended by the CCFM including: biological diversity, ecosystem condition and productivity, soil and water, global ecological cycles, economic and social benefits, and society's responsibility. Each criterion of success represents a broad objective that a given forest management plan is to achieve. However, depending on how they are applied, criterion can vary according to local input and conditions.

Indicators represent measurements that will reflect how well a given criterion or objective is being attained. The EBM Framework does not directly use the Criteria and Indicator structure but they can be derived from the goals and objectives.

For indicators to be effective they must show a causal relationship with policy alternatives or activities, inform progress towards policy goals and be simple to interpret. In addition, selected indicators must be measurable, use standard methodology, have definable accuracy and precision and be cost effective.

The EBM Planning Handbook suggests that indicators of biological conservation and human well being are a key component of monitoring the success of achieving EBM goals and objectives. The Handbook provides a variety of potential ecological indicators but does not extensively speak to socio-economic because the "...CIT approach to EBM emphasizes the need for communities and stakeholders to set their own objectives for, and do their own assessments of indicators of well-being." (Coast Information Team 2004b). Table 1 lists some examples of socio-economic indicators, by category, which could effectively measure or describe the conditions of human wellbeing within the North and Central Coast of British Columbia. As suggested, communities and stakeholders who are impacted by management decisions must establish the associated targets and objectives.

The indicators listed in Table 1 are a subset extracted from a number of Sustainable Forest Management processes around the world including Canada, Europe and Australia. Their suitability as indicators is due to their causal relationship to policy and ease in measurability. In addition, they can be modeled with relative ease, allowing forecasting of various management options. Suitable biological indicators should be selected based on similar criteria.

Table 1 – Examples of Socio-economic Indicators.

Indicator Category	Indicator
Culture	<ul style="list-style-type: none"> Percentage of known cultural heritage sites protected.
Income and Employment – Community	<ul style="list-style-type: none"> Individual/family income; employment by sector Low income population as % of total population
Income and Employment – Business	<ul style="list-style-type: none"> Profit margin, Sector and business profitability Payroll man-days per year from Regional forest companies
Health and Education – Income Related	<ul style="list-style-type: none"> % annual population change (5-year average) Individual/family dependence on social assistance
Harvest Level – Timber	<ul style="list-style-type: none"> Value of investment, including investment in forest growing, forest health and management, planted forests, wood processing, recreation and tourism Rates of return on investment
Harvest Level – Non-Timber Forest Products	<ul style="list-style-type: none"> Value of investment, including investment in forest growing, forest health and management, planted forests, wood processing, recreation and tourism Rates of return on investment
Recreation and Tourism – Area Related	<ul style="list-style-type: none"> Number and type of facilities available for general recreation and tourism, in relation to population and forest area
Recreation and Tourism – Use Related	<ul style="list-style-type: none"> Visitor numbers and recreation use days.

Using indicators to demonstrate the state or condition of biological and socio-economic values and forecasting of alternative management strategies, facilitates an understanding of the magnitude of potential trade-offs. These tradeoffs are best evaluated through detailed strategic plans that present a variety of planning scenarios at a scale relevant to the communities and stakeholders most connected to the outcome.

The companion analysis of ecological elements and socio-economic parameters through detailed strategic planning could be conducted using a spatial forest estate model to feed both an environmentally based habitat supply model and a socio-economic based regional impact model. Once these ecological and socio-economic comparisons are done and a management scenario is selected that achieves the most appropriate and acceptable equilibrium among elements, this Plan forms the basis for adaptive management.

Adaptive Management

Adaptive management is a formal process for continually improving management practices by learning from the outcomes of operational activities. Lindenmayer and Franklin (2002) state that “adaptive management is the acquisition of additional knowledge and the utilization of that information in modifying programs and practices so as to achieve management goals.” Davis et al. (2001) explain that “adaptive management includes highlighting uncertainties, developing hypotheses around a set of desired outcomes and structuring actions to test these ideas.” But the primary focus of adaptive management is structured learning. The structure is the uncertainties or questions inherent in new practices and the learning comes by answering those questions with comparisons of these new practices to controls, benchmarks or targets. Adaptive management can be both active (experimental) and passive (operational) but is not simply keeping track of mistakes or a trial and error approach (Walters and Holling 1990).

In order to begin formulating an adaptive management approach based on the practices suggested within the EBM Framework it is necessary to start small and provide focus. Adaptive management cannot be applied to all aspects of the Framework. Many of the goals, objectives, and elements are linked to concepts (i.e. risk to species loss, loss of ecological integrity) that cannot be measured. However appropriately selected indicators or proxies can be measured and their targets tested against the objectives.

Adaptive management is a formal process for continually improving management practices by learning from the outcomes of operational activities. For a program of adaptive management to attain its theoretical promise, it must contain four broad elements:

1. clearly defined objectives,
2. planning and practices to attain the objectives,
3. ways to assess proximity to those objectives, and
4. ways to modify practices if objectives are not attained (clear links to management action).

It is clear that that an analytical process referred to as detailed strategic planning within this report must result in a decision and social choices must lead to a management strategy (the Plan) that can form the basis for an Adaptive Management Program (the Program). The Plan forms the ecological and socio-economic hypotheses to test and monitor. The Program would be developed to answer the questions: Where do we want to go? How do we get there? Are we going in the right direction? How do we change if the direction is wrong? As new knowledge is gained or the answers to these questions change due to societal expectations, EBM management scenarios must be re-evaluated. In order to ensure the system of EBM remains intact, this review must preserve the commitment to evaluate socio-economic and environmental values in an integrated fashion.

Conclusion

The transition to full implementation of EBM within the Central and North Coast will require the continued dedication of all stakeholders, the Province, and First Nations to overcome the challenges associated with achieving equilibrium among socio-economic and environmental objectives. Through agreement to implement Ecosystem Based Management, the interests involved have voiced a commitment to try new approaches and a willingness to learn.

To date, there has been a strong focus on ecological objectives and associated management strategies. However, limited work has been done to integrate social and economic objectives. Although much of this work must be completed by the communities and stakeholders which are impacted by management decisions, mechanisms to inform and support these decisions are key to the successful implementation of EBM.

Through forest certification initiatives, the application of criteria and indicators have proven to be a beneficial tool for gathering information in support of sustainable forest management planning. However, indicators must be chosen wisely as they are only useful if they show a causal relationship with policy alternatives or activities, and inform progress towards policy goals. They must also be accurate, measurable and cost effective.

As EBM is intended to be an adaptive process, an efficient and effective vehicle to facilitate a clear feedback loop to land management decisions is essential. Thus, an adaptive management framework, based on clear questions related to uncertainties and well designed hypotheses is required before effective implementation can begin. As the North and Central Coast LRMPs near completion, we enter the new realm of implementation. Whether this phase is successful in ensuring the coexistence of "healthy, fully functioning ecosystems and human communities" remains to be seen. However, it is clear that innovative procedures for linking and balancing socio-economic and environmental objectives in an adaptive manner are required. Options presented in this report are intended to stimulate discussion, in recognition that there is still a great deal of work to be done.

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