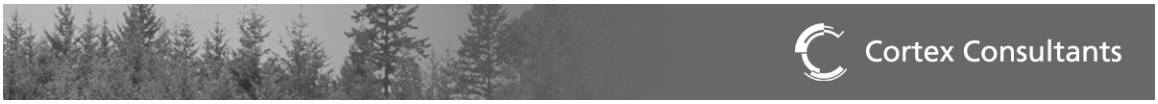

Coast Information Team Experience

Recommendations on Processes and Structures for Success

December 2004

Acknowledgements

This document draws on interviews with the CIT management committee, executive director, secretariat, and project team leaders, as well as the peer review chair and representatives of the three subregional land use planning tables. I thank these individuals for their contributions to this program and their time and thoughts on what was learned from the experience.

I have reconciled various viewpoints, including my own as a member of the secretariat, and synthesized general recommendations that will create the conditions for success in future programs of a similar nature.

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CIT Experience: Recommendations on Processes and Structures for Success

1 Introduction

1.1 Background

The Coast Information Team (CIT) program was designed to support ecosystem-based management (EBM) and to assist land use planning tables in the north and central coastal region of British Columbia, including Haida Gwaii/Queen Charlotte Islands. The CIT was to draw on the best available scientific, traditional, and local knowledge in developing independent information and analyses for use in resolving land use and natural resource management issues.

The CIT program was established through a November 16, 2001, Funding Agreement between the Province of British Columbia, the Rainforest Solutions Project, and the Coast Forest Conservation Initiative. This Funding Agreement followed several April 2001 agreements between the provincial government, First Nations governments from the central and north coasts and Haida Gwaii, forest industry, environmentalists, and communities concerning planning and interim measures along the B.C. Coast.

The Funding Agreement set out, in general terms, the principles by which the CIT would be administered, the mandated work, financial contributions and commitments, governance structure, financial administration and control, and provisions for review of the funding partnership. A part-time executive director was retained early in 2002, and a secretariat in June 2002. The CIT program concluded officially in March 2004, and most products were received by October 2004.

Sixteen project teams—not including the management team consisting of the management committee, executive director, and secretariat—were assembled to contribute to the CIT program. Several of the analyses had not been done previously in British Columbia, and some represented the application of new methodologies.

1.2 Science-based Decision-Making

Opinions range on the definition of "independent science" and how it can assist regional multi-stakeholder land use planning processes. Associated issues include the role of the decision-makers (clients) and the practitioners responsible for implementation, in the design and development of the scientific studies. Three approaches to science-based decision-making have been applied to resource management situations in British Columbia, each with varying degrees of scientific independence:

- *independent scientific team approach,* where a panel of renowned experts is given a terms of reference, budget, and timetable, and asked to focus its collective expertise on making management recommendations (e.g., B.C. Clayoquot Sound Scientific Panel)
- *collaborative multi-party team approach,* involving technical, scientific, and policy experts from various agencies and sectors who assess a management crisis, formulate and evaluate management options, and recommend a strategy (e.g., National Recovery Teams, U.S. Forest Ecosystem Management Assessment Team model)

- *interagency technical team approach,* often augmented by consultants, that provides scientific and technical information and bounded analyses to assist decision makers regarding subregional land and resource allocation (e.g., LRMP Tables).

The CIT embraced elements of the last two approaches, using scientists and technical experts from various institutional settings. It contracted scientific/technical teams to produce separate sectoral analyses that were to be integrated to meet LRMP and First Nations needs for science-based information, and to develop an EBM framework for the larger CIT analysis area, which encompassed the three subregional LRMP areas. This program was extremely ambitious. The component projects dealt with pure and applied science at a range of geographic scales from watersheds to landscapes, territories, subregions, and the CIT analysis area (11 million ha). The CIT program was based on the premise that science-based knowledge and analysis would offer clear, apolitical guidance to the planning tables on how a particular landbase could be allocated and managed to secure and maintain ecosystem, cultural, and economic values.

Science is a disciplined and logical search for knowledge based on examining the best available evidence; it is subject to correction and improvement as better evidence becomes available. In designing a program to deliver science-based information, it is useful to distinguish the type of science needed to answer questions (e.g., pure, applied) for the particular situation, as well as the approach. These choices significantly affect the program scope, structure, timetable, and budget.

1.3 Document Purpose and Organization

This document offers recommendations on how to structure complex programs, similar to the CIT, to increase their chances of succeeding. It draws on the lessons learned from the CIT experience, and focuses on the critical aspects of program design, structure, and management that affect program success.

Details on project management methods and tools, including the development and monitoring of workplans, risk management, quality management, procurement and contract management, communications management, and human resources management, are not included here. This knowledge is readily available in the literature and it is assumed that this expertise will be sought in a program manager.

This document recommends key processes and structures that will establish favourable conditions in which the managers and scientists can work together to achieve specified program goals. The document is organized into eight sections:

1 Introduction
2 Program Development
3 Program Funding and Financial Management
4 Governance
5 Creation and Maintenance of Project Teams
6 Communications
7 Scientific Peer Review
8 Closing Comments.

1.4 Terminology

In the project management literature, a "project" is "a temporary endeavor undertaken to accomplish a unique purpose." It has a definite beginning and end, and it invariably involves uncertainty. Project success is measured in terms of the extent to which: (1) outcomes meet or exceed client expectations; (2) team members feel satisfied with process and product; and (3) team members have learned lessons that will make them more effective in the future.

In this document, the word "program" is used when referring to all the CIT projects, and "project" when referring to individual analyses, assessments, or other program components. Program stakeholders include all the people involved in or affected by project activities: program sponsors, project teams, support staff, clients, users, suppliers, and even opponents to the program.

2 Program Development

Clearly defining and controlling program scope are two of the most effective ways of controlling budget and managing client and other stakeholder expectations.

2.1 Determining Client Needs

As noted in Section 1.4, a project (or program) is established to meet a unique need (solve a problem); its success depends on clients' needs being understood and met. Client needs, therefore, should drive the program scope, selection of projects, and deliverables. The CIT Funding Agreement stipulated the subregional planning tables as the end users. The CIT funding partners were the clients that influenced the selection of projects and specification of outcomes.

R1 Specify the client(s), purpose(s), and desired outcome(s) of the program in detail. For example, clarify whether the program is:

- developing a scientific foundation for decision-making by others (e.g., assembling databases, initiating analyses to inform management)
- making science-based recommendations for land use
- analyzing specific scenarios (e.g., impacts of alternative protected areas)
- developing tools for evaluating scenarios (e.g., software that can integrate results from a range of analyses).

2.2 Defining Program Scope[1]

A program is usually specified in terms of four variables: scope, time, cost, and quality. Specifying any one, two, or three of these limits options for the others (e.g., specifying budget and product quality requirements narrows the range of feasible products and timetables). Budget and timetable are often the delimiters of program scope (e.g., number and types of products) and quality (e.g., depth of analyses), making the selection and specification of projects critical to program success.

[1] Scope refers to all the work and processes involved in creating the products of the projects. The project stakeholders must agree on what these products are and, to some extent, how they should be produced.

Program scope should meet client-specified needs for information, tools, and advice. It should be based on considerations of inputs, such as data availability, information standards, existing knowledge; outputs such as information format, need for interpretation and support; and the scale of analysis appropriate to client issues (e.g., landscape, subregional, regional). Where time or budgets are limited or data are sparse or unreliable, expert opinion may deliver more cost-effective or appropriate information than a computer model.

Principles

R2 Focus analysis at the appropriate spatial scale and planning horizon to meet client needs. When models are appropriate, choose a level of complexity that suits the budget, timetable, availability of data, and level of uncertainty.

R3 Build on existing information, and incorporate local knowledge and expertise.

R4 The greater the timetable and budgetary restrictions, the more projects should rely on existing data and methods, and the less projects should attempt to innovate.

Process

R5 Establish which variables (scope, quality, cost, time) are most critical in shaping the program, and adjust the others to develop a program that suits client specifications.

R6 Follow an iterative process in defining and refining program scope:

a) In consultation with clients, identify the critical questions to be answered and the scales and formats (e.g., maps, reports, models) in which answers are required to assist decision-making.

b) Assess the availability of data required to answer questions, and the resources and time required to assemble the data.

c) Assess the suitability of available methodologies for answering questions, and, as appropriate, the resources and time required to develop alternate new methodologies, and their likelihood of success.

d) Based on the questions, desired format of answers, availability of data, and available budget and timeline, select the appropriate approach and projects.

e) Clarify what is *not* included in the program scope, and in the scope of component projects.

R7 Define integration requirements (e.g., common landbase categories, planning units, input data specifications, output product standards, analysis timetable) for component projects.

R8 Develop terms of reference for component projects including appropriate scale, available data, complexity, linkages with other projects, timetable, and budget.

R9 Structure the overall program as clusters of projects that can be undertaken at different levels of funding. For example, identify core projects at one level of funding, and additional tiers of projects that can be supported at additional funding levels. Incorporate some flexibility to respond to incremental extensions proposed by project leaders. As additional budget becomes available, select incremental or additional projects based on their value in meeting client needs.

2.3 Assessing and Managing Risk[2]

A program as extensive and complex as that undertaken by the CIT carries risks, and a plan to mitigate the impacts of these risks is required. Major risks encountered by the CIT included scope control, availability of data, estimation of time and resource availability, scientific leadership, scientific uncertainty, feasibility of new methodologies, quality assurance, project integration, completion within specified timetable, and usefulness of products to meet client needs for decision-making.

R10 Identify internal and external risks to program and its component projects. Establish an appropriate management reserve (for unidentified or unexpected work inside the scope of the project) and/or contingency reserve (for possible changes in project scope or quality) in consideration of program risks.

R11 Develop and implement a risk management plan to mitigate the impacts of risks. Monitor risk throughout program cycle.

2.4 Assembling and Managing Data[3]

The availability of data greatly affects the level and quality of scientific analysis that can be undertaken. The time and effort required to acquire, assemble, document, and distribute data are often underestimated.

R12 Establish data acquisition and distribution as an independent component of the program, with clear milestones and adequate resources and other support (e.g., executive level endorsement for data sharing).

R13 Establish data use protocols at the outset of the program, including:

a) data provision and distribution agreements with data suppliers

b) data use and, where appropriate, data removal agreements, signed by all data users

c) standards for documentation of all data and data products

d) warehousing and distribution of data and data products after project completion.

2.5 Managing Change

The potential for change in scope should be anticipated and provided for in structuring large and complex programs. A process for managing change should be established to ensure that all requests for change are documented and evaluated in terms of their effect on the quality of specified deliverables and their impact on program budgets and timetables.

The change management process should be transparent and efficient. It should enable the approval of changes to be made by the appropriate level of management, depending on the magnitude of the impact. For instance, impacts on a project's budget within a certain level to be approved by the project leader and program manager; impacts on program quality, budget, or timetable to a certain level to require approval of the program manager and scientific advisory

[2] Program/project risk refers to potential problems that might impede program/project success.

[3] Identification of data requirements is part of defining program scope (Section 2.2).

team; and impacts above a specified level to be approved by an established change control board (e.g., representatives of sponsor, management team, clients).

R14 Establish a clear process for receiving, documenting, and adjudicating change requests to ensure that each request is assessed in terms of its impact on project (and program) quality, budget, and timetables, and that decisions are made efficiently and transparently.

R15 Create a standard change request form and maintain a written record of all change requests, including the decision, impacts, and approving signators. Update all affected project and program plan(s) to incorporate approved changes, and communicate the changes to stakeholders.

3 Program Funding and Financial Management

A great deal of time (and associated administrative expense) was spent tracking, managing, and reporting on disbursements from the seven CIT funding sources,[4] which had differing requirements regarding GST, GST rebate, and administrative charges. In several cases, funding was tied to specific project deliverables, which necessitated additional tracking and reporting.

By allowing individual projects to be funded, funding agencies can tie donations to projects of special interest. While this approach attracts funding, it does not serve the vision that the program is greater than the sum of its parts, and can create administrative challenges. Efforts should be made to "sell" the program as a whole. Where funding is targeted to specific studies, negotiate with funders so that these studies are managed as part of the overall program, without additional administrative requirements.

Establishing one program fund allows the program funding partners to operate on equal footing, without favouring those sectors contributing the most funds.

R16 Complete fundraising based on program concept, before projects are initiated. Limit program scope to available budget, but identify how additional increments in funding will be allocated to pre-defined increments in scope that will improve the quality of products/services.

R17 Create one fund for program disbursements, thus minimizing the administrative costs of tracking disbursements and reinforcing the notion of the program as a body of work.

[4] Provincial government contributions (three sources), environmental non-government organizations contributions (two sources), forest industry contributions (one source), and federal government contributions (one source).

4 Governance

A program's governance structure should support the program mandate, and reflect its approach and level of complexity.

4.1 Program Oversight and Decision-Making

Board-level responsibility calls for the concentrated attention of people with the relevant skills and experience to guide the program through to completion. Board members must participate actively and equally, especially where multiple sectors are represented. Without balanced participation, the program and its outcomes may be devalued based on a real or perceived lack of commitment.

The CIT management committee consisted of six sector representatives (provincial government, coastal First Nations [2], ENGOs, coastal forest industries, and coastal communities) and four alternates. The sector representatives had different mandates, skills, knowledge, and levels of expertise. Some sector representatives changed during the program, with consequent loss of continuity and disruption to the management committee's relationships.

R18 Ensure that board members have skills and expertise suited to the program, and commit to participate actively for the duration of the program.

R19 Where "independent science" is a program objective, separate the political (multi-stakeholder, funding partner) aspects from the scientific/technical aspects of program management.

R20 Establish terms of reference and operating protocols for the board and committees, and ensure that they are followed.

R21 Establish lines and areas of decision-making authority for the board, its committees, the scientific leader, and program manager.

4.2 Scientific Leadership

Sound scientific leadership is essential in a program designed to deliver science-based information, tools, and advice. Programs that span scientific disciplines (e.g., ecology, economics, social sciences) will benefit from scientific leadership that encompasses each discipline.

R22 Retain a scientific leader with exceptional qualifications to guide the board on scientific content (e.g., assess data needs and availability, recommend project components to meet client needs, develop projects terms of reference, evaluate proposed methodologies) and oversee/guide the work of project teams.

R23 Where the subject matter is extensive, establish a standing scientific advisory committee to guide the board, scientific leader, and project teams.

4.3 Program Management

Program management involves the application of knowledge, skills, tools, and techniques to meet program requirements. The program manager manages teams to meet specific scope, time, cost, and quality goals of projects. In the CIT program, program management responsibilities were split between the executive director and program manager.

The following recommendations highlight key aspects of program management that contribute to program success.[5]

R24 Retain an experienced program manager with excellent communication skills to establish the processes and structures to ensure program success, and grant this person authority commensurate with his/her responsibilities.

Where the program includes a scientific leader and program manager, ensure that their roles and responsibilities are clearly delineated and that their interactions with project teams are documented in writing.

R25 Require signoff by the client(s), sponsor(s), board, scientific leader, and program manager on the overall program plan, timetable, and deliverables before significant project work begins.

R26 Require written documentation on all critical aspects of program (decisions, agreements, protocols, contracts, team progress, expenditures).

R27 Ensure that the responsibilities of the scientific leader and program manager (if the program has both) focus on the quality and timeliness of the program as a whole. Neither person should be actively involved in any of the projects.

R28 Establish a committee of project team leaders that meets frequently with the scientific leader or advisory committee and program manager to ensure that information and resources move efficiently between projects, that all are aware of project progress and problems, and that project outputs are integrated.

R29 Maintain and communicate a program-level critical path to ensure that decisions fully consider consequences.

R30 Track progress according to baseline and revised project plans, and report regularly on project variances in schedule and budget.

R31 Provide central services that each project team will need, such as GIS processing. If capacity does not exist, then provide clear standards and guidelines so that several suppliers can process consistently.

R32 Establish templates for project teams to ensure consistent reporting, labeling of maps, documentation of metadata, etc.

R33 Base all work on detailed written contracts that clarify the relationship between parties and the work to be done, but that do not unnecessarily constrain independent scientific inquiry. Ensure that contracts include:

a) a terms of reference specifying study area boundaries, planning units, input data specifications, output product standards, peer review requirements

b) a workplan structured in logical phases with a clear milestone at the end of each phase

[5] As noted in Section 1.3, this document does not include detailed recommendations on project management methods and tools; it assumes that the program manager would bring this knowledge and expertise.

c) phase reviews that require signed approval and acceptance of milestone before work continues to the next phase (in some projects, the first phase may be a feasibility assessment and review of proposed methodology)

d) clearly specified project deliverables, including product standards and reporting requirements

e) explicit recognition of the obligations of each party to the other, penalties for non-performance by either party, and provisions for the resolution of disputes

f) language that enables termination of a contract by either party if milestones are not met, or if milestones do not deliver sufficient value to warrant continuing the project

g) payment schedules based on milestones, with a contract holdback pending final approval.

R34 On conclusion of program, prepare a close out report summarizing the key inputs (budget, data), outputs (timeline, products), accomplishments, challenges, and lessons learned.

5 Creation and Maintenance of Project Teams

The success of a multiple-project program, such as the CIT, relies on structuring and managing teams effectively, by:

- laying a clear foundation so that all teams understand how their mission will unfold, how their success will be measured, and how they will work together to achieve program goals;
- providing the resources that the teams require to achieve their individual and collective objectives;
- monitoring their performance and managing incremental course corrections; and
- ensuring the efficient flow of information among teams.

Once teams are established and launched, their efficient functioning should be supported through ongoing scientific leadership and communication (see Section 6), and by ensuring that they receive needed data and guidance in a timely manner.

R35 Select team members to include local expertise. This will help to "ground truth" projects, build understanding and capacity in the regions and province, and assist in the interpretation of project outputs to stakeholders.

R36 Allocate resources to build and launch teams, and support their interactions throughout the program. This should include a program initiation/team building session at the outset to discuss direction, resources, roles and responsibilities, and regular team integration meetings.

R37 Actively support team building to make sure that all team members understand their roles and responsibilities and the relationship of their work to successful delivery of the program.

6 Communications

Effective communication is critical to program success. Its importance increases with program complexity. Significant effort should be made at the outset to understand stakeholder communication styles and needs, and to ensure that the appropriate level of information is provided to them throughout the program. Maintaining regular, ongoing communications with team members is crucial.

6.1 Internal Communications

Internal communications refer to all communications with stakeholders (everyone involved with and potentially affected by the program).

R38 Prepare a profile of stakeholders at the outset of the program that identifies their communication needs: content, frequency, and preferred methods (e.g., website, meetings, workshops, email, intranet, articles, progress report, final reports).

R39 Confirm understanding of program mandate, objectives, deliverables, and timetables with stakeholders as these are developed. Check in with stakeholders regularly, especially following any changes to these original agreements.

R40 Maintain regular communications with project teams to ensure that their needs are met and their work is progressing as planned.

R41 Establish a password-protected program management website to which all project information is posted (e.g., team member contact information, meetings, summaries, project workplans, data, reports). Control access to various types of information through passwords, as appropriate.

R42 Maintain and update a program plan that is communicated to all stakeholders as a support to managing expectations.

R43 Respect agreements and timetables; monitor progress closely and communicate any changes as they arise.

R44 Provide end users with interpretation of products and guidance on how they are to be used, including the scales or other circumstances under which information is valid or not.

R45 Clearly distinguish among the products of independent scientific investigation, directed applied science, and negotiated outcomes.

6.2 External Communications

External communications refer to information about the program objectives, structure, components, and deliverables that is to be communicated to external audiences who do not have a direct stake in the program. In many cases a website with downloadable PDFs will be the most cost-effective method for external communications. The site should be updated regularly as work progresses.

R46 Establish a website at the program outset, clearly setting out the program vision, objectives, structure, and components. Identify a contact person. Update the website with information on individual projects as terms of reference and deliverables are identified. Make sure that the program timetable is kept current and report regularly on progress.

7 Scientific Peer Review

Scientific opinion is a distribution, not a point. Peer review can help end users determine where a particular information product sits in that spectrum, and in doing so, provide guidance on how to use the information.

Peer review ensures that the program deliverables meet the requirements of the specified mandate. Because several of the analyses proposed as part of the CIT program had not been undertaken before in British Columbia, and a few had not been attempted anywhere, the program would have benefited from scientific scrutiny and guidance throughout the program cycle, including the assessment of project methodologies, preliminary results, and final results.

R47 Incorporate two types of peer review in process:

a) *Internal program review*, by a scientific advisory committee established to help define the program scope; develop terms of reference for projects; advise on issues such as appropriate scale, methodologies, planning unit boundaries; assist clients in evaluating scenarios and making decisions; and assess interim results.

b) *External review of the analyses,* by reviewers selected by an independent peer review chair from a shortlist of names approved by the scientific advisory committee and board. The chair would deal with the reviewers, adjudicate team responses to reviewer comments, assess the extent to which products met pre-established standards, and make recommendations to the board on the soundness and utility of the products.

8 Closing Comments

The CIT program was an ambitious undertaking of a size and complexity not previously attempted in British Columbia. It was conceived and initiated in the face of major challenges regarding timetables, data, and funding. It met the first part of its mandate—to develop independent information and analyses to support EBM in the north and central coastal region of British Columbia, including Haida Gwaii/Queen Charlotte Islands—but fell short in its attempt to provide complete information to meet timetables for land use planning in the central and north coast regions.

The analyses, data products, models, and relationships that were developed as part of the CIT offer information, insight, and tools that can assist the implementation of ecosystem-based management on the coast of British Columbia and elsewhere in the province. It is hoped that the recommendations on processes and structures for success presented here will also be useful to those entrusted with organizing and managing similar programs.