INTEGRATED LANDSCAPE MANAGEMENT

APPLYING SUSTAINABLE DEVELOPMENT TO LAND USE

Prepared by: Canadian Integrated Landscape Management Coalition

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Executive Summary

Land use practices have undergone incremental improvements over the past two decades as governments and industry have attempted to incorporate sustainable development principles and practices into land use management systems and operations. In many cases, specific elements of integrated landscape management (ILM) can be identified within these systems. ILM concepts are not new. However, many would argue that there is no fully functional and operational ILM system in Canada that incorporates all the elements discussed in this document.

Current resource management systems have not been especially successful in balancing land and resource use with the need to protect and conserve the natural resources and land base. Instead, resources are generally allocated for development without considering other resources, users or the capacity of the land. There is limited application of time and space considerations, and inadequate assessment and management of cumulative effects.

Governments often make broad commitments to "sustainability" and issue statements affirming the need to balance economic and social development with environmental protection. These are frequently non-specific, not supported by direct legislation, and not always translated into meaningful operating practices. As well, sector-based or single resource-based management approaches are deeply entrenched.

ILM promotes progressive change that enables significant improvements to systems, delivers results on the land, and provides certainty for improved resource management. It approaches planning from the point of view of *whole landscapes*, which sets it apart from current systems. ILM optimizes a broad range of economic, social and environmental objectives, and addresses a multitude of industrial, recreational, cultural and other activities.

All benefits cannot be delivered at all times from a single land base. There will be circumstances where one choice will have to be made at the expense of another. Through the ILM process, such choices are guided by decisions made at the policy and planning stages, before the allocation (disposition) of resources. ILM can also help address situations where conflicts arise among rights that have already been allocated.

Managing the disposition process is critically important (i.e., where and under what conditions the issuance of rights should occur). ILM enables increased integration among departments, allowing for a coordinated, multi-sectoral rights disposition process to determine what rights may be disposed over the geographic area in question, and how the collective rights of various land users could be managed to ensure sustainability.

Using ecological thresholds to define limits on impacts or on the intensity of activity is not widely used today but is an essential aspect of ILM. Establishing thresholds is necessary for successfully managing cumulative environmental effects. This is particularly important where these effects result from individual activities of small to modest impact.

Now is the time for broad-scale acceptance and implementation of ILM. This approach provides a powerful opportunity to improve land and resource management decision-making, thus enabling environmental, social and economic objectives to be achieved more effectively in each province and territory, and across Canada as a whole. The Canadian Integrated Landscape Management Coalition (ILMC) is committed to promoting ILM as a more balanced, practical approach to achieving conservation and development objectives in Canada.

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INTRODUCTION

Canada is a vast land with a wide variety of natural resources, landforms and ecosystems. It is generally viewed as being wild and relatively unspoiled, with large areas yet uninhabited. Yet Canada is also an urban nation with densely settled lands. Most of Canada is now readily accessible through various means and is open to a broad spectrum of potential land uses. Surface resources have been harvested for over two centuries. Combined with mining, oil/gas/oil sands/coalbed methane development, urban development, agriculture and tourism/recreation, the face of the country is changing as more activities and pressures are placed on the land base.

Land conservation measures have been taken in an attempt to offset the potential for extensive land use. The current approach to conserving land has been primarily through creating some form of protected areas. This approach has not been without conflict, nor has it been especially successful in meeting conservation objectives.

More effective strategies are needed to ensure that resources and land are maintained and managed wisely not only over the short term, but well into the future. These strategies should be based on a more integrated planning and decision-making process than currently exists.

Growth of the Canadian Economy

Canada has one of the strongest economies in the world, which relies heavily on natural resources. Governments of every province and territory, and businesses from every resource sector, have a vested interest in supporting and increasing the economy, capitalizing on Canada's natural advantages in a progressive yet responsible manner. Mandates for growth exist for each primary resource sector—forestry, agriculture, tourism, energy and mining – and within most Canadian municipalities. Parallel to these mandates are federal, provincial and territorial objectives for land/resource conservation and protection.

Land is the common factor between these mandates for growth and objectives for conservation. In many locations multiple industries occupy the same land base—all with the intent of pursuing their own interests. This places increasing pressure on the land and the capacity of the land to support the ever-increasing use.

Land and Resource Management

It is difficult to grasp the diversity of Canada’s landscapes. The barren habitat and ecosystems that characterize the arctic, give way to the shield, forests, grasslands, foothills and prairie further south. Each landscape has its own particular surface resources (e.g., trees, wildlife, wetlands, surface water) and subsurface resources (e.g., oil and gas, minerals, groundwater).

Historically, land uses were often separated geographically. This has become increasingly difficult as resources often share a common land base. Managing this multiple use is now far more complex. Not all current management practices were designed to cope with the increased pressure, and the implementation of planning regimes is inconsistent across Canada.

Land and resource management regimes must respond to this changing context. Integrated Landscape Management (ILM) provides a solution to the complexities of resource and land use now faced by land/resource managers and decision-makers.

Integrated Landscape Management

ILM is synonymous with other management terms such as ecosystem management, ecological management, the ecosystem approach, watershed management and integrated coastal zone management. All are based on related concepts that emphasize a more integrated, whole-system approach to planning, conservation and management of land and water systems. ILM, however, embraces a state of balance in which use, conservation and protection are applied appropriately and at the correct scale. Issues of scale are critical.. For instance, not all boreal forest issues can be passed down to the local level for resolution.

Broad policy is used to effectively govern the use and management of landscapes. ILM calls for policy and planning in all landscapes, irrespective of the current activity level. However, all aspects of the landscape are not necessarily subjected to management intervention. While some leading conservation groups advocate the "conservation first" approach for development projects, ILM incorporates the principle that landscape planning precedes everything—planning first.

This paper explains what ILM is, and why it is important. It provides a checklist of elements for a fully functioning ILM system, but does not provide detailed guidance for implementing ILM in a particular situation.

THE ILMC—WHO WE ARE

The Canadian Integrated Landscape Management Coalition (ILMC – see Appendix 2) is a consortium consisting of the following:

- federal and provincial government agencies,
- academic and research institutions,
- conservation organizations,
- natural resource industries (energy, mining, forestry), and
- anglers and hunters.

For a number of years, it has been observed that current management systems do not work as effectively as they need to. In some cases, they may even be aggravating situations rather than addressing the issues. This trend will worsen unless more effective approaches to land and resource management are adopted.

Mission of ILMC

To advance and accelerate Integrated Landscape Management in Canada by influencing key decision-makers in the development of appropriate policies, practices and tools.

Background

In the spring of 2002, more than 60 land use professionals from across Canada; including representatives of the conservation community, resource industries, Aboriginal people, academia, provincial and federal government agencies; convened a workshop to discuss:

- the ILM concept,
- its value for addressing today's issues,
- obstacles to its implementation, and
- strategies for promoting its use.

The following conclusions were reached:

1. Integrated landscape management is a proven and progressive approach to land and resource management, and should be applied as a continuous adaptive management process.
2. Many obstacles stand in the way of successful implementation, most of which are systemic in nature, such as sector-based or single resource-based management approaches.
3. Achieving maximum value from integrated landscape management requires systemic improvements, particularly in the areas of planning, policy and legislation, and the institutional frameworks that support them. These systems need to be supported by adequate assessment processes, enhanced information systems and established monitoring programs.
4. Opportunities for effective public input need to occur at appropriate stages in the decision-making process.
5. Public awareness of the existence and value of the ILM approach needs to be enhanced.

The value of implementing ILM was clear. As a result, the ILMC was formed in 2003.

EXISTING MANAGEMENT SYSTEMS

The application of "sustainable development" in a land use context requires appropriate choices among conservation, development and social objectives. If such objectives are to be achieved, integration must be recognized as a core element of land use management systems. By and large, the systems now in use across Canada were not based on sustainable development principles, and thus lack the institutional structures for this integration. Existing systems have been modified and enhanced over the years, but most are still unable to achieve the desired balance.

Characteristics of Existing Systems

Characteristics common to current systems include the following:

- **Silos/fragmented decision-making** — Government decision-making systems are developed by departments or ministries, with each department focusing solely on fulfilling its mission. Departments generally operate independently of each other. Decision-making relationships are vertical and usually focus on the mandate of the host or lead department. While these systems can deliver a narrow scope of business, decisions are generally not made in the context of considering other businesses or interests.

  This “silo” effect is a dominant feature of historical and contemporary government structures. Silos are problematic. The lines that define the decision-maker's authority are often arbitrary and inappropriate for effectively managing landscapes for long-term sustainability.

- **Incrementalism** — Current approaches to land management rely on decision-making based on a disposition-by-disposition or project-by-project basis. This results in incrementalism and management becomes narrowly constrained. Generally no clear direction is provided regarding the longer term landscape-level objectives, and the broader landscape-level issues are either ignored or dealt with in an *ad hoc* fashion. In addition, the overall patterns of land and resource use across large spatial and temporal scales are rarely considered.

  Problems stem in part from the absence of a detailed and effective policy and planning context for project-specific decision-making. Consequently, policy is interpreted and applied to specific projects rather than landscape plans.

- **Gaps in the decision-making hierarchy** — Across much of Canada's public and private land base, broad-scale objectives are either not defined or are referred to in ways that result in inadequate direction for decision-makers. As well, broad-scale decisions made at the policy and regional planning levels are not necessarily adhered to at the lower levels of the decision-making process and on down to the project approval stage. No legal measures are in place to ensure these decisions are followed.

- **Lack of measurable outcomes** — Few if any jurisdictions in Canada have comprehensive ecological/biodiversity monitoring systems that establish clear starting points, set time-bound objectives for landscapes and resources, and measure performance over time. Few jurisdictions conduct comprehensive cost-benefit analyses when considering available options, and the economic value of environmental goods and services is rarely factored in.

- **Cumulative effects** — With the increasing intensity of development on public land, and already existing pressures on private lands, cumulative effects must be factored into decision-making processes. Cumulative effects reflect the sum of individual projects or activities on a given landscape, whether sequential or simultaneous. Concerns arise that the impacts of these activities may exceed the natural resilience of ecosystems and have a lasting negative impact on the environment.

  Activities that include mining, forestry, energy, agriculture, urban development, transportation, protected areas, outdoor recreation and subsistence wildlife harvesting frequently share the same land base, but each is managed independently. Based on legislation and through policy, water, air, wildlife, fish and forests are often treated as separate entities. This creates difficulties in managing cumulative environmental effects of multiple activities.

- **Uneven playing fields** — The regulatory environments governing different land users are usually distinct from each other, even though the activities occur on the same land base. Current regulations do not distinguish among the activities of different industries even though the types of impacts depend on the type of industry. Thus, different industries may be accountable to different standards. As well, the application of one sector-specific standard may have a negative effect on another. The opportunities for stakeholders to participate in decision-making processes are also not equal. The final result is a fragmented land use regime that can be vulnerable to inefficiencies and conflicting decisions.

System Challenges

The shortcomings of existing management systems present important challenges for land and resource management in Canada.

- Landscapes are being changed in unforeseen ways as the result of multiple activities and decisions. The outcome of these changes may be undesirable from ecological, economic and social perspectives.
- Resource management and regulatory processes are inefficient and increase the risk of conflict. For example, landscape-level issues that are not addressed at the policy and planning stages (e.g., during project-specific environmental assessment and regulatory processes) may surface after resource rights have been issued and after significant investment has been made in project development.
- As a result of institutional fragmentation along sectoral lines, decision-makers are often focused on a narrow set of interests, issues and impacts rather than considering the

implications of multiple activities and their impact over broad landscapes and across resource sectors.

- Policies and laws designed along sectoral lines, while providing jurisdiction and power to individual government agencies, present barriers to integration and can contribute to conflict.
- Current decision-making processes can fail to meet public expectations and to discharge public mandates that have been established by law or policy (e.g., the inability of EA processes to adequately address cumulative environmental effects).
- Defined landscape objectives may not be achievable owing to uncoordinated and inconsistent activities on the same land base (e.g., oil and gas or recreational development on forestry land) or on surrounding lands (e.g., external threats to the ecological integrity of protected areas). In some cases, land uses have already been fully committed in the absence of overarching planning and the setting of objectives.

These challenges are the direct result of limited or non-existing integration within the decision-making continuum and among the users of the land. Such challenges and deficiencies can be addressed through ILM.

LOOKING BEYOND THE IMMEDIATE

Land management systems that have evolved over the past 10 to 15 years have not kept pace with the increasing demand and complexity of land use. Changes have been made in a reactive, piecemeal fashion, but insufficient progress has been made toward achieving an appropriate balance among development, conservation and social objectives.

As significant issues emerge, governments come under increasing pressure to slow development and constrain access to resources. Current land use systems impose unnecessary costs related to resource development, threaten the resource base, and affect access to domestic and international markets. Conversely, unmanaged growth can lead to consumption that is beyond the capacity of the landscape to sustain. The landscape then becomes limited in its ability to support continued growth and still provide the ecological functions vital to survival and health.

All decisions have consequences and some degree of risk. Any potential risks must be deliberate and calculated with the support of the communities that are directly or potentially affected. Using ILM, the full range of available options can be assessed along with their current and future impact over appropriate space and time. Then a fully informed, conscious decision can be made.

ILM – AN OVERVIEW

The objective of ILM is simple, yet its effects are significant. Ecological health relies on human activity being managed successfully (land, water and other resource development and use), thereby maintaining the ecosystems and services they provide for human wellbeing. Sustainable development is centered on the premise that economic, social, environmental and cultural considerations need to be balanced in the decision-making process.

ILM embodies the principles of sustainable development and ecological management, but takes them a step further:

ILM enables decision-makers, and society as a whole, to set and achieve landscape-level objectives for sustainable development and sustainable ecosystems over appropriate spatial and temporal scales.

- ILM acknowledges that true value can be achieved if policy and operations are integrated within government agencies, in boardrooms and in the field.
- ILM is based on the premise that whole systems (ecological and management) need to be considered, and all activities are inter-related.
- ILM aims to maintain functioning ecosystems by integrating policy decisions and operations at appropriate scales.
- ILM acknowledges that managing individual sectors of the economy independently of each other can result in significant, unpredicted cumulative effects that put sustainability at risk.

ILM identifies and removes barriers to achieving sustainability by improving decision-making systems and information flow. It recognizes that policy, institutional, cultural and other barriers exist that prevent resources from being managed in the most progressive way possible (consistent with the principles of sustainable development).

There are three fundamental ways to address integration to ensure success:

1. Integration among the stages of decision-making; that is, progressive focusing of decision-making from the broad, policy level down to specific management of individual projects.
2. Integration across sectors and land uses, addressing all current and projected land uses, how one affects the other, their cumulative effects and the tolerance of natural systems to support them.
3. Integration over meaningful time and space, making trade-offs and decisions at the right scale and over the right time horizons.

ILM – THE PRINCIPLES

Integrated landscape management is founded on a core group of principles.

Integration. Integration is the fundamental principle underlying the landscape management approach. It is present at all levels, both vertical and horizontal, and provides an overall context that links and encompasses all other principles and functional elements. It involves transparency and coordination among the various levels of decision-making, across sectors and land uses, and over space and time.

Working with landscapes. Planning within an ILM system begins at very large scales in terms of space and time, moving sequentially to lower scales as required. ILM approaches planning from the point of view of *whole landscapes*, which sets it apart from current site-specific land use systems and makes it an effective approach to conservation of biodiversity. The landscapes themselves provide the necessary context for risk assessment, trade-off analysis and cumulative effects management.

Inclusivity. To achieve consensus on how to integrate economic, social and environmental goals, local communities and other stakeholders require information on the appropriate uses of resources and necessary tradeoffs to ensure the long-term health of ecosystems. Consensus decisions are made based on the best available data including thresholds, risk assessment and cumulative effects. Planning that occurs with a full range of stakeholder views and information enables insight and wisdom when making choices and decisions.

Outcome-oriented. Integrated landscape management incorporates processes for developing measurable outcomes or targets regarding the desired future state of the landscape and its

resources. Monitoring and information management systems assess performance and allow results to be shared among stakeholders.

***Comprehensive*.** Landscape management is a comprehensive, knowledge-based approach that integrates the results of scientific research from many disciplines, as well as traditional knowledge, to support decision-making and provide decision-makers with the best available choices, data and information.

***Adaptive*.** Landscape management is a continuous adaptive process that yields on-the-ground action. It has the flexibility to enable effective management responses to changing conditions and to gain an improved understanding based on research, monitoring, assessments, feedback and experience.

***Stewardship*.** Integrated landscape management is a multi-scale approach that includes an understanding of the cumulative effects of human activities. It ensures that informed decisions are made about land use within the context of predicted thresholds and carrying capacities, measured over appropriate spatial and temporal scales.

ILM – THE MODEL

ILM is a mechanism for applying sustainable development to land and resource use. It can be described in terms of two main elements, an integrated decision-making framework and an array of supporting functional components.

The decision-making framework is a continuum that ranges from the broadest, strategic level of policy development, through regulations, rights allocation/disposition and regional planning authorities, down to specific project reviews. The functional components are tools used to support the decision-making framework and enable the translation of decisions into operations on the landscape.

Governments apply ILM through the design and operation of the decision-making framework. Key stakeholders, including the private sector, local communities, special interest groups and Aboriginal Peoples, input into the decision-making framework and participate in the application of the functional components.

Elements of the ILM Model

Decision-Making Framework

Most Canadian jurisdictions use decision-making frameworks when managing natural resources. These enable the progressive narrowing and refinement of decisions from the broadest policy level considerations down to individual projects and operations.

ILM requires an integrated legal framework that transmits values, priorities and decisions from the strategic level down to specific land uses, along the continuum that includes policy, land use planning, disposition of rights, project reviews/environmental assessment and regulation of projects and activities (Figure 1).

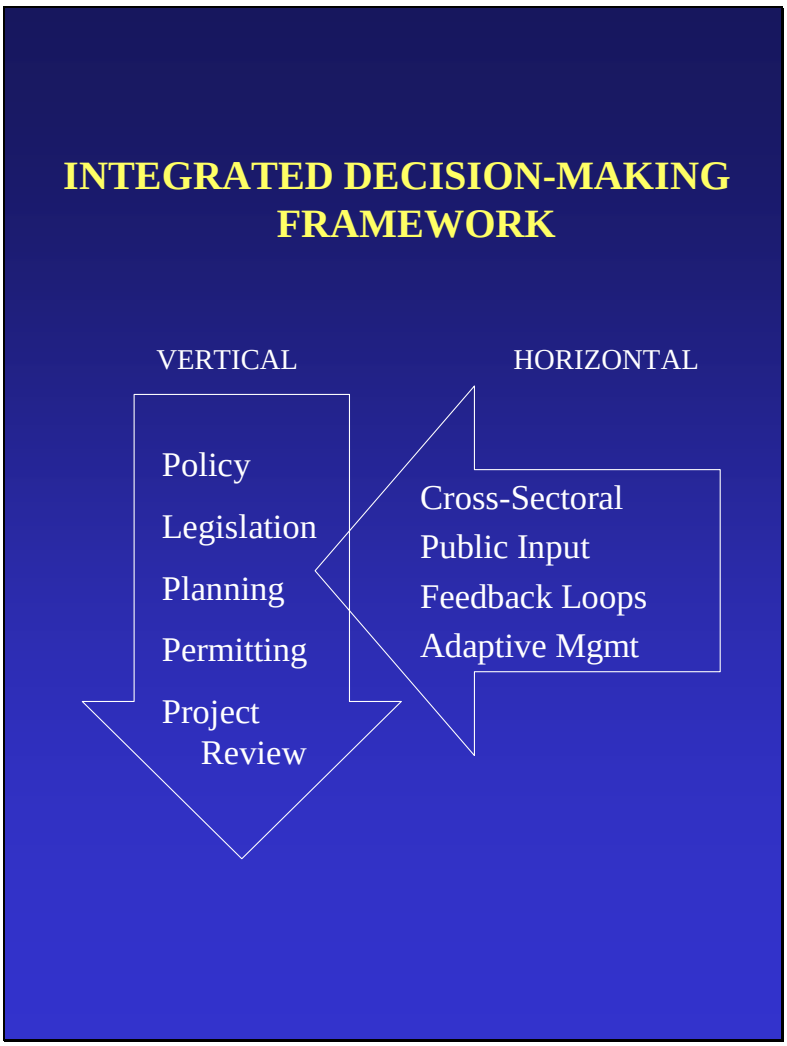

Figure 1. Integrated Decision-Making Framework.

Each stage provides context and lays the groundwork for the one that follows. The vertical integration of the decision-making continuum is matched by horizontal integration across sectors and land uses, and includes the full range of uses, local community values, social considerations and cumulative effects.

The decision-making framework must be adaptive. To ensure this, feedback loops for research, data and information management, monitoring and evaluation are built in at specific levels within the framework. Each of these factors is used to inform managers about performance and any adjustments that may be necessary.

The entire continuum operates as an efficient and effective process for setting and achieving landscape-level objectives by progressively narrowing the issues, increasing attention to detail at each stage, and bringing in horizontal integration and adaptive management. Each type of issue—from questions of broad land-use policy to details of a project-specific regulation—is addressed at the appropriate point in the chain of decisions and in a forum that has the required information, technical expertise, legitimacy, stakeholder involvement and mandate. Before this can occur, the

necessary policy, legal and planning components must be in place with effective linkages between them.

Decision-Making Components

1. Broad Strategic Direction (Policy)

Government policy is a statement of direction at the strategic level, and provides the basis for land use planning and resource management at the landscape level. Over-arching policies must contain sufficient procedural and substantive detail to provide clear direction to decision-makers. At present policies are generally implemented through existing legal instruments that are not designed to facilitate integration.

The policy stage presents the most important opportunity for society to make choices, set priorities and decide on trade-offs at the broadest scale. Creating policy should be done in an open and transparent manner. If it is to be effective, policy development needs to occur in an environment where integration is a necessary and deliberate outcome.

This process starts with a commitment from the responsible government. Policy, legislation and planning processes need to be reconsidered and potentially re-engineered to ensure the system as a whole is capable of delivering integrated decisions. All policy should be tested against sustainable development criteria.

Policy decisions made on development of one resource should not come at the expense of another, unless that choice is deliberate and respects environmental, social and economic objectives established for the area. When these decisions are made clearly and carried through the decision-making process, less intervention is necessary at later stages in the process (e.g., during environmental assessment and project review phases).

Clear policy establishes the primary direction for all subsequent decisions. It provides the foundation for the planning process and sets the direction for allocating and managing natural resources at the landscape level.

2. Legislation

The second element of the decision-making continuum is to apply the specific legal requirements that govern activities on the landscape. A variety of permits, licenses and other authorizations are typically required for resource development projects and other activities. Regulatory approvals usually cover items such as land tenure, soil management, water consumption and discharge, disposal of liquid effluent, solid waste disposal, timing of operations (e.g., for wildlife management), air emissions and reclamation. The regulatory terms and conditions may be set in statutes and regulations of general application. Often they are determined along sectoral boundaries, in relation to various media (land, air, water), or may also result from land claim settlement agreements.

The specific requirements of any sector or medium need to be acknowledged and addressed. However, when the overall regulatory framework is characterized by sectoral boundaries or segregated into distinct media, integration is difficult. As an example, regulations that support the orderly and efficient development of an energy resource may be at cross-purposes with sustainable forest management.

The statutory and regulatory regime needed to support an ILM approach would do the following:

1. Retain the ability to distinguish among specific sector needs while supporting integration across multiple sectors.
2. Enable the translation from policy direction to planning, as at the level of a regional (landscape) authority or a similar body.
3. Provide flexibility to allow for a variety of other tools that would help to achieve the desired objectives, including economic instruments and codes of practice.

3. Land Use Planning

Land-use planning is the third stage of the decision-making continuum. It is a key mechanism for translating strategic direction on both substantive and procedural issues into specific decisions regarding particular landscapes. Whether the land is public, private, or managed by Aboriginal people, collaborating to define landscape-level objectives and manage multiple activities to enable these objectives to be achieved is a major challenge.

All land use planning must be done within the context of Canada's ownership and tenure mosaic. Most of the land base in Canada is crown or public land, and the issue of Aboriginal title exists throughout much of Canada. Some public lands are covered by crown dispositions issued to a variety of users, while vast tracts in other areas have no dispositions.

Land use planning should be conducted at various scales (i.e., provincial, regional, sub-regional and local) and with varying levels of detail. Planning incorporates both the spatial and temporal dimensions of land and resource use. The specific tools available to planners include risk assessment frameworks, land use zoning, objective setting, limits of acceptable ecological impacts (thresholds), limits and characteristics of development footprints, limits on the intensity of activities, temporal sequencing of activities (e.g., phased development) and the application of best practices.

Land use planning is important for proactively managing cumulative environmental effects. An efficient and up-to-date planning regime reduces uncertainty for all land and resource users, thereby simplifying issues at subsequent stages in the decision-making continuum.

Regional Land Use Authorities

With the challenges facing decision-makers, shared partnering arrangements that engage stakeholders and citizens are necessary for determining the desired landscape-related outcomes. Methods for involving stakeholders and citizens include a wide range of possibilities, from providing information, through obtaining advice, to shared decision-making.

The most successful outcomes are generally achieved through processes that provide the greatest opportunity to influence decisions. The trade off is that these generally take the most time to complete. Even now, integrated landscape management often suffers from being mainly a technical exercise that does not adequately involve the public. Appropriate levels of involvement can be ensured by decision-makers establishing a steering committee of stakeholders, citizens and government representatives (*regional land use authorities*) that will make consensus-based decisions. Experience has demonstrated this will most often provide decisions that are more acceptable to those who are affected.

The lack of regular reporting on activities within an area has been a shortcoming of past integrated landscape management processes. This has resulted in plans losing their value over

time, and often being forgotten. This has led to situations where a dramatic change in the plan is required on short notice, or decision-makers simply ignore the plan as no longer meeting their needs. Both routes lead to mistrust and create uncertainty for industry. This can be remedied in two ways:

1. Ensure the local land use authority has an annual reporting requirement to the public on the implementation of the plan. This will maintain a focus on the area and ensure the agreed-to conditions are met.
2. Build in a regular review and update of the plan. This will allow for gradual change over time as situations change, and will avoid the common problem of ignoring changing circumstances until the plan becomes so outdated that it no longer meets the needs of stakeholders.

4. Issuance of Rights (Permitting)

The fourth element of the decision-making continuum is issuing rights. These are the specific legal rights required for new developments on public or private lands. For governments, granting property and resource rights represents an initial decision at the policy level that specific activities are acceptable for the area in question. Depending on the legal regime, additional rights and obligations may flow directly from that initial decision.

From the perspective of all involved and interested parties, this is a critical stage in decision-making. Any Aboriginal rights, including settlement of outstanding claims, should be clearly identified. Where such rights are in question, all potential rights-holders must be engaged in the decision-making process and be satisfied with its result. This includes any interim allocation of rights pending final settlement of outstanding claims.

For the land or resource developer, rights issuance is the legal precondition for project implementation (e.g., road construction). Often it is also the basis for making significant infrastructure investments. A developer expects that once it has been granted legal rights to the land and resources, its projects and activities will generally be allowed to proceed as long as regulatory requirements can be met and potential environmental and other risks addressed.

Developers should have the opportunity to find innovative solutions where it appears that current approaches may not maintain the desired ecological conditions. In this context, land can be managed in a sustainable fashion and infringement on rights minimized. This latter point is important for minimizing legal actions and potential compensation situations.

From the perspective of ILM, rights issuance should be transparent and based on the explicit consideration of landscape-level directives arising from the policy and planning stages. It should consider other land use dispositions, known constraints to resource access, Aboriginal rights and any potential infringement of those rights. Rights issuance should also be guided by the need to maintain ecological integrity of the landscape and the potential impacts on pre-existing rights holders. A coordinated, multi-sectoral rights disposition process through increased integration among departments would determine what rights should be disposed of over what geographic area and how the collective rights of various land users could be managed to ensure sustainability.

5. Project Reviews/Environmental Assessment

The fifth element in the decision-making continuum is project review, generally referred to as project-specific environmental assessment (EA). For projects ranging in size from small to major,

Canada has legislated EA processes at both the federal and provincial levels. Projects outside the legislated EA process are generally reviewed by one or more government departments in the decision-making process.

In functional terms, the EA is both a filter to screen out projects and activities that are deemed unacceptable and a planning tool to provide guidance on project design and implementation with the objective of mitigating environmental impacts. The EA process is not designed to evaluate the many smaller projects and activities that, although of lesser impact individually, may collectively result in significant cumulative effects.

The EA process minimizes the direct and indirect impacts of individual projects, and facilitates issue resolution with important stakeholders including local communities. Further, an EA is now required to include cumulative effects assessment, a process that has rapidly gained acceptance as critical to evaluating the potential environmental and social risks associated with a given project.

There are three serious challenges associated with project EAs that have yet to be effectively addressed:

1. Currently there is insufficient baseline environmental data necessary to properly conduct a cumulative effects assessment.
2. The responsibility for conducting baseline studies and cumulative assessments has been inappropriately allocated, in many cases, to the project proponent.
3. EAs have become lightning rods for unresolved land-use issues and conflicts that are beyond the normal scope of project-specific reviews.

The ILM approach recognizes that cumulative effects should be assessed and managed on a regional or ecosystem basis, rather than project-by-project. Government is responsible for baseline studies, cumulative effects assessment and management, although industry is expected to contribute resources and information to the process that is relevant to the property in question.

Landscape-Level Plan

Optimally, a landscape-level plan would identify zones, establish resource objectives, and state thresholds for critical resource elements such as land capacity and water quality. The plan would also identify and address Aboriginal interests. Governments would monitor land use and determine the scale and scope of the remaining capacity, and new uses would be assessed in the context of cumulative effects.

Project proponents would be required to assess the impact of the proposed development against thresholds and, where required, adjust the proposal to reduce impact. Finally, the disciplined, highly integrated, decision-making process envisaged by ILM would ensure that broad-scale land use discussions were properly addressed at the policy and planning stages, and the resulting decisions were properly reflected in the EA process.

Functional Components

The previous section outlined the decision-making framework that would enable an integrated landscape management process. This section describes the necessary components required to translate these decisions into operations on the landscape. All integrated landscape management decisions are multidimensional, allowing them to be modified by scale, time, space and a variety of other considerations. Figure 2 illustrates in a simplified way the key relationships among the elements of the decision-making framework and the functional components .

Figure 2. Relationships among the elements of the decision-making framework and the functional components.

Landscapes

Landscapes are characterized by a combination of geographic features such as landforms, waterbodies, flora, fauna, and human communities. A landscape may contain one or several ecosystems, encompass settled areas and infrastructure, and include areas with resource development potential and significant biodiversity value. Landscape boundaries are often defined by a combination of bio-geographic features, regional issues and development objectives. Thus boundaries are flexible and may change over time as knowledge is gained and development or conservation objectives evolve.

ILM can be implemented at all scales, but it is particularly useful at the level of whole landscapes (applied at the regional, sub-regional and local levels), where it provides:

- a way to establish meaningful boundaries,
- an appropriate ecological context to measure and evaluate progress,
- coordination among various land users, and
- a context in which meaningful land use trade-offs can be considered.

Based on the landscape-level approach, ILM provides one of the most effective ways to achieve multiple objectives, including those under the broad headings of biodiversity conservation and sustainable development.

Determining the appropriate landscape, and consequently the planning area, is the responsibility of the government agency holding the mandate for land management. The particular landscape selected should reflect the scale of planning and decision-making that makes sense to local inhabitants and stakeholders, and the nature of the issues to be considered. The formation of regional landscape-level authorities is critical to the development of appropriate plans, their implementation and maintenance.

Modeling

In recent years computer modeling techniques have evolved to become valuable tools in conducting risk assessment, allowing a variety of informed choices to be made available to decision-makers. Land use planning has been significantly advanced by adding the capability to integrate aspatial, spatial and animation capacity into a single modeling system. Models can project the consequences of today's decisions into the future (tens to hundreds of years), and enable preferred options to be selected in a deliberate and thoughtful manner.

Integrating ecological function with land use, economics and social considerations is a complex task that requires appropriate, up-to-date tools. Such tools assist the land manager in addressing planning issues over long periods of time, and help stakeholders to assess the consequences of today’s choices and how they will affect tomorrow's landscapes.

By collecting appropriate baseline data including traditional knowledge, and factoring in resource management objectives and thresholds, computer models can assess a range of land use options and cumulative effects. Modeling the application of best practices can also be used to assess relevant management options for cumulative effects.

Of course, computer modeling techniques and the scenarios they are used to generate are only as good as the data they rely on. This underlines the importance of continuous access to the best available data and scientific research, and on this basis, periodic testing of scenarios based on new information.

Research

Achieving long-term sustainability requires an understanding of how human activities and developments impact landscapes and ecosystems, and ongoing efforts to transmit this understanding to the broader public. Multidisciplinary research is required to understand baseline inventories, determine ecological thresholds and predict impacts and cumulative effects over space and time. Tools such as “dose-response curves” (critical biotic/ecological response to anthropogenic disturbance) assist in defining the ecological and biotic thresholds. Collectively,

this work provides the basis for planning developments and making adjustments as required to meet social, economic and conservation objectives.

Carrying out multidisciplinary research is of particular importance in ILM, as multiple users often undertake a variety of activities on the same landscape. Research directed at advancing methodologies for resource harvesting, or extractive processes and approaches to regeneration and reclamation, is also critical to increasing efficient use of natural resources and reducing the footprint on the landscape.

Monitoring

Long-term monitoring is used to track and evaluate performance against stated objectives. Collecting information in a consistent fashion is fundamental to monitoring and performance assessment. Data and information systems need to be developed to enable the results to be used from research, inventories and long-term monitoring across landscapes and regions.

Management decisions are often made with only a basic understanding of the landscape; thus, adaptive management approaches must be included that are based on effective monitoring to provide vital information for the decision-making process. Adjustments can then be made accordingly.

Data and Information Management

Reliable data and information are required to model and visualize different development scenarios, conduct risk assessments, manage cumulative effects, and evaluate management activities. ILM uses diverse sets of data and information from physical and biophysical inventories, as well as inventories of land uses, facilities, transportation corridors, traditional knowledge and other elements.

Managing data and information requires significant investment. However, this same quality information will serve all resource users. By allowing for informed choices and a better understanding of risks, this information will lead to reduced conflicts among diverse interests.

Access to Data

The necessary types of data are generally not available to resource planners and developers for both technical and policy reasons. ILM promotes improved access to data and information through integrated design and establishing data and information policies that encourage and enable sharing.

Data and information standards and protocols must be established among users of the same landscape; in turn, this will improve the basis for planning. Establishing a vehicle for information management with the ability to collect and manage resource information, set standards for data management and sharing, and develop products would be a significant asset in advancing ILM.

Even with ILM, rarely will all the desired data and information be available for decision-making. Often timely decisions need to be made without complete information being available. When there is doubt about the completeness or accuracy of the information base, these decisions may need to be precautionary and revisited if more information becomes available.

Risk Assessment/Trade-Off Analysis

Risk assessment is an analytical approach to determining the risk/reward aspects of management choices. In the context of ILM, risk assessment is guided by the policy and planning frameworks

in place for a given region that provide direction for environmental, social and economic objectives.

Modeling tools are a basic element of risk assessment, and are used to analyze various scenarios. Land uses are assessed individually and collectively against predetermined criteria (objectives and thresholds), and over space and time to determine the relative risk and merit of each option. In the context of ILM, risk assessments should be conducted by governments at all levels of the decision-making continuum, and the results shared with affected stakeholders/citizens.

When specific policy decisions are required (e.g., develop an oil sands mine) a risk assessment provides information on the probable consequences of each available option. Trade-offs (time and space) can then be made to balance the interests of a broad range of stakeholders/citizens. As an example, the loss of ecological integrity on a site may be offset over time and space through future reclamation (time aspect) and by maintaining ecological integrity at the landscape level (space aspect).

Thresholds

Thresholds are key components of modeling and generating scenarios, and form a critical part of land use planning, risk assessment, cumulative effects assessment, monitoring and management. They are used to estimate the limit or capacity of an ecosystem to accommodate land use activities, while still functioning in a sustainable fashion. For example, when the density of a linear disturbance reaches a certain point, habitat is no longer viable for Woodland Caribou. That point becomes a threshold on a landscape where caribou conservation is an explicit objective.

Thresholds are generally applied within the context of various social and development objectives for an area, and reflect a combination of societal values and scientific knowledge. As an example, societal values related to a wildlife population may not allow for any reduction in its size, even though the proposed land use would not cause the sustainability threshold to be reached.

Thresholds are defined using the best available scientific and traditional knowledge. The threshold information enters at the policy and planning stages of the decision-making process, enabling informed decisions and allowing each development decision to be considered within the context of the whole. In a particular landscape, a policy decision may then be made with the objective of maintaining activity below certain thresholds. Such a decision often involves trade-offs regarding the allowed level of industrial or development activity. Conversely, a decision can be made in favor of development, in which case the trade-off may be at the expense of an ecosystem value.

The government is responsible for establishing appropriate thresholds and monitoring performance with respect to these benchmarks. Thresholds will change over time as a result of emerging science, progress in technology, changes in industry practices and changing societal values. Through the process of adaptive management, these changes are incorporated into modeling scenarios which help identify the appropriate adjustments to the landscape plan and allowable land uses. As part of the adjustments, thresholds may be modified as well.

Approaches to Conservation

Protected Areas Approach

Designating areas of the land base as protected areas has long been the key method used by governments to achieve conservation objectives. This approach provides some insurance against development activities occurring in sensitive areas.

All governments have formally adopted the protected areas approach and have committed to developing and implementing protected areas strategies. However, few strategies have been completed and put into action, and progress on achieving conservation objectives has been unsatisfactory. In using protected areas as the mechanism for achieving conservation objectives, a significant amount of conflict has been generated among land users.

An approach other than one based primarily on protected area designation should be used to achieve conservation objectives for the following reasons:

1. A protected area is a tool that has been designed to achieve a very specific type of outcome (preservation); therefore, it is not amenable to allowing a broad array of conservation objectives. The designation should be used wisely and in circumstances where it can be demonstrated that such preservation measures need to be applied.
2. Protected areas, in and of themselves, cannot achieve the conservation goals that have been identified. This applies particularly to conservation of biodiversity, which requires an approach involving whole landscapes.
3. For the most part, protected area strategies have not been designed and implemented within an overarching land use strategy that includes a broad conservation planning framework, which would ensure the best tools are being used for the circumstances.

ILM Approach

Through ILM, conservation objectives would be approached within the context of a broad land use policy and planning process, which would include considering the full spectrum of land use issues and societal priorities. Within this planning framework, conservation objectives would be developed for particular landscapes. An array of tools would also be identified as being the most effective in meeting those objectives, including protected areas. The Canadian Biodiversity Strategy emphasizes this approach of planning at the landscape level. It was developed by an intergovernmental working group with advice from a wide range of stakeholders, and officially adopted by federal, provincial and territorial governments in 1995.

Thresholds, modeling, risk assessment and adaptive management can all be applied to the development and management of a conservation framework. Once assessments have been conducted and decisions made, the results can be used to construct a risk assessment framework. A simple example of this is shown in Figure 3.

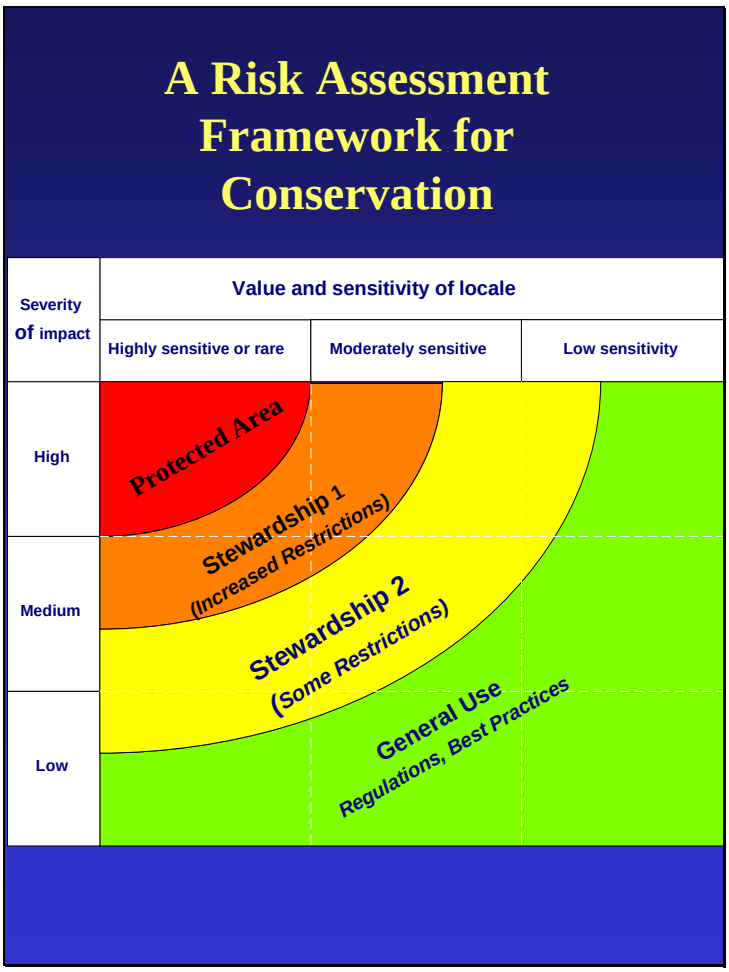

Figure 3. A risk assessment framework for conservation.

Each field in this framework is distinguished by a specific set of criteria that defines the following:

- the level of sensitivity for the area,
- the desired conservation objectives,
- the specific measures used to achieve them, and
- the conditions which proposed development activities would have to meet in order to be permitted.

In some cases, protected areas could be the conservation measure of choice and little or no development activity would be allowed. As the level of sensitivity decreases, the conservation measures become less prohibitive and the permitting requirements less specialized and more general in nature.

Once the risk assessment frameworks are agreed upon and established, land-use decisions are made within that framework, providing transparency and predictability for all land users. The criteria and framework can be modified over time to accommodate changing landscape conditions, evolving societal priorities, and new technologies and approaches applied to resource development.

By involving comprehensive planning and applying an array of tools tailored for the circumstances, the ILM approach provides the most effective method for achieving conservation objectives and at the same time, addresses the desired environmental, social and economic needs.

Time and Space

Integrated decision-making is best achieved if it is based on appropriate spatial and temporal information. By including this information, ILM provides for decisions that are properly structured according to scale. As an example, maintaining biodiversity over a range of species on a mine site may not be practical, but it could be achieved at the landscape level.

ILM does not presume that all benefits can be delivered at all times from a single land base. There will be circumstances where one choice will have to be made at the expense of another. However, such choices are guided by the decisions made at the policy and planning stages, in advance of the disposition of resources.

Governments must determine the appropriate scale for planning and policy decisions to optimize the full range of values that can be derived from land and resource management. Modeling is a extremely useful in assessing the range options for time and space integration.

Best Practices

Best practices involve the development, application and continuous improvement of day-to-day management and business activities, and are designed to achieve the highest quality results in terms of environmental, economic and social objectives. Best practices are useful for demonstrating leadership, sharing knowledge, and encouraging greater performance within the affected sector. They are generally undertaken on a voluntary basis, and thrive in an environment where industry has the flexibility to find the most cost-effective means to achieve the desired results, and where markets reward companies that demonstrate leadership in setting and achieving sustainability targets.

Typically, best practices are focused on one industry and generally set performance benchmarks within that industry. Industries working together to develop coordinated best practices can reduce their collective footprint, and sustain or even enhance their ability to access the land and use the resources.

Within the context of ILM, industry best practices take on a far more significant meaning, since decisions are based on parameters such as risk assessment, thresholds and cumulative effects. For example, the introduction of best practices may alter existing limits imposed by thresholds and cumulative effects, such that an activity which would otherwise have been disallowed can now be permitted.

Operational Coordination

Governments play a major role in facilitating business-to-business integration and operational coordination. A fundamental component of ILM is the coordination among land users that involves integrating operations over space and time. For instance, activities among the forest, energy and mining sectors should be integrated where possible and at all stages (exploration, development, operations, expansion plans, decommissioning and reclamation). Areas of integration could include harvest sequencing, road/access development, well site reclamation, and other initiatives that would reduce the industrial footprint. Regulatory requirements, cost savings and reductions in environmental impact are typical business incentives that encourage this activity.

Business-to-business integration may be possible within the current systems; however, the tendency is for this to be driven by opportunity and therefore transient. By using ILM, with its decision-making framework that integrates individual sectors, the necessary infrastructure and discipline is provided to make operational coordination a more permanent aspect of the corporate culture. For instance, the regulatory system could be designed so that opportunities to coordinate operations must be examined and implemented, but flexibility would be provided for industry to find the best business solutions.

ILM – ROLES AND RESPONSIBILITIES

Understanding the roles and responsibilities of key stakeholders, including governments, the private sector, local communities and the general public, is critically important for successful implementation of integrated landscape management. ILM requires each participant to understand their role and fulfill their obligations.

- **Governments** — Public lands and resources are owned and managed by governments which act in the interests of the publics they serve. Governments also restrict development options on private lands. Governments are responsible and accountable for proper management of these resources, and provide knowledge and technical support to a broad range of land users. They are responsible for making decisions regarding integrated landscape management and establishing the appropriate institutional, policy and governance framework that will facilitate proper and necessary integration. The government takes the lead in ensuring that the decision-making system (hierarchy) is respected and followed. With the right framework in place, government can empower the private sector to deliver portions of the ILM system.

- **Private Sector** — The private sector bears considerable responsibility for making ILM operational. Landowners, resource developers and other land users are expected to communicate among one another about their development plans and to integrate aspects of these plans where opportunity exists. Government will assume an oversight role, observing and evaluating private sector efforts.

  Opportunities and limitations accompany this approach. Industries that are involved will need to have a far more thorough and deeper understanding of their respective businesses, and be aware of how integration may affect their operations.

  Industry has maximum flexibility in meeting the integration objectives. The degree of success that industry has in integrating their actions will influence the need and nature of future legislation, policy or government processes.

- **Aboriginal People** — The constitutional entrenchment of Aboriginal rights and the emergence of modern land claim agreements has become a key factor in landscape management across much of the Canada. In the northern territories particularly, Aboriginal people have a significant role in land and resource management by virtue of their interest in, or direct ownership of, surface and/or subsurface rights in certain areas, and their participation in the institutions of public government that have been created pursuant to land claim agreements. They are also playing a growing role in landscape management on their traditional territories. The courts have also recognized the right of Aboriginal people to be consulted when resource development and other activities may infringe on their inherent or treaty rights.

As a partner in ILM, Aboriginal people play a prominent role in sharing traditional knowledge, articulating landscape objectives, promoting responsible development and implementing sustainable practices.

- **Local Communities and General Public** — Private landowners have rights not enjoyed by companies operating on public lands, but these rights are not absolute. Decisions on allocation of resources, permitting of projects and operational management all require consultation with the affected communities. Citizens want to participate in decisions that affect them, and often expect community governance to be the normal operating procedure, not a special event. This includes understanding decision conditions and monitoring performance to ensure decisions are acted upon and implemented in a fair and balanced manner.

  The public need to have an opportunity to share perspectives, offer insight and assist in making value choices. They also need to be well informed and knowledgeable about the costs and benefits of available resource management choices. Through ILM, opportunities would be available for them to be engaged at appropriate levels in the decision-making process.

  Government and industry need to ensure that effective and ongoing consultation processes exist. As well, decision-making time frames and formal opportunities for input need to be clearly defined. The opportunity for public participation would come with an obligation for the public to meet the process requirements.

THE NEED FOR CHANGE

The conditions for making policies have changed dramatically, as reflected by multi-level policy networks, increased globalization, privatization and increased democratic participation. Individuals, organizations, NGOs and political entities that traditionally ignored one another are having to work together more and more, albeit often under legal and political pressure.

Issues are now crossing ecological, social, political, administrative and legal boundaries. As such, integration is necessary because no single policy sector, agency or political player can resolve these issues alone. In many cases, different national and provincial government agencies must find approaches to manage these issues together.

The pattern of land uses on the landscape is becoming increasingly complex, and requires an inclusive process that incorporates the essential elements of sustainable development and ecology. Traditional bureaucratic organizations were not designed for conflict and change, but rather for order and continuity. As a result, these cross-sectoral demands challenge the essence of their identity and structure. This has led to more flexible non-government organizations often leading communities and working toward improved policy coordination.

Over the past decades, there have rarely been comprehensive initiatives that comprised multiple resources, economic and social issues. Through the environmental assessment processes, even the largest resource development project experienced only limited integration, and certainly not a comprehensive ILM approach.

THE VALUE AND BENEFITS OF ILM

Integrated landscape management offers solutions for optimizing land and resource use, conservation and protection objectives throughout Canada. In the process, it delivers significant value to the constituents who are affected. Both Canada's institutional framework and the practice of resource and environment management in the field would experience enormous benefits by implementing ILM. The positive outcomes are identified below.

Sustainable development — ILM reduces cross-sector impacts and the contradictory effects of single-focused policies. It allows economic, environment and social objectives to be integrated at a level where communities can perceive it. ILM also facilitates the use of an integrated system of economic and environmental accounting to measure and monitor cross-sectoral policy impacts.

Policy decision-making and governance — ILM facilitates the participation of all players at all levels for effective policy implementation, and the participation of environmental and resource stakeholders in other sector policy processes. It enhances policy coordination and collaboration, including the assessment of trade-offs between policy options. It enables policy instruments to be developed that support local suppliers of ecological goods and services in order to correct market failures. ILM also facilitates local decision-making and community-based initiatives among Aboriginal peoples and in remote communities.

Regulatory efficiency — ILM offers the opportunity for streamlined regulatory systems to reduce the costs and time to administer approvals. It focuses the decisions and scope of regulatory processes at the landscape level, making them much more efficient. It also eliminates the need for successive interventions, and enables a more efficient permitting process through to the project review and environmental impact assessment stages.

Ecosystem-based management — ILM allows for the identification and implementation of an array of conservation tools tailored to the circumstances and thus optimizes the achievement of conservation objectives applied over whole landscapes. Further it enables monitoring of changes in landscapes including assessment criteria such as cumulative impacts and environmental thresholds. It also allows consideration of ecosystem goods and services such as flood prevention, carbon sequestration, nutrient retention, etc. Further, it allows special areas/resources to be identified for management within the context of total landscapes rather than addressed as isolated entities.

Access to resources and market — The use of ILM can contribute significantly to attaining certification and removing barriers to market entry. It embodies responsible resource management and development, which increases constituent confidence and enhances public trust, thus enabling continued access to public resources.

Reduced environmental impact — ILM results in a reduced industrial footprint and minimizes the environmental impact by integrating development plans and operations. Owing to the reduced environmental impact and corresponding regulatory demands, conducting business is less costly.

Certainty — ILM provides assurance that at any given locale in the country, whether characterized by remoteness or high-intensity use, a landscape plan will guide activities. This will provide re-assurance to conservationists and developers that the requirements in the plan have been accepted by all and will be carried out. All those with an interest in the land have access to

that plan and can design an appropriate work program with the certainty the plan will be followed. Through ILM, plans will evolve as priorities change and new knowledge becomes available. There will be less need for frequent interventions, thus allowing developers, recreational businesses and conservationists to enjoy an increased level of certainty.

Operational efficiency — ILM facilitates improved coordination of land uses and industrial activity, thereby reducing the costs of accessing and developing resources and regulatory compliance.

PROPOSALS FOR FUTURE ACTION *(Note: The following section presents some possible recommendations. These have not been agreed to by the Coalition.)*

Enhancing Landscape Management in Canada will require a concerted effort and partnerships among governments, the private sector, indigenous and local communities and non-governmental organizations. The Canadian Integrated Landscape Management Coalition, subject to the mobilization of financial resources, proposes the following activities in order to move the agenda forward:

- The undertaking of a survey and analysis of Canada's current capacity to undertake landscape management. The intent would be to identify the current obstacles (lack of capacity for planning, gaps in legislation, etc.) and to determine opportunities and needs to enhance the implementation of integrated landscape management.

- To convene a national workshop involving researchers, land and resource planners and developers, and policy makers to determine the current state of understanding of ecological thresholds in relation to land use and resource use and to develop a research program to enhance understanding of ecological thresholds.

- To continue communicating on the needs and requirements of integrated landscape management among key stakeholders and to build awareness and support for landscape management across Canada. This could include the development of a *code of conduct* or "*checklist"* of how to achieve integrated landscape management.

- To establish and promote demonstration sites where integrated landscape management approaches are being implemented.

- To continue to establish a network of individuals with expertise and interests in integrated landscape management, and to link them with those who seeks their knowledge and advice.

CONCLUSION

The days when Canada's size and remoteness could be considered a protection in itself are gone. The land is an enormously valuable asset, and needs to be treated as such. Current and future generations will bear the cost of inaction.

The Canadian population and economy continue to demand improved land use and ecological resources delivery. In addition, people are increasingly informed and knowledgeable about

resource development and are demanding they be part of that decision-making process. Awareness of essential processes such as capturing carbon and providing habitat for wildlife are no longer reserved for the scientific community.

Canadians fully understand that ecosystems are not only a grouping of various resources, but also function together to provide essential goods and services. This context places pressure on governments to modify traditional decision-making structures and processes and blur the lines between government departments and those of civil society. It also requires relevant governance options to be considered in an open, transparent and integrated manner.

New institutional, legal and policy instruments may be necessary to ensure sustainable development for society and preservation of development options for the next generations. There is also considerable scope for a more systematic use of existing instruments in an ILM context. Although it is a challenge, and forces a new way of approaching land and resource management, ILM is a tremendous tool that yields numerous, exciting benefits for the environment, society and the economy, and carries the potential for reaping even more benefits with time.

APPENDIX 1. A CHECKLIST FOR COMPARING CURRENT SYSTEMS TO THE ILM APPROACH

A fully functioning ILM system includes a specific set of elements that are shown in Figure 2 and summarized below. These can be used as a type of checklist for comparison with current systems. The elements most commonly missing from current systems are ones that are fundamentally important to ILM—the ones that form that basis of an integrated decision-making system.

Policy Development and Strategic Planning

The commitment to ILM is made at this point and the process begins. The following aspects are incorporated:

1. A transparent and inclusive process that involves relevant government agencies and input from the public and key stakeholders.

2. Identification of, and agreement on, the values and objectives for land and resource use that provide high-level direction for the subsequent, more detailed stages of the decision-making continuum. The values and objectives may change with time based on changing priorities or the availability of new knowledge and information (adaptive management).
3. A commitment to establishing an ILM system that involves identifying the institutional restructuring required to enable integrated planning, assessment, information flow and decision-making. This is supported by development of an implementation plan and allocation of the necessary resources.
4. Commitment to information, monitoring and feedback processes including baseline studies, modeling, establishing thresholds and adaptive management.
5. Commitment to establishing mechanisms that will allow for cross-sectoral, integrated decision-making. This may involve integration and/or consolidation among existing agencies, processes, statutes and regulations.

The Legal Regime

The legal regime includes legislation, supporting regulation and rights disposition (permitting). It is designed to support the integration required by an ILM system, and to enable decisions made at the policy and planning stages to be put into practice in a systematic, clear and predictable manner.

1. Mechanisms that will allow for integration among sector specific statutes and regulations while preserving the specific needs of individual sectors.
2. Integration of the permitting process across sectors, either through creation of a single agency or linkages among existing sector-specific agencies.
3. Regulations that are not prescriptive in nature but focus on objectives, allowing flexibility for proponents to determine the most effective and efficient means of achieving them.
4. Regulations that encourage, facilitate and enforce coordination among land users, and encourage the development and implementation of best practices for the purpose of reducing the footprint of development projects.

Planning

Planning is the single most important element of the ILM system, and represents much of what is missing from current systems and processes. Planning incorporates the aspects listed below.

1. Interpretation, direction and implementation of policies and strategic directions while maintaining the integrity and spirit of the values, goals and objectives that have been established.
2. A transparent and inclusive process that includes input from relevant public and stakeholder interests and, in particular, local communities at the sub-regional levels.
3. A single, cross-sectoral planning process and/or agency supported by consolidation of pre-existing statutes, regulations and agencies, or forming linking processes to enable the required integration across sectors.
4. A process that commences at the provincial level and proceeds systematically to landscapes at the regional and sub-regional levels, accompanied by progressive geographic narrowing

and tailoring of interests, values and options. The product could be in the form of a nested hierarchy of regional, sub-regional and local plans.

5. The formation of regional landscape authorities comprising regional government officials, stakeholders and local citizens to create and implement regional and sub-regional land use plans and maintain and update them over time.
6. A planning process that uses the results of information and monitoring, including baseline studies (e.g., cumulative effects), modeling, establishment of thresholds, scenario generation and socio-economic data in the decision-making process, as well as the creation of objectives and deciding on options and trade-offs.
7. The principle of adaptive management, whereby adjustments to planning decisions and objectives are made on the basis of advances and improvements resulting from scientific research, experiments, pilot projects, development and application best practices, and coordination among land users.
8. A process in which, ideally, planning precedes all activities on the landscape, including the disposition of rights and the implementation of conservation and protection strategies.
9. A process that uses a risk-management assessment framework to determine, in a systematic and predictable way, the application of different land uses in the context of ecosystem sensitivity, and generally provides a framework for achieving agreed upon objectives for development, conservation and protection.
10. The risk-management assessment framework recognizes and uses an array of tools for the purpose of implementing conservation and protection strategies, and includes established criteria for applying those tools.

EA and Project Review

The EA and project review processes reflect the directions and decisions made in the policy and planning stages, a connection that is embedded within the decision-making continuum and supported by a legal framework.

1. A process that is appropriately narrow and focused in scope, efficient in application, and does not require a review of policy and planning decisions or political intervention.
2. Policy, planning and regulatory stages that allow for flexibility of application at this stage.
3. A process that is open to public scrutiny and participation.

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