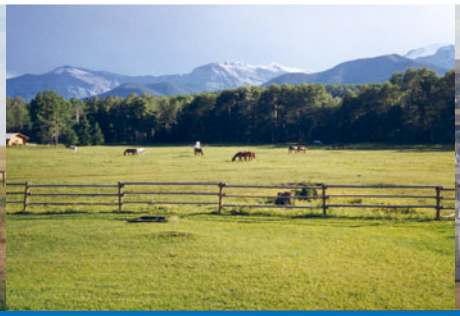
Making It Real

Implementing Alberta's Land-Use Framework

October 2008



Steven A. Kennett • Richard R. Schneider

Making It Real

Implementing Alberta's Land-Use Framework

Steven A. Kennett, Pembina Institute

Richard R. Schneider, CPAWS Northern Alberta

October 2008

the PEMBINA institute
Sustainable Energy Solutions

Canadian Parks and Wilderness Society

Kennett, Steven A., and Schneider, Richard R.
Making It Real: Implementing Alberta's Land-Use Framework
Published October 2008

Editor: Roland Lines
Cover Photos: David Dodge and Mary Griffiths, The Pembina Institute

ISBN: 1-897390-16-5

CPAWS Northern Alberta
P.O. Box 52031, Edmonton, Alberta T6G 2T5
Phone: 780-432-0967
Email: info@cpawsnab.org

The Pembina Institute
Box 7558, Drayton Valley, Alberta T7A 1S7 Canada
Phone: 780-542-6272
Email: info@pembina.org

You can download additional copies of this publication from either www.pembina.org or www.cpawsnab.org.

About the Pembina Institute

The Pembina Institute is a national non-profit think tank that advances sustainable energy solutions through research, education, consulting and advocacy. It promotes environmental, social and economic sustainability in the public interest by developing practical solutions for communities, individuals, governments and businesses. The Pembina Institute provides policy research leadership and education on climate change, energy issues, green economics, energy efficiency and conservation, renewable energy, and environmental governance. For more information about the Pembina Institute, visit www.pembina.org or contact info@pembina.org.

About the Canadian Parks and Wilderness Society

The Canadian Parks and Wilderness Society (CPAWS) is Canada's grassroots voice for wilderness. The Northern Alberta chapter works to maintain biodiversity and wilderness in Alberta through the establishment of industrial practices that are sustainable for nature, communities and the economy. CPAWS Northern Alberta has approximately 3,000 members led by a volunteer board of directors. More information about CPAWS Northern Alberta is available at www.cpawsnab.org or by contacting info@cpawsnab.org.

About the Authors

Steven A. Kennett

Steve Kennett is a Senior Policy Analyst in the Alberta Energy Solutions Program at the Pembina Institute. His work focuses on environmental governance and natural resource policy, including the development of integrated planning and regulatory regimes for oil and gas development, and other land and resource uses. Prior to joining the Pembina Institute in April 2007, Steve was a Research Associate with the Canadian Institute of Resources Law at the University of Calgary. His publications and contract work have examined a range of topics in natural resource and environmental law and policy, including integrated resource management, cumulative effects assessment and management, resource management and regulatory processes in Alberta, the Northwest Territories and the Yukon, environmental assessment, and climate change. Steve holds a BA (Hons) in Politics and Economics from Queen's University, an M.Phil. in Politics from Oxford University, an LL.B. from the University of Toronto and an LL.M. from Queen's University.

Richard Schneider

Dr. Richard Schneider has been with the Canadian Parks and Wilderness Society since 1993. He currently serves as Senior Policy Analyst for the Northern Alberta chapter. Richard obtained a degree in veterinary medicine from the University of Saskatchewan in 1985 and a Ph.D. in wildlife epidemiology from the University of Guelph in 1992. He then completed an NSERC postdoctoral fellowship at the University of Alberta, studying the interrelationships between wolves, bison and disease in northern Canada. Richard has been actively involved in several landscape-level forest management initiatives in Alberta. He wrote the book *Alternative Futures: Alberta's Boreal Forest at the Crossroads* as well as numerous influential papers on the management of Alberta's forests.

Acknowledgements

The Pembina Institute would like to acknowledge the generous support of the Max Bell Foundation, the Ivey Foundation, and the Walter and Duncan Gordon Foundation.

The Canadian Parks and Wilderness Society would like to acknowledge the generous support of the Max Bell Foundation and the Ivey Foundation.

The authors acknowledge very helpful comments on earlier drafts of this report from Nigel Douglas and Alan Gardner.

Making It Real

Implementing Alberta's Land-Use Framework

Table of Contents

Executive Summary

The Draft Land-use Framework (LUF), released on May 21, 2008, is a good first step toward the fundamental changes that are needed to fix Alberta's badly outdated system for land and resource management. It correctly states that "we have reached a tipping point, where sticking with the old rules will not produce the quality of life we have come to expect."[1] There are two fundamental problems with the old rules.

The first is a fixation with maximizing short-term economic growth instead of managing land and resource use to promote long-term sustainability and improved quality of life for Albertans. The second problem is an inability to manage the cumulative impacts of development. Tools for integrated planning and decision making are lacking, making it all but impossible to set and achieve landscape-scale objectives when multiple projects and activities affect land use values. The LUF has the potential to address these problems if it is implemented effectively.

The challenge before us now is making the LUF "real." The extent to which the good intentions in the Draft LUF result in meaningful change on the ground depends entirely on how it is implemented. This paper presents a roadmap for the implementation process. It recommends actions in six key areas to translate the Draft LUF's positive policy direction into a new way of managing Alberta's land and resources.

Setting Objectives

The importance of the government's commitment to outcome-based management as a matter of principle cannot be overstated, but more information in needed on how this commitment will be implemented in practice. The Draft LUF provides little guidance on what the outcomes will be, or how they will be selected, beyond the general notion of balancing economic, environmental, and social objectives. To make the LUF real, the process for defining desired outcomes must be clearly described at both the provincial and regional levels.

At the provincial level, the LUF Cabinet Committee has the lead role in setting outcomes, supported by the Land-use Secretariat. The choice of outcomes should be informed and guided by public land use values, environmental limits, provincial policy reconciliation, trade-off analysis, and the exploration of alternative futures. The process should be participatory, inclusive and transparent in order to ensure that the broad public interest is reflected.

Ideally, a coordinated set of provincial land use policies should be clearly articulated before regional planning begins. But given the urgent need to begin the planning process, it seems likely that provincial-level direction will be developed in parallel with the first two regional plans. This approach to setting outcomes is likely to be messy, but may ultimately prove to be beneficial because insights gained through regional planning may strengthen the provincial process. The

[1] Government of Alberta, *Draft Land-use Framework*, May 21, 2008 (www.landuse.gov.ab.ca), p. 1 (Draft LUF).

danger, however, is that provincial tasks may not be completed, leaving the province with a hodgepodge of regional outcomes and no effective policy coordination and accountability for land use outcomes at the provincial level. The mandates of the Cabinet Committee and the Land-use Secretariat, as specified in LUF legislation, should be to ensure policy coherence and guarantee accountability for outcome setting at the provincial level.

At the regional level, outcomes should be defined through the terms of reference for each regional plan. These terms of reference should support the achievement of provincial outcomes while responding to local issues and opportunities. The Cabinet Committee should lead the process, but the Regional Advisory Council and the broader public should be meaningfully engaged.

A final stage of objective setting is required at the level of the regional plans, led by the Regional Advisory Council and the planning team within the Land-use Secretariat. The focus here shifts from defining desired outcomes to determining how human activities should be managed. Land use objectives should include quantitative thresholds and limits to guide decisions about the amount, intensity and distribution over space and time of specific land uses (e.g., recreation, oil and gas, residential development). The process should be guided by cumulative impacts modelling and ongoing dialog with the LUF Cabinet Committee.

Achieving Objectives

Achieving the objectives set through regional planning presents a significant challenge given the multitude of activities that share Alberta's land base. The LUF can meet this challenge in two ways.

The first is a management strategy that combines cumulative effects modelling and policy analysis to identify ways of maintaining activity levels and impacts within specified thresholds and limits. Cumulative impact curves can be plotted, showing how cumulative effects respond over time under different land use scenarios. Policy options, represented as "wedges," can be used to bend these curves, changing the trajectory of cumulative impacts over time so that they do not cross management thresholds and regulatory limits. A "bending the curves" strategy should be guided the following principles:

1. Take early and cost-effective measures to bend the curves.
2. Avoid hitting the "wall" of limits on total impacts.
3. Consider drivers of impacts as well as impact mitigation.
4. Consider the range of intervention points and types of policy instruments (wedges) to bend the curves.
5. Map policy instruments against thresholds for management action.

Second, the LUF should establish the institutional capacity to ensure that the day-to-day activities of individual land users contribute to achieving the outcomes specified in regional plans. A regional land use manager will be needed for each regional planning area to provide support, direction, oversight and accountability for the plan. Operational integration will be the key to on-the-ground success and this will not happen without "hands-on" coordination and

decision making by a regional land use manager. These regional land use managers should be new high-level agencies or interdepartmental bodies.

Removing Obstacles

Making the LUF real will require the removal of obstacles to integrated planning and cumulative effects management that are embedded in Alberta's current policies for land and resource management. Obstacles in four areas are particularly significant.

First, policy "collisions" need to be addressed. The combination of strong departmental silos, weak integrative mechanisms and a planning vacuum has meant that inconsistent policies have been allowed to co-exist. The LUF will need mechanisms to identify and address policy collisions at the outset and as they become evident during planning.

The second key obstacle is the oil and gas "silo." The Draft LUF acknowledges increasing land use conflicts resulting from oil and gas development and states that policies addressing surface and subsurface values "are not well integrated."[2] The importance of applying the LUF to the oil and gas sector should not be underestimated, nor should the obstacles to achieving this objective. The Department of Energy's policies, the process for issuing mineral rights, and the tenure regime are inconsistent with integrated regional planning and cumulative effects management. Making the LUF real will require measures to bring Alberta's oil and gas regime into line with the new land use system.

A third major area of concern, also acknowledged in the Draft LUF, is the management of recreational land use and access on public lands. Inadequate access management on public lands is an important obstacle to protecting ecological and social values that are likely to be identified as important in regional land use plans. Although the government already has some tools for access management, they have not been effectively used to date. This pattern of failure must change if the LUF is to succeed.

Finally, the absence of flexibility to deal with existing land and resource dispositions will be a major challenge for the LUF, as it was for previous land use initiatives in Alberta such as protected areas planning under Special Places 2000. The Draft LUF acknowledges this issue but provides few details on policy tools. The LUF should include mechanisms for ensuring both flexibility and fairness in adjusting existing dispositions when a business as usual approach would unduly restrict planning options.

Supportive Policies

Policy direction and institutional design are essential for the success of the LUF, but making it real will also require a supportive policy context. Measures in the following six areas will be essential.

1. Capacity for cumulative effects modelling and spatial analysis using geographic information systems is needed to support decision making by allowing planners to

[2] Draft LUF, p. 25.

understand and communicate the interactive effects of various land uses and management levers at the landscape scale.

2. Tools for monitoring and adaptive management need to be developed to support the LUF, including a suite of Genuine Progress Indicators and a transparent process for tracking these indicators and feeding the results of this monitoring into planning and decision making though an adaptive management loop.
3. The Draft LUF refers to the development of a plan for provincial parks to "address the gaps associated with conserving and protecting the biodiversity of Alberta's land base" but provides few details of the government's vision for protected areas, the principles for selecting these areas, or the process to ensure that gaps in Alberta's protected areas system are filled before conservation options are foreclosed by other land use decisions.
4. The LUF should be integrated with existing and emerging strategic initiatives such as Water for Life, the Clean Air Strategy, the Climate Change Strategy, the Comprehensive Energy Strategy, the Plan for Parks and the Biodiversity Strategy by policies that ensure alignment on key objectives and effective implementation through the governance structure established by the LUF.
5. Interim measures will be needed to maintain land use values and options and to avoid a development rush during the planning process in areas of the province where important values are at imminent risk (e.g., northeast Alberta, southern east slopes).
6. Making the LUF real will require a concerted effort to build institutional capacity and a significant new and sustained funding for the core LUF functions and for support for regional planning from elsewhere in the government.

Good Governance

The durability and credibility of the LUF will depend on adherence to general principles of good governance, including effective public and stakeholder involvement, transparency and accountability in decision making, and systematic performance monitoring. The main roles of the LUF are to define desired land use outcomes and to create the plans and processes needed to achieve them. The public and stakeholder component of the LUF should provide input on both of these topics. Because of the hierarchical structure of the LUF, this input will be required at multiple levels, from provincial down to subregional.

The Draft LUF states that land use decisions will be transparent and accountable, but provides few details about the practical implementation of these guiding principles. A genuine commitment to these principles should be demonstrated through the rules of the game for planning and decision making and in the design of LUF institutions. These principles should also be promoted by requiring regular LUF implementation audits prepared by independent experts. These audits could also include a broader sustainability assessment of land use in Alberta.

Legal Foundation

Strong implementing legislation is essential to making the LUF real because the structural problems that that this initiative is intended to address require legal solutions. Fragmented and incremental decision making stem from departmental mandates and decision-making processes

that are rooted in existing laws and institutions. Legislation is also essential to provide continuity and durability for the LUF and it will be a litmus test for the government's commitment to this initiative.

Conclusion

The LUF has the potential to be one of the most significant policy and legislative initiatives for land and resource management in the history of Alberta. The LUF should set landscape-scale objectives for Alberta at the provincial and regional scales, accepting the fact that we can't do everything, everywhere, all the time. It should also establish specific management thresholds and limits on total impacts, along with the policy tools and institutional capacity to ensure compliance with those limits. Obstacles to integrated planning and cumulative effects management must be removed, supportive policies developed and the system as a whole needs to be infused with principles of good governance and built upon a solid legal foundation. The Draft LUF points Alberta in the right direction, but significant actions in each of these areas will be necessary to make the LUF real.

1. A Good First Step

Every journey begins with a single step, and Alberta's Draft Land-use Framework (LUF), released on May 21, 2008, is an important first step toward the significant reform of Alberta's badly outdated system of land and resource management.

The Draft LUF states: "We have reached a tipping point, where sticking with the old rules will not produce the quality of life we have come to expect."[3] In it, the Government of Alberta proposes six strategies to address the "unprecedented pressures on Alberta's landscapes."[4]

1. Establish six new land use regions with a requirement to develop regional plans for each.
2. Establish a new Cabinet committee to oversee implementation of the LUF, a Land-use Secretariat and a multi-stakeholder Regional Advisory Council for each region.
3. Use a cumulative effects approach at the regional level to manage the impacts of development on air, land, water and biodiversity.
4. Develop new policy tools for conservation and stewardship on private and public lands.
5. Establish an information, monitoring and reporting system to support planning and decision making.
6. Include Aboriginal peoples in land use planning.

The Draft LUF identifies metropolitan planning in the Capital and Calgary areas and the Northeast and Southern Alberta Regional Plans as immediate priorities. It also promises to address significant policy gaps in several areas, including the issuance of Crown mineral rights, the fragmentation and conversion of agricultural land, the establishment of transportation and utilities corridors, the management of recreational use of public land, and the conservation and protection of Alberta's land base.

This major policy initiative, announced after two years of public and stakeholder consultation, received considerable support from a broad range of stakeholder groups, including representatives from industry, the environmental community and municipal governments.[5] The multi-stakeholder working groups that provided input to earlier stages of the LUF initiative endorsed the government's broad policy direction and the principal elements of the proposed land use system at meetings held in May and June, 2008.

---

[3] Government of Alberta, *Draft Land-use Framework*, May 21, 2008 (www.landuse.gov.ab.ca), p. 1 (Draft LUF).

[4] Draft LUF, p. 3.

[5] Canadian Parks and Wilderness Society and Pembina Institute, *Perspectives on Alberta's New Land-use Framework* (backgrounder), www.pembina.org/pub/1637; Jason Fekete and Renata D'Aliesio, "Land use plan needed now: critics; Tory blueprint to be adopted over four years," *Calgary Herald*, 22 May 2008, p. A1.

The significant cross-sectoral support for the LUF initiative is a strong indication that Alberta's current system for land and resource management is not working for many Albertans and that the new policy is headed in the right direction. The government's consultations as part of the LUF initiative revealed remarkable consistency on important issues.[6] The need for greater provincial leadership on land use issues was a common theme. There is broad consensus that the government should move decisively to fill the regional planning vacuum and create an integrated decision-making system that can manage cumulative environmental impacts. Many respondents "emphasized that land use planning decisions should seek to ensure the long-term sustainability of Alberta's land base and water resources" and that "the protection of ecosystems, biodiversity, wildlife habitats and watersheds must play a more central role in all land use management decision making."[7] The strategies proposed in the Draft LUF have the potential to address these widely held concerns if they are implemented effectively.

Positive Policy Direction

The strengths of the Draft LUF include

- acknowledgement that Alberta's existing system for land and resource management is inadequate to address current and future land use challenges and that significant changes to the structure of decision making are needed;
- commitment to regional planning as the centerpiece of an integrated system of policy, planning and decision making for land and resource management;
- commitment to outcome-based planning and decision making, applying a triple bottom line approach that balances economic, social and environmental values;
- commitment to using quantitative thresholds and limits to define the acceptable amount and intensity of development that is consistent with meeting the environmental, social and economic objectives specified in land use plans;
- commitment to establishing a new governance structure, including a new Cabinet Committee, a Land-use Secretariat and Regional Advisory Councils that will be engaged in regional planning;
- commitment to deploying an expanded set of policy tools to promote conservation and stewardship on private and public land;
- commitment to an enhanced information and knowledge system to provide the information, monitoring and evaluation needed for good planning and decision making and for adaptive management and continuous improvement within the land use system;
- commitment to supporting the new land use system by addressing important issues and policy gaps in areas such as mineral rights issuance, access management, parks and protected areas, and the conversion and fragmentation of agricultural land.

The Honourable Ted Morton, the minister leading the LUF initiative, has also promised new legislation to establish the legal foundation for the LUF.

---

[6] *Provincial Land-use Framework Initiative Cross-sector Forum, Summary Report,* (December 2006) (www.landuse.gov.ab.ca/docs/RD%20Summary_screen.pdf); *Land-use Framework Workbook Summary Report,* (October 2007) (www.landuse.gov.ab.ca/docs/LUF%20Summary%20Report.pdf).

[7] *Land-use Framework Workbook Summary Report,* p. 2.

The policy proposed in the Draft LUF is therefore headed in the right direction. While the Draft LUF needs some refinement and should have several important gaps addressed before it is finalized,[8] it accurately identifies the problems and includes many of the key elements of the solution. This necessary and welcome first step is not, however, sufficient to ensure arrival at the intended destination.

[8] Steven A. Kennett & Richard R. Schneider, *Land-Use Framework Report Card: A Checklist-Based Evaluation of Alberta's Draft Land-use Framework*, Canadian Parks and Wilderness Society and Pembina Institute, 12 June 2008 (www.pembina.org/pub/1653).

2. Making It Real

The challenge facing the LUF initiative over the coming months is to ensure that the good intentions in the Draft LUF result in meaningful change on the ground. The Draft LUF recognizes that Albertans are no longer satisfied with the status quo, but anyone familiar with the history of land and resource use in Alberta knows that the existing land use system is firmly entrenched in law, policy and decision-making processes and in the organizational cultures of some government departments and stakeholders. Support for "business as usual" can be expected from powerful interests that benefit from the status quo, particularly when they are confronted with the inevitable choices and trade-offs that will be needed to shift land use in Alberta to a sustainable trajectory. Broad policy statements alone will not be sufficient to change this reality.

To meet the challenges of "making it real," the LUF initiative needs to remain focused on the ultimate destination, the obstacles to be overcome, and the path forward beyond the release of the LUF. It must be guided by core objectives and principles. Lessons from the failure of past initiatives must be heeded. An implementation roadmap must be in place and the government must demonstrate that it has the political will and organizational capacity to take the critically important next steps.

Objectives

Fundamental reform of Alberta's land use system is a complex task, but the basic objectives are easily understood. These objectives are shaped by the underlying problems, which are described in *Alberta by Design: Blueprint for an Effective Land-Use Framework* (see text box).[9]

Alberta's Current System Is Broken

There are two fundamental reasons why Alberta is on a path to declining quality of life and unsustainable development. Both reasons highlight the need to re-think our land use objectives and how we achieve them. The first is an inappropriate focus on short-term economic growth, as measured by indicators such as gross domestic product (GDP), in place of broader measures of success related to quality of life and long-term sustainability. The second is a management philosophy and decision-making infrastructure incapable of managing expanding land uses on a finite land base. We lack the tools needed for integrated planning, managing cumulative impacts and dealing with trade-off decisions.

— *Alberta by Design: Blueprint for an Effective Land-Use Framework*, p. v.

[9] Steven A. Kennett and Richard R. Schneider, *Alberta by Design: Blueprint for an Effective Land-Use Framework*, Canadian Parks and Wilderness Society and Pembina Institute, February 2008 (www.pembina.org/pub/1590).

Defining these two fundamental problems leads to the two core objectives that relate to triple bottom line decision making and cumulative effects management.

1. Making triple bottom line decision making real requires a fundamental redefinition of success to ensure that a concern with overall quality of life and long-term sustainability permeate all aspects of planning and decision making relating to land and resource use in Alberta.
2. Making cumulative effects management real requires a new planning and decision-making system that is capable of *setting and achieving landscape-scale objectives* in a context where multiple land and resource uses affect land use values.

Guiding Principles

To achieve these objectives, the LUF should allow Albertans collectively to define their desired outcomes and make decisions about priorities and trade-offs. Recognizing the full range of economic, social and environmental values and respecting environmental limits, the LUF must accept that we can't do everything, everywhere, all the time. It should also establish mechanisms for guiding activities to ensure that our agreed upon outcomes are achieved. The end result should be a shift from reactive and fragmented decision making on individual resource dispositions and projects toward proactive and integrated landscape management. These concepts are captured in the following five guiding principles for the policy and planning framework:

1. **Ensure Genuine Progress.** Improving overall quality of life and ensuring long-term environmental, social and economic sustainability (the triple bottom line) should be the primary policy objectives for land and resource management. They should replace the current focus on maximizing economic growth as defined by narrow indicators such as gross domestic product.
2. **Public Engagement to Define Genuine Progress Indicators.** Quality of life should be defined in terms of clear and measurable desired outcomes that reflect the full range of values and interests of Albertans. The processes used to determine these desired outcomes should be open and transparent, and should have procedural guarantees for effective public participation and mechanisms for accountability.
3. **Our Land Base Is Finite.** It is not possible to achieve all desired outcomes in all places all the time. Therefore, the policy and planning framework should include mechanisms for setting priorities, defining limits of acceptable impacts, and making decisions about trade-offs.
4. **Landscape Scale Management Across Sectors.** The policy and planning framework should enable Albertans to achieve landscape-scale objectives and manage cumulative impacts when multiple activities occur on the same landscape. Promoting integrated decision making across different types of land uses by breaking down sectoral and departmental silos is paramount. The policy and planning framework should also include the legal and institutional linkages needed to guide specific decisions on land and resource allocation and to review and regulate individual projects and activities.
5. **Market Failures Corrected.** Reliance on market forces should be tempered by the recognition of market failures and the need for public policy to correct these failures. Notable market failures include its inability to account for the externalized environmental

and social costs of development, and the tendency of some market-based decisions to ignore or under-valuing non-market values, including the benefits conferred by Alberta's natural capital.

Lessons from Past Initiatives

The history of land use initiatives in Alberta over the past several decades has important lessons for the LUF. Positive first steps have been taken before, only to yield disappointing results. For many stakeholders, betting on the success of the LUF at this stage would require a significant leap of faith — the triumph of hope over experience.

Many previous land use initiatives, such as the Alberta Forest Conservation Strategy, the Regional Sustainable Development Strategy for the Athabasca Oil Sands Area, the Northern East Slopes Strategy and the Integrated Resource Management Initiative, appeared to be headed in the right direction at the outset, but they ultimately failed because of poor design and inadequate follow-through at the implementation stage.[10] What these initiatives had in common were statements of good intentions and broad policies that paid lip-service to the general principles of integrated planning. What caused them to fail was a combination of the following deficiencies:

- **The absence of mechanisms to promote integration in government institutions and decision-making processes.** Integration initiatives were forced to fit their square peg into a round hole. In particular, the proponents of regional integration had to work with provincial government departments that were pursuing narrowly defined and conflicting mandates in the absence of linkages needed for hierarchical decision making.
- **The absence of a statutory framework to define and support the process of land use planning.** Without clearly defined procedures, back-stopped by mechanisms to ensure compliance and accountability, planning initiatives were allowed to fade quietly into obscurity or to become mired in intractable multi-stakeholder processes once difficulties were encountered.
- **The absence of legislation and political will necessary to withstand challenges from the trade-offs inherent in integrated planning.** Simply put, the strategies and plans that were developed had no teeth. They could be, and eventually were, circumvented or simply ignored.

This record of failure cannot be allowed to repeat itself for the LUF — the stakes for Albertans are too high.

[10] Steven A. Kennett, 2002. *Integrated Resource Management in Alberta: Past, Present and Benchmarks for the Future*, CIRL Occasional Paper #11 (Calgary: Canadian Institute of Resources Law), February 2002 (www.cirl.ca/pdf/OP11Benchmarks.pdf); Richard R. Schneider, *Alternative Futures: Alberta's Boreal Forest at the Crossroads*; Steven A. Kennett, *Closing the Performance Gap: The Challenge for Cumulative Effects Management in Alberta's Athabasca Oil Sands Region* (Calgary: Canadian Institute of Resources Law), May 2007 (cirl.ca/files/cirl/OP18Athabasca.pdf).

Implementation Roadmap

The remaining sections of this paper present an implementation roadmap for making the LUF real. The proposed next steps are directed toward

- setting landscape-scale objectives at provincial and regional levels;
- achieving those objectives through a management strategy to address cumulative impacts and through the operational integration of decision making;
- removing important obstacles to implementing the LUF;
- establishing supportive policies in key areas;
- applying principles of good governance;
- enacting new legislation to provide a legal foundation for the LUF.

Making the LUF real will require tangible actions in each of these areas.

3. Setting Objectives

The LUF's adoption of the triple bottom line and commitment to outcome-based management represent a paradigm shift in Alberta's approach to land management. If these core principles of the LUF are implemented effectively, maximizing economic growth (i.e., gross domestic product) and short-term revenue will no longer be the dominant criteria for land use decisions. Not only will environmental and social impacts be a much more significant part of the decision-making equation, but land use choices will reflect the fact that the social and economic well-being and the quality of life of Albertans depend in large part on an environmental "bottom line" that includes clean air and water, healthy ecosystems, and the sustainable management of Alberta's natural capital and renewable resources.

By implementing these principles, the government will be able to turn the corner on the current practice of allowing the future of Alberta's landscapes to be defined through incremental, project-by-project decision making within a planning vacuum. Fundamental changes to the way the government sets land use objectives will be required to implement these new principles. Working out the details of these changes at both the provincial and regional scales is a critically important next step for the LUF.

3.1 Provincial Outcomes

The importance of the government's commitment to outcome-based management as a matter of principle cannot be overstated. However, this aspect of the LUF will not be meaningful until the general notion of balancing economic, environmental and social outcomes is translated into well-defined directives for regional planning. A major course correction will be needed to attach much greater weight to long-term environmental sustainability and quality of life when setting land use outcomes.

The process of defining broad provincial outcomes is primarily a task for the Cabinet Committee and Land-use Secretariat. It cannot be delegated to the regions for the following reasons:

- Setting outcomes and land use priorities for a region may have important economic, environmental and social implications for the province as a whole if they affect a major economic driver (e.g., oil sands development, agriculture, forestry, tourism), the management of a provincially or nationally significant environmental resource (e.g., major watershed, environmentally significant area, endangered species) or the provision of social and economic infrastructure in areas of provincial responsibility (e.g., transportation, health and social services).
- In some instances, there may be important transboundary issues between regions. Outcomes established for one region may have positive or negative implications for adjacent regions. Regional priorities may also reflect inter-regional trade-offs (e.g., intensive development in parts of one region are balanced by development limits to protect ecological integrity in another region).

- The incentive structure for constructive collaboration on detailed planning by members of the Regional Advisory Councils and participants in the broader public and stakeholder consultations will depend on clear guidance regarding provincial outcomes. If outcomes are clearly defined, the incentive is to find ways of achieving these outcomes that best meet the needs and interests of the various stakeholders. If these outcomes are not defined in advance of detailed planning, everything is up for debate and strong incentives exist to dig in heels to protect established positions.
- There is no point in allowing a regional planning process to develop a plan that has little or no chance of Cabinet approval because it is out of line with the government's major policy priorities. Furthermore, allowing a planning process to deviate too far from the government's major policy directions increases the likelihood that powerful interests will successfully end-run the proposed plan through direct lobbying to Cabinet, thereby undermining the credibility of the planning process itself.

The starting point for defining land use outcomes, both provincially and regionally, should be an acknowledgement that our land base is finite. There are limits to what Alberta's land and water can provide to society, so defining outcomes is really about making choices — reconciling what we want with what is possible. This process has three interrelated components, described below.

3.1.1 Articulating Values

Competing values cannot be prioritized until the values themselves have been clearly articulated. This step could be accomplished by developing a list of indicators that capture the full suite of public values related to Alberta's land, water and air across all three pillars of the triple bottom line. Indicators express values (i.e., what we care about) in terms of attributes that are concrete and measurable. They do not define desired outcomes but provide the foundation for that process to occur. Once established, the list of indicators should remain relatively stable over time.

Much of the ground work needed to define a suite of provincial indicators for use with the LUF has already been done. Input from the LUF working groups (especially the monitoring and evaluation group) and public consultations should be sufficient to construct an initial list of indicators. The Genuine Progress Indicators developed by Mark Anielski would also help jump-start the process.[11] Public feedback on the draft list of indicators, together with additional input from the LUF working groups, should be sought before the indicators are finalized.

Once the indicators have been selected they should be given a high profile within the LUF process as it rolls out in coming years. A monitoring program should be established to track the status of the indicators, and regular reporting via the Internet should occur.

3.1.2 Exploring Alternative Futures

Living on a land base with finite capacity means that not all desired outcomes can be achieved in all places at all times. In Alberta, this reality has manifested itself as a steady deterioration in

[11] Mark Anielski, 2007. *The Economics of Happiness* (Gabriola Island, B.C., New Society Publishers, 2007); Amy Taylor, *The Alberta GPI Summary Report* (Pembina Institute, September 2005) (www.fiscallygreen.ca/gpi/doc.php?id=193).

environmental health as economic outcomes generally won out over environmental outcomes whenever conflicts occurred. In addition, the mitigation-based approach to environmental management has been profoundly ineffective in preventing insidious losses through cumulative impacts. Under the triple bottom line approach, economic, environmental and social outcomes will need to be rebalanced through proactive outcome-based planning.

Outcome-based planning needs to take into account desired outcomes, the current state of the land base, historical and projected trajectories of all major land uses, interactions between land uses, external drivers such as climate change, and the intrinsic capacity of the land to sustain the demands placed on it. Computer models such as ALCES® have been used at the regional scale to grapple with these factors in the context of alternative scenario modelling.[12] It would be advisable to conduct similar scenario analyses at the provincial level to inform decision making concerning provincial and regional outcomes. The better able we are to define outcomes that are achievable, the more likely we are to actually achieve them. The modelling process will also illustrate how the available management levers affect economic, environmental and social indicators and help pinpoint where the key trade-offs lie. Such knowledge will improve decision making and help explain to stakeholders the rationale for the decisions that are made.

It is important to conduct scenario modelling at the provincial scale, and not just at the regional scale, because innovative scenarios applicable at the provincial scale may hold the greatest promise for overall success. For example, it would be interesting to explore the merits of a zonation approach, applied at the provincial level, relative to the current approach of multiple use.

3.1.3 Integrating Land Use Policy

Further complicating the entire process is the fact that we are not building a new structure but renovating an old one. Alberta already has a broad suite of laws, regulations and policies on land use issues. This fact presents several challenges for implementing the LUF. First, the existing directives were developed during a period when economic growth was the overriding objective of land use decision making. Instead of providing a suitable foundation for the triple bottom line, existing policy is skewed toward achieving economic objectives. Second, existing policy and law were developed in the absence of an integrating framework. Policy conflicts and ambiguity about land use priorities abound. In part, this reflects Alberta's history of allocating responsibility for land use to multiple government departments with differing mandates.

The Draft LUF provides no indication of how conflicts, gaps and integration of policy will be handled. In fact, the policy component of the Draft LUF is effectively missing. Other than the basic notion of the triple bottom line, there is little guidance on what land use outcomes the LUF is actually intended to achieve. Nor do we know how the LUF will be integrated into the existing policy and regulatory system and how all the pieces will fit together. These are critical issues that still need to be addressed. The best approach would be to develop a land use policy statement in parallel to the LUF, instead of trying to combine everything in one document.

[12] Sustainable Ecosystems Working Group, *Terrestrial Ecosystem Management Framework* (Cumulative Environmental Management Association, 2008).

The objective of the new land use policy statement and supporting legislation should be to provide an integrated and internally consistent foundation for regional planning. The province may continue to have many different policies covering various aspects of land use, but the LUF will serve as a funnel through which all land use policies must pass on their way to implementation in the guise of regional plans. This process of policy integration, which is central to the LUF, must be done right.

An analysis of existing land use law and policy will need to be undertaken as a first step, to take stock of what we have, identify conflicts with the LUF vision and triple bottom line, and flag internal inconsistencies. A process of reconciliation and integration should follow, informed by input from the LUF consultations (see 3.1.1) and the analysis of alternative future scenarios (see 3.1.2). It is at this stage that trade-off decisions will need to be made and policy gaps filled, including raising the profile of environmental and social values from their current levels. To resolve conflicts, priorities will need to be clarified and consequential amendments made to existing laws and policies.

The end result should be a policy statement that defines measurable objectives (desired outcomes) for all of the provincial land use indicators (public values). The statement should also provide the rationale for trade-off decisions and prioritization, and an explanation of how the objectives link back to pre-existing land use policies. Finally, the primacy of LUF objectives should be clearly established so that land users and government departments do not try to make an end run around regional plans in order to achieve objectives of specific interest to them.

Ideally, a coordinated set of provincial land use policies should be clearly articulated before regional planning begins. Given the urgent need to begin the planning process, however, it seems likely that provincial-level direction will be developed in parallel with the first two regional plans. This approach to setting outcomes is likely to be messy, but it may ultimately prove to be beneficial because insights gained through regional planning may strengthen the provincial process. The danger, however, is that provincial tasks may not be completed, leaving the province with a hodgepodge of regional outcomes and no effective and visible policy coordination and accountability for land use outcomes at the provincial level. The mandates of the Cabinet Committee and the Land-use Secretariat, as specified in LUF legislation, should be to ensure policy coherence and guarantee accountability for outcome setting at the provincial level.

Although Cabinet leadership and sign-off are essential to provide top-down strategic direction to regional planning, the process for policy reconciliation and identifying desired outcomes should be participatory, inclusive and transparent, not arbitrary or closed.

3.2 Regional Outcomes

Setting regional outcomes is the principal task of the LUF's integrated planning process. It should begin with the broad vision and expectations for the region as defined in terms of reference and the initial stages of planning. On this basis, regional plans should drill down to the much more specific management objectives and limits on cumulative impacts that are needed to guide operational decisions about land and resource use.

3.2.1 Terms of Reference for Regional Plans

The development of terms of reference for the regional plans should be an extension of the process used to develop provincial outcomes. The focus should again be on defining what success looks like, in terms of measurable outcomes. There should also be some guidance on process issues, such as requirements for public input, completion date and the use of certain management tools (e.g., zonation).

Some regional outcomes are likely to be synonymous with provincial outcomes and shared by all regions. However, in some cases regions will be expected to deliver different outcomes because of intrinsic regional differences or trade-off decisions made at the provincial level. For example, the northeast Alberta plan may be expected to emphasize the extraction of petroleum resources, whereas the southern Alberta plan may emphasize outcomes related to water supply. In these cases provincial outcomes are achieved through the collective contribution of all plans.

Cabinet will have final authority to determine the appropriate balance between regional and provincial interests within the terms of reference for regional plans, but that decision should clearly reflect the values, priorities and knowledge of regional stakeholders and the public at large. It should have direct input from the Regional Advisory Councils and a provincial advisory group or other mechanism to provide stakeholder advice on policy reconciliation. Broad stakeholder and public consultation should also be included at this stage.

The process for this input should be well defined. Draft terms of reference for regional plans should be circulated for public and stakeholder comment before they are finalized. The final terms of reference should include a decision document that explains the rationale for the policy choices and outcomes selected and decisions concerning land use priorities and trade-offs. Depending on the level of detail provided in terms of reference, some further elaboration of the regional land use vision and specific outcomes may occur at the early stages of planning. Opportunities to test this refinement of outcomes with Cabinet should be provided in order to ensure alignment between provincial and regional priorities. A feedback loop should also be included in the planning process so that terms of reference can be revisited if the regional planning process identifies significant obstacles on key issues in the direction provided by Cabinet (e.g., problems identified through regional scenario modelling or policy collisions that were missed in the policy reconciliation process).

The importance of terms of reference to the success of the LUF should not be underestimated. Cabinet and its advisors must provide specific guidance on desired outcomes, land use priorities and trade-offs so that the regional planning processes can focus on how to achieve those outcomes on the ground. Leaving the Regional Advisory Councils and the Land-use Secretariat to undertake planning in a policy vacuum is a recipe for failure.

3.2.2 Regional Management Objectives and Limits

Once Cabinet has determined broad outcomes through policy reconciliation and the approval of terms of reference for regional plans, the regional planning process should focus on setting more specific management objectives such as quantitative targets, thresholds and limits to guide decisions about the amount, intensity and distribution over space and time of specific land uses (e.g., recreation, oil and gas, residential development). In other words, the plans should establish

specific and practical objectives so that decisions about the human activities that are *managed* achieve the outcomes that are *valued*.

This process should be let by the Regional Advisory Council and the planning team within the Land-use Secretariat, with opportunities for public and stakeholder input. The product of this stage is a regional plan that provides clear answers to specific questions (see text box) that will determine how land uses unfold on the landscape over space and time.

Examples of Questions for Setting Regional Objectives

What limits on the scale, intensity, location and impacts of land uses that drive landscape-scale change in the region (e.g., oil and gas development, forestry, recreational access, residential development, transportation infrastructure) are needed to protect important regional environmental, social and economic values and outcomes (e.g., caribou or other wildlife populations, fescue grassland, adequate community infrastructure and social services, economic stability and diversification in the region, quality of life as measured by genuine progress indicators)?

What indicators relating to development and its impacts are most relevant to the landscape-scale outcomes identified for the planning region (e.g., development footprint, water consumption, linear disturbance density, rate of population growth)?

What metrics should be used for thresholds and limits to ensure that they are understandable, are measurable and can be applied directly to management decisions?

What specific management thresholds and regulatory limits should be adopted to maintain cumulative impacts at levels that are consistent with environmental, social and economic objectives for the planning region?

What other planning tools, such as land use zoning using a TRIAD approach, can be used to manage cumulative impacts and achieve landscape-scale objectives in the planning region?

Cumulative effects models and spatial planning tools should be used to explore scenarios for land and resource use and to inform the discussion about which management options are consistent with intended outcomes and which fit best with regional priorities. This land use information, including the results of scenario modelling, should be publicly available. Reconciliation and prioritization of outcomes may be necessary if modelling suggests that outcomes are not all mutually consistent and achievable. Thresholds, limits and other spatial and temporal constraints on cumulative impacts should be developed using indicators that are meaningful for land use decisions.

The discussion of cumulative effects management in the Draft LUF includes a commitment to developing "a process to identify appropriate thresholds, measurable management objectives, indicators and targets for the environment (air, land, water, biodiversity), at the regional levels, and where appropriate at the local levels" and affirms that "Land-use planning and decision making will operate within these defined thresholds."[13]

Making the LUF real requires much more clarity regarding the process for setting thresholds and limits. The term threshold is used in the following discussion to refer to a pre-determined level of

[13] Draft LUF, p. 18.

activity or impact that triggers a management response or where adverse environmental, social or economic consequences become unacceptable. A limit is a maximum level of activity or impact that is ultimately enforced through regulation. Limits could also be defined in spatial terms through land use zoning or temporally through seasonal restrictions or specified sequencing for activities.

The rationale and requirement for incorporating management thresholds and regulatory limits into regional land use plans should be built into the LUF through legislation, policy and incorporation into terms of reference for regional plans. The use of thresholds and limits for cumulative effects management is essential for the following reasons:

- **Limits as a social and biophysical reality.** There is growing recognition globally that environmental limits exist, whether defined in terms of absolute resource availability (e.g., water shortages), limits in carrying capacity of ecological systems, or limits of socially acceptable change. There is also clear evidence that cumulative impacts can transform ecosystems beyond limits of biophysical systems and beyond limits of socially acceptable change (e.g., species extinction, habitat degradation, climate change).
- **The end of the frontier mentality.** The adoption of thresholds and limits signals an fundamental shift from the illusion of endlessly exploitable resources to a recognition that human impacts cannot expand indefinitely on a finite land base and on resources that have finite carrying capacities.
- **A proactive approach to cumulative effects.** Thresholds and limits respond to clear evidence of the potential for the accumulation of individually insignificant actions to bring about the landscape-scale transformations with major unintended consequences for environmental, social, cultural and economic values. Implementing policy and management practices that reflect thresholds and limits before the scale of impacts reaches unacceptable levels is a proactive and precautionary approach to environmental management.
- **Corollary of setting objectives at the landscape scale.** If a society wants to set objectives and implement outcome-based environmental management in a context where outcomes may be adversely affected by increasing cumulative impacts, it will need to set limits on those impacts.
- **Recognition that project-specific incrementalism is not a satisfactory approach to environmental management in the context of rapid growth in impacts.** Decision-making processes that seek to improve the design and mitigation of individual projects may not be sufficient to guarantee acceptable outcomes if the pace and intensity of development overwhelm the gains that can be achieved through improved project design, best available technology and mitigation.
- **Focus on impacts rather than direct restrictions on "development" or "growth"** ***per se***. While some types of limits may have significant impacts for certain types of development, many activities may be possible within limits if these activities are undertaken in ways that minimize or eliminate their impacts. In fact, the implementation of thresholds and limits can be a significant driver for innovation. A good example is the development of low-impact and no-impact seismic technology to enable geophysical exploration to occur without creating large-scale linear disturbances.

The key point here is that the use of thresholds and limits follows logically and inevitably from a genuine commitment to consciously and proactively set landscape-scale objectives that reflect environmental, social, cultural and economic values. In other words, this second stage of regional objective setting is a necessary complement of stage one.

There is no standard formula for setting specific management thresholds and limits.[14] Identifying thresholds and limits for cumulative impacts is a process of social choice informed by

- objectives, values and interests relating to land and resource use;
- science (e.g., dose-response curves relating impacts with effects on valued components and identifying indicators that aggregate and simplify the relationships between management decisions, impacts and valued components);
- traditional and community knowledge;
- economic and social trade-offs (based on scenarios about costs and benefits under various assumptions and including risk analysis and risk tolerance);
- ongoing adaptive management and learning by doing in terms of dose response, trade-offs, etc.;
- the incorporation of flexibility mechanisms and adaptation to changing circumstances.

A full discussion of the factors identified above that inform societal choice on thresholds and limits is beyond the scope of this report. However, the following general comments on trade-offs and risk are particularly relevant to this process.

First, the cost-benefit and trade-off analysis may be complex or relatively simple, depending on the issues, decision-making process and context. Striking the right balance may be complicated if the choice is about how much ecosystem degradation society is willing to tolerate for certain economic gains, or how much foregone economic development to protect certain environmental, social or cultural values.

The choice can be simplified in some circumstances by drawing a clear line, identifying a point at which adverse impacts will not be tolerated regardless of foregone economic gains. For example, thresholds and limits may be set to avoid impacts that create significant risks of severe health effects, catastrophic ecological impacts (e.g., ecosystem collapse due to water withdrawal below instream flow needs), species extinction, and serious degradation to areas of high ecological, social and cultural value. The establishment of protected areas is an example of limit-setting that reflects the primacy of certain values over others. In some cases, thresholds and limits may also reflect absolute resource limits, such as the depletion of surface or groundwater.

Second, the process of setting thresholds and limits requires attention to risk and uncertainty. The interest in using thresholds and limits to manage cumulative effects reflects the recognition that continually increasing the scale and intensity of some types of human activities will bring about

[14] For an accessible introduction to the use of thresholds and limits for cumulative effects management, see: Salmo Consulting Inc., *Developing and Implementing Thresholds in the Northwest Territories — A Discussion Paper* (February 2006) and Steven A. Kennett, *From Science-Based Thresholds to Regulatory Limits: Implementation Issues for Cumulative Effects Management* (March 2006), prepared for a conference on Thresholds: From Theory to Practice, convened by Environment Canada and the Department of Indian Affairs and Northern Development, Yellowknife, NWT, March 13-14, 2006 (www.ceamf.ca/03_reference/Reference_ThresholdWorkshop.htm).

landscape-scale changes eventually — even if science cannot predict exactly the point at which specific changes will occur and even if society has not reached a decision on what specific trade-offs it is willing to accept. The risk that some of these changes may be unanticipated and unacceptable underlies the use of the precautionary principle in environmental management.

The development of management thresholds and limits will involve a process of learning-by-doing for the LUF. The choice of indicators and the levels selected for thresholds and limits may be contentious, but regional planning must follow this path if outcome-based management is to become a reality in Alberta.

3.3 Sub-Regional and Sectoral Planning and Decision Making

The setting of provincial and regional objectives in the LUF will need to be connected to sub-regional and sectoral planning and to operational decisions regarding land and resource use. Plans for sub-regions may be developed where issues are more appropriately dealt with at that scale. This possibility is already recognized in the Draft LUF through its reference to planning initiatives in the Capital and Calgary areas. Likewise, sectoral planning will continue within the LUF. Forest management plans, access management plans and transportation planning will all have important roles in the implementation process under the regional planning umbrella.

Sub-regional and sectoral planning and decision making will involve the setting of more specific objectives than those identified in the two stages of the LUF's regional planning process. This relationship should be defined through a legal hierarchy and a functional division of responsibility based on the level of detail required. Sectoral silos cannot, however, be allowed to re-assert themselves at the sub-regional level in a way that jeopardizes the ability to achieve the outcomes embodied in regional land use plans. Regional planning provides the integrative mechanism for defining policy priorities and desired outcomes and translating them into management thresholds and regulatory limits that apply directly to land and resource uses. At this point, the challenge of cumulative effects management is to achieve operational integration. The next section of this report outlines two ways to ensure that operational planning and decision making, including project-specific decision making, conform to the principle of management by objective that is central to the LUF.

4. Achieving Objectives

Achieving the objectives set through regional planning presents a significant challenge given the multitude of activities that share Alberta's land base. This section proposes two ways that the LUF can meet this challenge. The first is a management strategy that combines cumulative effects modelling and policy analysis to identify ways of maintaining activity levels and impacts within specified thresholds and limits. This approach is referred to as "bending the cumulative impact curves." Second, the LUF should establish the institutional capacity to deploy that management strategy and to achieve the operational integration of land use decisions.

4.1 Bending the Cumulative Impact Curves

The LUF needs a clear management strategy for implementing thresholds and limits once they have been established. The strategy proposed in this section applies the intuitively simple concept of management by objective to the complex problem of cumulative effects management. It uses graphic representations of the relationships between cumulative impacts and management thresholds or limits, referred to as cumulative impact curves. This approach provides the basis for examining how various policy options can be used to change the trajectory of cumulative impacts over time so that they do not cross management thresholds and regulatory limits. Cumulative impact curves can be used to show historical trends in impacts and to model future scenarios under various assumptions about land and resource uses.

4.1.1 Understanding Cumulative Impact Curves

The starting point for this management strategy is information about the trajectories of cumulative impacts over time under business as usual scenarios and in relation to specified thresholds. These trajectories can be represented graphically by a series of curves that have time on the horizontal axis and a metric of net cumulative impacts (e.g., total land disturbance) on the vertical axis (Figure 1). The vertical scale is "net" impacts because for some impacts there may be factors, such as reclamation or regeneration of disturbed areas, that offset to some degree the new impacts caused by human activity. These cumulative impact curves can be generated through a modelling tool such as ALCES® that aggregates all land uses that contribute to the impact in question and calculates impact trajectories for different land use scenarios.

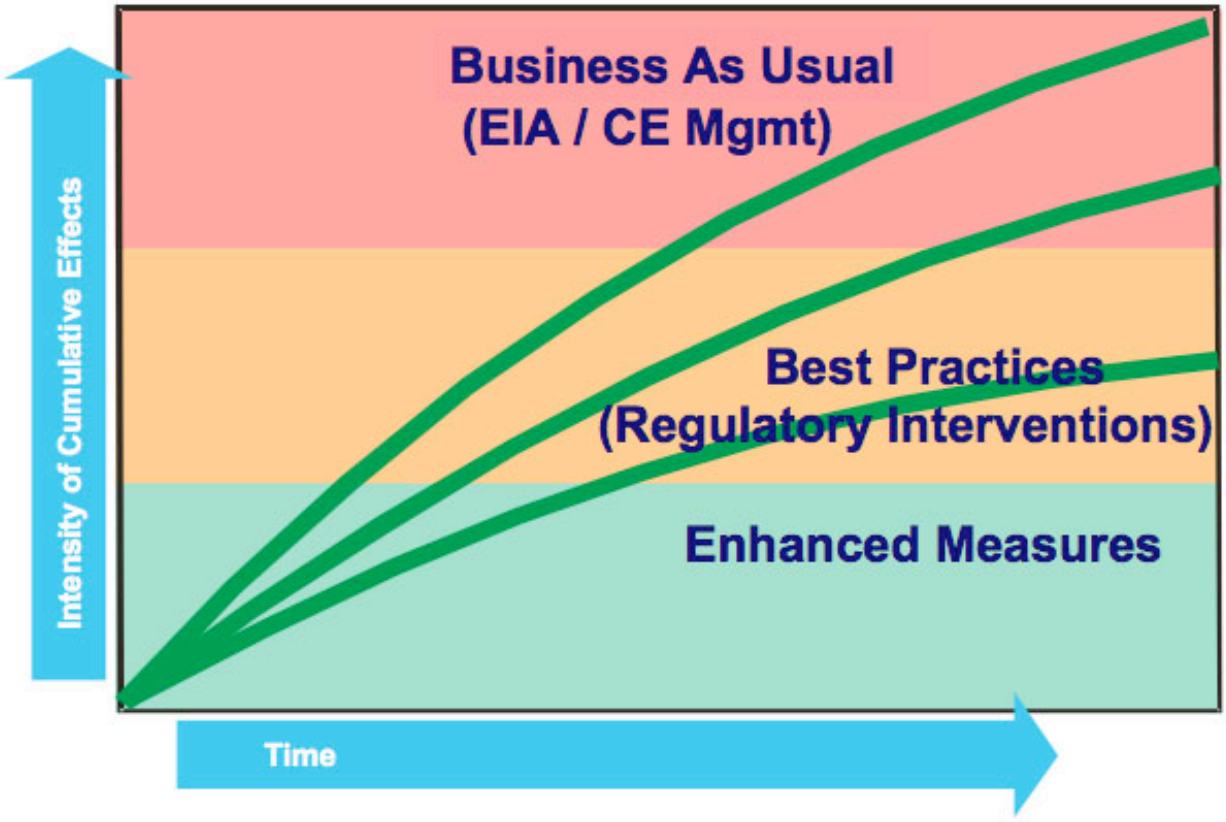


Figure 1: Generalized cumulative impact curve

Source: courtesy of Salmo Consulting Inc.

Management thresholds and limits on acceptable impacts can then be drawn as horizontal lines on each cumulative impact diagram. If a cumulative impact curve is on a trajectory that will cross the thresholds or if it has already exceeded a threshold or limit, then measures are needed to alter the slope of that curve. Success in implementing a thresholds-based approach to managing cumulative impacts occurs when the cumulative impact curves are below the management threshold levels and are horizontal or downward sloping. Put another way, sustainable development can be defined as development that generates horizontal or downward sloping cumulative impact curves below threshold levels for important management indictors.

Cumulative impact curves can help to address some of the principal challenges facing the LUF because they combine the effects of all land uses and plot impact trajectories over time. Modelling shows how fragmented and incremental decisions about land and resource use will affect land use values over time and how these impacts change under different land use scenarios. As these curves approach management thresholds or limits, they show how the accumulation of long-lasting impacts can eventually make it difficult or impossible to add new activities while maintaining cumulative impacts at acceptable levels. Removing existing impacts or increasing the rate of reclamation or decommissioning will reduce the slope of the curve, creating greater flexibility. These curves also show how managing impacts from early entrants, even when total impacts are below threshold levels, has the advantage of reducing the slope of the curve and avoiding the risk that inefficient land use will lock in impacts and block higher value uses as thresholds and limits are approached. The combination of cumulative effects

modelling and policy wedges also provides a way of systematically incorporating new information into outcome-based management. These issues are discussed in more detail in the appendix.

4.1.2 Using Policy "Wedges" to Bend the Curves

The objective of the management strategy for each impact metric (e.g., linear disturbance density, total footprint) is to bend the cumulative impact curve to avoid crossing the ultimate limit on acceptable impacts, or to return below that limit if it has already been crossed. The concept of tiered management thresholds can be applied to trigger appropriate policy and management responses if the cumulative impact curve reaches certain pre-determined levels. Even if the ultimate limit of socially acceptable impacts has not been determined, cautionary markers and management thresholds can be put in place to trigger policy responses to a trend of rising impacts.

Policy options for bending the curves can be represented through wedge diagrams where different policy and management options contribute to changing each curve's slope. A familiar example of this technique is wedge analysis for reducing greenhouse gas emissions (Figure 2). Greenhouse gas management is a complex cumulative effects problem since these emissions come from many sources and a range of policy and management options will be needed to achieve reductions in total emissions. The policy wedges show how each of these options contributes to bending the curve of total emissions.

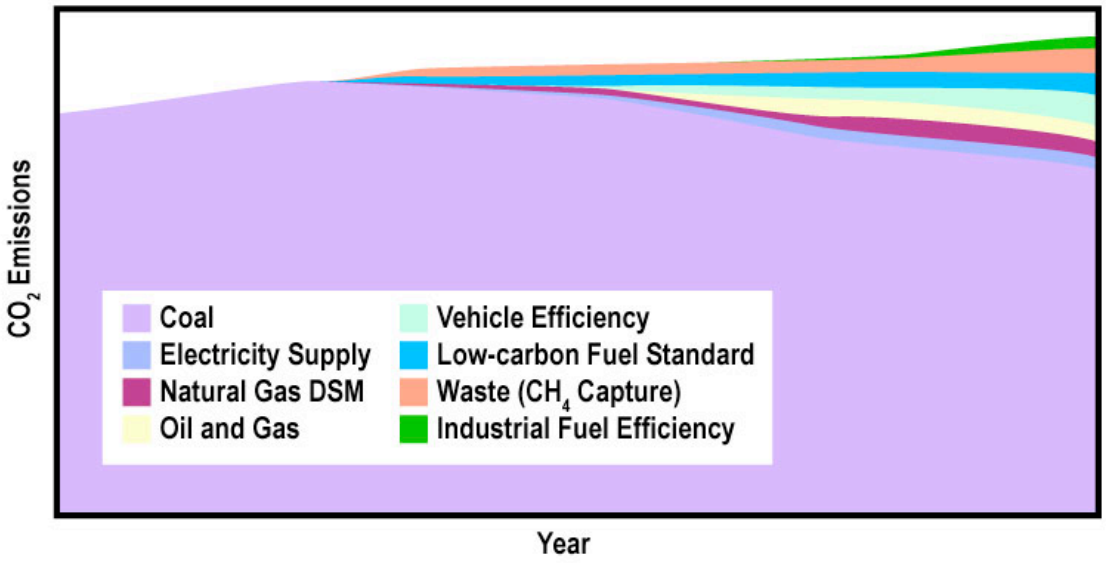


Figure 2: Bending the curve: An illustration from greenhouse gas wedge analysis

The principal determinants of the slope of a cumulative impact curve are the amount, pace and types of activities that are contributing to cumulative impacts, the amount of impact associated with each unit of activity, and any countervailing factors (e.g., rate of reclamation or regeneration) that offset new impacts. The "wedges" show how various changes in policy and management affect these determinants to decrease the slope of the curve. Analysis of historical cumulative impact curves can provide insights into the effect of policy and management decisions and other drivers on the slope. Using a model such as ALCES® to generate future

scenarios that incorporate various assumptions about the determinants of a curve's slope provides a basis for assessing how different policy and management options can contribute to maintaining cumulative impacts under threshold levels.

This analysis, combined with the specific management triggers linked to tiered thresholds, can guide policy and management interventions to alter the slope of the curve. If the curve under business as usual is relatively flat and well below the management thresholds there may be little need to take action. However, a very steep curve, even if below threshold levels, indicates a potential problem and invites attention the factors driving the curve. Particularly if impacts are long lasting, early action to bend the curve may avoid more difficult policy and management choices later on.

4.1.3 Principles for Bending the Curves

A cumulative impact curve provides information on both the likely trajectory of cumulative impacts at a given point in time and its proximity to thresholds or limits. Tiered thresholds provide triggers for graduated policy and management responses that are intended to bend the curve. This strategic framework thus provides decision makers with key information needed to manage cumulative impacts in a proactive manner with the objective of bending the impact curve so that critical thresholds or limits will not be exceeded.

Five general principles can be distilled from the application of this framework to the challenges for cumulative effects management that are discussed in the previous section and in the appendix. These principles should guide implementation of the LUF's thresholds-based and limits-based approach to cumulative effects management.

Take early and cost-effective measures to bend the curves

The first principle is to implement cost-effective measures to bend the cumulative impact curves from the outset of development, minimizing the creation of long-lasting impacts and inefficient land uses that waste the scarce resource of available space within the limit on total impacts. Even if current levels of impacts are well below thresholds and limits, steep cumulative impact curves may be indicative of future problems if there is reason to believe that they will remain on this trajectory under business as usual development.

Avoid hitting the "wall"

The second principle is to avoid hitting the "wall" of critical thresholds (or absolute limits on acceptable impacts). In other words, the implementation strategy should be designed to flatten cumulative impact curves proactively before they reach the critical threshold or limits, rather than simply responding once limits have been reached.

It may be difficult to flatten a steep cumulative impact curve quickly because of rigidities in the economic, political and social determinants of its slope (e.g., long-term investments in capital stock, government policies that are difficult and costly to change, etc.). Dramatic regulatory intervention to reduce cumulative impacts at a threshold point may result in disappointed expectations, economic inefficiency, and equity issues among competing land users. Political will to constrain activities within threshold levels may be difficult to maintain in the face of pressure from interests with a significant stake in the business as usual approaches that are

driving the curve upwards. It is preferable, therefore to achieve a flat or downward sloping cumulative impact curve before critical thresholds are reached.

For these reasons, an implementation strategy for thresholds-based management should include a clear and credible commitment to respecting the thresholds early on in the process so that the expectations (and investments) of land and resource users can be adjusted accordingly. The ability to maintain political, stakeholder and public support for the trade-offs that may be required to maintain cumulative effects within predetermined levels will likely be enhanced if expectations are clear from the outset and measures to bend the cumulative impact curves are initiated early on and adjusted as necessary over time to avoid crossing critical thresholds.

Consider drivers of impacts as well as impact mitigation

The third principle is to pay attention to the underlying drivers of land and resource use when bending the cumulative impact curves. "Drivers" are decisions or systemic influences on the slope of the cumulative impact curves (i.e., key determinants of the type, pace and intensity of development).

For example, attention should be directed to decisions that have the potential to influence future development patterns and associated impact trajectories but that may be taken without adequate consideration of the implications of those patterns for cumulative impacts. Drivers of land use and resource use also include projects or activities that have ripple effects in the form of induced development. For example, construction of a major road network or pipeline in a previously remote area is likely to have both direct and induced effects. The direct effects are, of course, the physical footprint of the project itself and its implications for forest cover, water, wildlife and other values. The indirect effects are the other projects and activities that may occur because that key piece of infrastructure is in place.

Drivers may be important because they can create both incentives for certain development patterns and expectations on the part of industry and other land users that these patterns will occur. If the drivers produce a steep cumulative impact curve, the stage is set for conflicts and difficult choices as that curve approaches management thresholds. It may also be difficult to put the brakes on development at the project review stage if prior policy and planning decisions have produced legitimate economic and social expectations that the activities in question will proceed.

Understanding the implications of drivers for cumulative impacts is therefore an important part of an outcome-based management strategy. In practical terms, decisions that affect potential land use drivers should explicitly consider implications for the cumulative impact curves. For example, the following questions should be asked about decisions on a land use driver such as a major infrastructure development:

- Are the direct impacts of the proposed project consistent with management thresholds (the mitigation question)?
- Is the project economically or socially justified on the basis of subsequent activities that will have important implications for the slope of the cumulative impact curves? and
- Is the project likely to have unintended consequences that affect the slope of the impact curves (e.g., transportation infrastructure leads to increased access, which produces additional impacts or impedes reclamation)?

An implementation strategy that incorporates this type of analysis into planning, land and resource allocation and project review processes will have additional tools for bending the cumulative impact curves before they reach critical thresholds or limits.

Consider the range of intervention points and types of policy instruments to bend the curves

The fourth principle is to consider a variety of intervention points and policy instruments. Opportunities to influence the slope of a curve can be identified at each stage of decision making governing land and resource use: overarching policy, planning, land and resource allocation (e.g., mineral rights issuance), and the review and regulation of individual projects and activities.

There are also a variety of types of policy instruments that can be deployed to bend cumulative impact curves. These include

- planning and regulatory instruments that specify how or with what effect land uses may occur (e.g., prescriptive requirements of best practices, results-based requirements);
- fiscal instruments (e.g., incentives, subsidies); and
- market-based instruments (e.g., incentives and allocation mechanisms that use price signals to influence behaviour).

Tools in each category may be used to affect underlying drivers of the cumulative impact curves and immediate determinants of its slope. Decision makers should think broadly about the range of policy wedges that can be used to bend the cumulative impact curves.

Map policy instruments against tiered management thresholds

The fifth principle is that policy instruments can be mapped against tired management thresholds when developing an implementation plan. In the early stages of development, incentives and cost-effective regulatory requirements could be used to encourage efficient use of land and resources (i.e., uses that minimize footprint or other impacts per unit of activity). These measures could include cost signals, perhaps with a progressively increasing cost as impact levels rise. This approach is analogous to a progressively increasing carbon tax to bend the curve of increasing greenhouse gas emissions. Regulations or a baseline and credit system could also be used to promote or require best practices (e.g., low-impact seismic exploration).

If impacts continue to climb and cross higher management thresholds, more aggressive policy and management measures could be taken to flatten the curve. These could include regulatory requirements to reduce impacts from land uses, such improved technology and management practices, increased reclamation and more effective access management. Regulators could also require multiple land users to coordinate operational planning and decision making in order to minimize total impacts (e.g., sharing roads and other infrastructure). Other options include significant price signals to discourage new disturbance. Attention could also shift to underlying drivers, including measures to slow the rate of new development.

If the cumulative impact curves approach and then reach critical thresholds or limits, more significant measures will be required to maintain impacts at desired levels. These could include the imposition of a “no net impact” policy, implemented through mechanisms such as a cap and

trade system, a full offset requirement, a regulatory roll-back of existing activities creating impacts, or a refusal to approve new impact-creating activities.

Case Study of Policy "Wedges" for Bending the Cumulative Impact Curves: Limiting Linear Disturbance Density and Managing Public Access[15]

The science of landscape ecology shows that increasing density of linear disturbances (e.g., roads, seismic lines, pipeline and transmission rights-of-way, recreational trails, stream crossings etc.) and the closely related increases in human access to the land base can have significant impacts on ecological and social values that may be identified as important in regional land use plans (e.g., fish and wildlife populations, watershed function, landscape aesthetics, some recreational values, traditional Aboriginal land uses). Where the cumulative impact curves for linear disturbance density and human access are increasing, policy options (or "wedges") could be deployed to bend the curves to achieve specified management objectives such as quantitative limits on disturbance density and total length of disturbance, minimum size of undisturbed areas (e.g., blocks of roadless core habitat), or limits on human access. These options could include:

1) Establish optimal transportation grids including: (1) planning the location and construction timetable for transportation corridors in order to minimize impacts and costs while meeting the needs of the various interested parties; (2) specifying the design and maintenance standards that are appropriate for all users of the infrastructure; (3) allocating some or all of the construction and maintenance costs among users; and (4) creating incentives, requirements and operational planning processes so that industry will, to the extent possible, adapt its operational planning in order to make use of common transportation corridors.

2) Establish regulatory requirements that companies operating on the same land base coordinate operational planning and share infrastructure.

3) Establish stronger incentives or specific requirements to adopt "best practices" when creating linear disturbances. For example, a combination of fiscal incentives and regulations could promote the shift to low- or no-impact seismic operations in oil and gas exploration.

4) Establish a policy of "no net increase" in linear disturbance density within specified areas. This policy could be implemented by regulatory limits on new disturbances or through a cap-and-trade allowance system. Additional flexibility could be provided by allowing companies to gain credit for reclaiming existing disturbances and by establishing offset or mitigation banking. This technique would allow government, industry or other land stewards to establish reclamation projects that would then be available through an intermediary (the reclamation bank) to companies in need of offsets for their proposed linear disturbances

5) Establish a roadless areas policy that would identify areas with few or no roads or other access corridors and explicitly recognize the ecological value of these areas when making land use decisions. A roadless areas policy could be linked to protected areas designation or a triad zoning system that includes the creation of "benchmark" ecological reserves on the working landscape. Roadless areas are also compatible with development if activity is planned over a sufficiently long time frame. Integrated planning could direct resource development to particular areas for given periods of time and

[15] Adapted from Steven A. Kennett *et al.*, *Managing Alberta's Energy Futures at the Landscape Scale*, Report prepared for the Alberta's Energy Futures Project, Institute for Sustainable Energy, Environment and Economy (ISEEE), University of Calgary, June 2006 (www.iseee.ca/images/pdf/ABEnergyFutures-18.pdf); Daniel Far *et al.*, *Al-Pac Case Study Report*, Prepared for the National Round Table on the Environment and the Economy (NRTEE), July 2004 (www.nrtee-trnee.ca/eng/publications/case-studies/boreal-forest/alpac-case-study/eng/index-alpac-case-study-eng.htm).

provide for the progressive reclamation of roads and other linear disturbances as the geographic focus of industrial activity shifts. This approach could be used to establish "floating" roadless areas (or areas with limited road access) that could be moved over time across large landscapes.

6) Establish regulatory requirements or fiscal incentives to accelerate reclamation of linear disturbances.

7) Manage the human use of industrial access corridors once they have been created. Restricting the recreational and industrial use of linear disturbances through access management mechanisms other than complete reclamation could reduce some adverse ecological effects of this type of development. For example, it would address impacts directly related to off-highway vehicle use (e.g., erosion, soil compaction, disruption of reclamation), hunting and fishing (e.g., pressure on sensitive populations) and increased human presence in environmentally sensitive areas (e.g., poaching, displacement of animals from breeding habitat).

4.2 Operational Integration

Bending the cumulative impact curves is a management strategy for achieving landscape-scale objectives, but it does not resolve issues related to operational integration among land and resource users and accountability for achieving the objectives set out in regional plans. Making the LUF real requires legal and institutional mechanisms to ensure a "hands-on" approach to coordinating land uses and to provide a focal point for accountability.

Alberta's current system of land and resource management contains well-known obstacles to operational integration. The structural origins of unmanaged cumulative effects lie in a system of decentralized, sectoral and incremental decision making about land and resource use that makes it difficult to set landscape-scale objectives and achieve them through the aggregation of multiple individual decisions. There is currently no single agency or land manager that is responsible and accountable for ensuring that cumulative impacts are considered in decision making and management thresholds are respected. This institutional gap must be filled by the LUF.

Thresholds and limits defined in regional plans are not the only objectives guiding land and resource use. Incentives facing individual decision makers and land users may not be consistent with socially optimal allocation of land uses within the management threshold. The creep of individual decisions may drive impacts toward the management thresholds over time despite policy and management changes intended to bend the cumulative impact curves.

Implementation of a "bending the curve" management strategy requires answers to the following questions about operational integration, institutional capacity and accountability:

- Who is accountable for ensuring that management thresholds or limits are respected within a system characterized by considerable decentralization in decision making?
- Who is responsible for picking and deploying the policy wedges for bending the curves and monitoring the success of these policies in achieving this objective?
- Who is responsible for ensuring that trade-offs are made and that available space within impact limits is allocated appropriately among competing land and resource uses?
- Who is responsible for enforcing compliance with limits on total impacts by decision makers and the users of land and resources?

- Who ultimately says "no" to proposals for new land uses that will push a cumulative impact curve beyond the critical threshold or limit?

There are several ways to design an implementation strategy that answers these questions.

First, accountability, monitoring and enforcement may be built into the LUF's planning and decision-making hierarchy through a formal conformity requirement. Once management thresholds and limits are set on a regional basis, sub-regional and sectoral plans and project-specific decisions would be legally required to be consistent with these threshold and limits. For example, the approval of sectoral plans for forestry or oil and gas development would be contingent on evidence (e.g., cumulative effects modelling) that demonstrates consistency with the land use priorities and limits on total impacts that are established in the regional plan. Sectoral and sub-regional plans, in turn, would constrain the issuance of forestry and mineral rights and the approval of individual projects.

A second way of building operational integration and accountability into the implementation strategy is to establish new institutional capacity. Successful implementation of the LUF will likely require the designation within planning regions of one or more agencies with the responsibility and capacity to ensure operational coordination. Once the landscape-scale objectives have been set through the regional planning, front-end operational coordination among land and resource users is essential.

The key point is that this operational coordination must be active and "hands-on." Sectoral and sub-regional plans may provide some guidance on operational coordination because of the detail that is possible when focusing on smaller geographic areas or specific resources. Even with this level of planning, however, aggregating individual decisions may involve more than mechanically implementing a plan.

On public land, operational coordination requires a land manger to undertake or facilitate inter-industry and multi-company coordination through pre-development planning and to adjust and integrate operational decision making. Individual company plans must be incorporated into an integrated landscape plan, based on data, cumulative effects modelling and an upfront planning process. Integration with public access management and recreational land uses would also be required. On private land, municipal governments and inter-municipal partnerships might be able to fulfill this function for industrial, commercial and residential land users. Coordination with land use for transportation infrastructure would be required on both public and private lands.

These functions could be undertaken by single land management agencies with the authority and capacity to engage actively in operational integration. Internal government capacity could be supplemented by fee-for-service planning companies that would facilitate operational planning for industry and other land users.

Integration could also be broken down somewhat according to the key stages of land use decision making. For example, the allocation of resource rights (e.g., forestry and oil and gas rights) might be undertaken by a single agency that would be responsible for looking at aggregate expected impacts when considering individual decisions. That agency would be accountable for ensuring that the allocation of oil and gas, mining, forestry and other resource rights is consistent with the objective of flattening the cumulative impact curves before management thresholds are crossed.

Similarly, project review processes could be better integrated across sectors so that review processes are no longer confined to regulatory silos administered by separate departments and agencies. Integration of project review processes could be enhanced by allocating responsibility for cumulative effects issues within project-specific review to the regional land manager.[16] In project review processes, for example, cumulative impact management and the consistency of proposed projects with thresholds and limits could be addressed through a "two proponent" system that would see both the project developer and the land manager playing important roles in the process. The project developer would continue to be responsible for providing project-specific information, showing how the factors that it controls have been addressed to ensure compliance with requirements and the incorporation into project design and management of appropriate measures to minimize project-specific impacts. Terms and conditions relating to these issues could be identified in the EIA and included in regulatory approvals.

However, the land manager would also have a role in some ways analogous to a proponent in the area of cumulative impacts. The onus would fall on the land manager to address the question of whether or not the proposed project is consistent with the policy and management framework for maintaining regional cumulative impacts within management thresholds. Like evidence introduced by the project developer, the land manager's explanation of how the project fits with scenarios for regional cumulative impacts would be tested within the project review process. Furthermore, terms and conditions regarding cumulative impact management would be appropriately directed to the land manager as a condition of approval.

A key element of this new institutional structure is the fusing of responsibility, authority and accountability for cumulative effects management at the operational level within the regional planning areas. The new land management agencies should be answerable for ensuring that operational decisions are consistent with the objectives defined through regional planning. That means that they would be legally responsible for taking operational decisions to ensure compliance with the management thresholds and regulatory limits defined in regional plans.

This role should include oversight and accountability for the decisions that may be needed to flatten the cumulative impact curve. In some instances, that may mean that these agencies or subordinate decision makers, such as the Energy Resources Conservation Board, the Alberta Utilities Commission or the Natural Resources Conservation Board, will say no to proposed projects and activities that are not consistent with maintaining impacts below management thresholds and regulatory limits.

Hands-on operational coordination within planning regions is a complex task, but it is essential if the LUF is to achieve real changes on the ground. If that task looks too daunting from the vantage point of Alberta's current regime for land and resource management, there are three complementary ways to make it more manageable.

The first, noted above, is to simplify Alberta's current institutional structure by establishing single regional land managers and integrating key functions such as land and resource allocation

[16] Steven A. Kennett, "Lessons from Cheviot: Redefining Government's Role in Cumulative Effects Assessment" in Alan J. Kennedy, ed., *Cumulative Environmental Effects Management: Tools and Approaches* (Edmonton: Alberta Society of Professional Biologists, 2002) p. 17.

and project review. The best way to break down departmental silos that impede integrated management may be to *break* them down.

The second way to facilitate operational integration is to simplify the context. For example, integrated planning and decision making on public land would be simpler if there were fewer players, larger land and resource allocations to each player, and more flexibility regarding time lines for resource tenures. Market instruments, such as tradable rights, could provide incentives for operational coordination without the need for direct regulatory decision making. Land use zoning, planning of transportation and utilities corridors and the development of detailed sub-regional and sectoral plans (e.g., vegetation management and access management plans) would provide greater certainty, narrowing options and thereby simplifying operational planning and decision making.

Finally, the operational integration that is essential to making the LUF real will require adequate financial, human and technical resources. If it was easy, it would likely have been done already.

5. Removing Obstacles

Making the real LUF will require the removal of obstacles to integrated planning and cumulative effects management that are embedded in Alberta's current policies for land and resource management. Some of these obstacles are mentioned in the Draft LUF, but little detail is provided on how they will be addressed. This section of the paper examines four areas where action is needed to overcome obstacles.

5.1 Addressing Policy Collisions

Setting objectives and making trade-offs are critically important functions within the LUF. These functions occur within a policy and planning hierarchy, the highest level of which is provincial policy direction established by Cabinet. If this direction includes policies that are directed to mutually inconsistent objectives and that impede successful implementation of the LUF, the entire system risks paralysis and dysfunction.

Alberta's existing suite of land use policies has never been subjected to a rigorous test for internal consistency. The combination of strong departmental silos, weak integrative mechanisms and a planning vacuum has meant that inconsistent policies have been allowed to co-exist. The results of these inconsistencies have been masked by the incrementalism of project-specific decision making and lack of readily accessible indicators and data to compare policy objectives with reality. These internal inconsistencies will likely be thrown into sharp relief by the LUF, as will inconsistencies with the policy direction and practical implications of the new land use system of integrated regional planning and decision making. Policy collisions may become apparent in the objective-setting process itself or through the cumulative effects modelling directed to identifying land use scenarios that will achieve stated objectives.

Implementation of the LUF will be much easier if there is a concerted effort at the outset to identify and address policy collisions. This task should be a primary task of the Land-use Secretariat, with ultimate responsibility residing in the Cabinet Committee. The effectiveness and transparency of this process would be enhanced by input from a multi-stakeholder Provincial Advisory Council. Policy reconciliation will be an ongoing and iterative process, since policy inconsistencies may emerge during the course of the regional planning processes.

Policy collisions are particularly likely where:

- Economic, social and ecological objectives are promoted under the banner of sustainability in the absence of careful analysis of the preconditions for achieving these objectives or the relationships among them;
- Policies have been developed in separate departmental silos and promote narrow mandates without reference to other objectives, values, and land uses that co-exist on the same land base (e.g., the policies for oil and gas development discussed in the following section);

- There is strong empirical evidence that stated policy objectives are mutually inconsistent (e.g., maintaining caribou populations and encouraging intensive oil and gas development in the same area — see text box);
- Policies governing different activities on the same land base establish inconsistent spatial and temporal parameters for planning and decision making (or promote development without planning);
- Policies create incentives for land and resource use that are incompatible with the integrated planning and decision making that is essential to implement the LUF (e.g., incentives to accelerate development and promote competition among land users that impede information sharing and operational coordination); and
- Outdated policy and planning documents remain on the books, increasing complexity and impeding more innovative and integrated decision making.

These types of policy collisions have frustrated earlier attempts at integrated land and resource management in Alberta, particularly those focused solely at the operational or tactical level. In the absence of a strategic policy and planning framework, the obstacles to *ad hoc* operational integration are likely to be enormous and the achievable gains are likely to be small. The LUF is intended to fill this strategic vacuum, but to do so effectively it needs the capacity and decision-making processes to identify and fix policy collisions both in anticipation of regional planning and as these inconsistencies are revealed through planning processes (e.g., land use conflicts, inconsistencies revealed by scenario modelling).

Caribou versus Oil and Gas Development

One of the more obvious policy collisions that currently exists involves caribou and oil in northeastern Alberta. Woodland caribou are listed as a threatened species in Alberta. Current provincial policy, expressed through the Alberta Woodland Caribou Recovery Plan, calls for a progressive improvement in conditions for caribou with the aim of achieving sufficient habitat and stable population status for caribou herds throughout the province, including those in the northeast.[17] At the same time, provincial policy aims to maximize economic returns through rapid exploitation of oil sands deposits in the northeast. All evidence to date suggests that these two policy objectives are incompatible. Modelling studies indicate that if the current trajectory of petroleum development in northeastern Alberta continues, extirpation of the caribou herds in this region is essentially certain. Various mitigation measures are available (e.g., access management, low-impact seismic, etc.); however, the benefits of these steps are swamped by the tidal wave of new development being projected. The caribou herd on the east side of the Athabasca River, where oil sands development has begun in earnest, has already declined by 50% over the past decade.[18] Some observers have suggested that it might make most sense to concede the loss of caribou in northeastern Alberta and place extra effort on saving herds elsewhere in the province, through outright habitat protection. So far, the government has not been receptive to this idea, perhaps because of legal implications under the Species at Risk Act, the economic cost of protection, or the public backlash that would likely be associated with sacrificing one or more caribou herds. But scaling back oil sands development as an option to preserve caribou is not being entertained either. So the policy conflict remains.

[17] Hervieux, D., et al., *Alberta Woodland Recovery Plan*. (Alberta Sustainable Resource Management, 2005).

[18] Alberta Woodland Caribou Recovery Team, unpublished data (2007).

5.2 The Oil and Gas Silo

The Draft LUF acknowledges increasing land use conflicts resulting from oil and gas development and states that policies addressing surface and subsurface values "are not well integrated."[19] Completion of the Upstream Oil and Gas Policy Integration Initiative and a review of the process for identifying surface concerns prior to the public offering of mineral rights are identified as priorities.

The importance of applying the LUF to the oil and gas sector should not be underestimated, nor should the obstacles to achieving this objective. The Department of Energy has pursued a single-minded policy of maximizing energy development and associated revenue flows. Other social, environmental and economic values have been largely ignored or marginalized within this development-oriented policy framework. There is probably no better example of a narrow and powerful departmental silo within the Government of Alberta.

The oil and gas silo has resisted past efforts at integrated planning and decision making in Alberta and has frustrated other environmental policy initiatives. The Department of Energy's policies, the process for issuing mineral rights, and the tenure regime are inconsistent with key elements of the system for integrated regional planning and cumulative effects management proposed in the LUF.[20]

First, the policy objectives of Alberta Energy's oil and gas regime are inconsistent with a triple bottom line approach to land and resource management. The *de facto* guiding policy direction is Alberta Energy's mandate to generate revenue and economic activity through the sale of mineral rights and the development of the province's energy resources. Other policy objectives, such as the management of cumulative environmental effects at the landscape scale, are not effectively incorporated into energy decision making.

Second, the internal government mechanism (Crown Mineral Disposition Review Committee) for reviewing proposed mineral rights dispositions to identify potential environmental impacts and other surface concerns is generally viewed as unable to consider cumulative effects. Limitations of this system include the cursory nature of the environmental review and various procedural deficiencies of the review process, notably the absence of a clear mandate, express legal authorization, and mechanisms to ensure transparency and public accountability in its decision making.

---

[19] Draft LUF, p. 25.

[20] Michael M. Wenig and Michael S. Quinn, "Integrating the Alberta Oil and Gas Tenure Regime with Landscape Objectives: One Step Toward Managing Cumulative Effects" in H. Epp (ed.), *Access Management: Policy to Practice* (Calgary: Alberta Association of Professional Biologists, 2004); Dan Woynillowicz, Peggy Holroyd and Simon Dyer, *Haste Makes Waste: The Need for a New Oil Sands Tenure Regime*, Pembina Institute, April 2007 (www.pembina.org/pub/1409); Steven A. Kennett *et al., Managing Alberta's Energy Futures at the Landscape Scale*, Report prepared for the Alberta's Energy Futures Project, Institute for Sustainable Energy, Environment and Economy (ISEEE), University of Calgary, June 2006 (www.iseee.ca/images/pdf/ABEnergyFutures-18.pdf); Daniel Far *et al., Al-Pac Case Study Report*, Prepared for the National Round Table on the Environment and the Economy (NRTEE), July 2004 (www.nrtee-trnee.ca/eng/publications/case-studies/boreal-forest/alpac-case-study/eng/index-alpac-case-study-eng.htm); J. Roger Creasey, *Cumulative Effects and the Wellsite Approval Process* (M.Sc. Thesis, Resources and Environment Program, University of Calgary, 1998).

Third, the rights disposition process provides no opportunities for the involvement of land-owners, other land users and the public at large in the decision to issue mineral rights. The voices of those who are most likely to raise concerns regarding the pace, extent and intensity of development and its cumulative impacts at the landscape scale are therefore not at the table when that development process is set in motion by the sale of publicly owned mineral rights to private companies.

Fourth, rights disposition in Alberta often results in a patchwork quilt of small mineral rights holdings owned by different companies. In cases where rights to different subsurface formations are sold separately, several companies may own rights under the same surface area. This pattern of rights holding makes it difficult to coordinate surface infrastructure such as roads, wellsites and pipeline rights-of-way in order to minimize disturbance and manage landscape change.

Fifth, Alberta's mineral rights regime contains strong incentives to accelerate the pace of development. The highly competitive bidding process and the inclusion in tenure instruments of a five year "use it or lose it" provision mean that companies are obliged to move quickly to identify and produce commercially viable reserves once mineral rights have been purchased. This time pressure reduces the ability of mineral rights holders to coordinate surface operations among themselves and with other land users such as forestry companies.

Sixth, the competitive environment fostered by the rights issuance process and tenure regime creates incentives for companies treat information about their mineral rights holdings and operational plans as confidential. Unwillingness to share this information is a significant barrier to the coordination of operational planning.

Finally, the issuance of mineral rights is viewed by the energy industry and its regulator, the Energy Resources Conservation Board, as creating a legal and economic interest that implies a "right" to develop the resource. That right is not absolute, since applications to drill wells and construct energy facilities can be turned down if they fail to meet regulatory standards or if the proposed activities create exceptional risks to human health or the environment. Nonetheless, despite the fact that mineral rights are issued without an effective process for considering competing land use values, without assessing cumulative impacts of likely development scenarios and without public input, rights issuance is viewed within government and industry as a *de facto* policy decision by government that development of the resource is acceptable and, indeed, desirable.

Thus, while the oil and gas tenure system may be "rational" from the perspective of maximizing the short-term benefits, it is a significant barrier to the outcome-based management and integrated planning and decision making that are central to the LUF. The brief comments in the Draft LUF about surface and sub-surface conflicts should provide the starting point for a thorough and public review of the guiding policies, tenure regime and decision-making processes of Alberta Energy to ensure consistency with the LUF. Several specific reforms should be considered.

The most important change is to ensure that decisions at the rights issuance stage do not drive development patterns that are inconsistent with the objectives established in regional land use plans. One possibility is to establish an open and transparent review process to determine whether or not likely development scenarios associated with proposed mineral leases are consistent with regional plans. The presumption possession of a mineral lease implies the right to

develop could also be removed. Companies would then assess the likelihood of obtaining development approval by comparing possible development scenarios with the restrictions contained in the applicable land use plan. If leases are likely to be difficult to develop, the price paid for them would fall accordingly. There would be incentives, however, for companies to develop innovative technologies and land use practices that would enable them to develop leases while complying with the thresholds and limits in land use plans.

Another policy option is to lengthen the five-year timeline for activity on conventional mineral leases, thereby allowing companies more time to plan development that is optimal from both economic and environmental perspectives. Longer time frames would also facilitate coordinated operational planning among oil and gas companies, forest companies and other land and resource users. Coordinated planning could reduce environmental impacts and costs to companies through measures such as the design of common transportation infrastructure, improved planning and sequencing of development in order to minimize disturbance (e.g., location of well sites in areas that will be harvested by forest companies), and the coordination of operations in order to minimize the total duration of industrial activity in an area.

Inter-industry cooperation could also be facilitated by moving to larger tenures in environmentally sensitive areas, thereby reducing the number of companies whose activities would have to be coordinated. Issuing mineral rights in larger blocks would increase the flexibility of disposition holders to adjust the location and timing of their operations. Finally, this change in disposition policy would make it more likely that mineral rights would be held by large companies that may be more willing and able than smaller ones to adjust their operations to minimize adverse impacts on the environment because of their greater human and financial resources, their technical expertise, and their concern with reputation.

The tenure regime could also include formal mechanisms allowing companies to relinquish resource rights in order to achieve conservation objectives (e.g., offset areas, ecological benchmarks, etc.). From a corporate perspective, there are sometimes compelling reasons to forego development in an area where rights have been acquired in order to achieve environmental objectives or address stakeholder concerns. Companies may be reluctant to surrender rights, however, if they thereby forfeit the money that they paid to the Crown to acquire those rights and if there is a risk that they will lose competitive advantage if the rights are subsequently re-issued to another company. The effectiveness of this technique for addressing stakeholder concerns will obviously be undermined if surrendered rights are subsequently re-issued by government.

Significant reform of Alberta's oil and gas regime is a high priority, but it will take some time. Immediate action is also needed to prevent the inconsistencies between energy policy and the LUF from becoming more acute. For example, the Department of Energy is currently proposing to change the oil and gas tenure regime to require the reversion to the Crown of "shallow" mineral rights that are above the shallowest productive zone of the current lease holders.[21] This policy change is designed to encourage increased energy production and fill existing pipeline capacity, consistent with Alberta Energy's traditional focus on maximizing economic activity and revenue. It is another example of policy developed within Alberta Energy's departmental

[21] See www.energy.alberta.ca/Tenure/603.asp.

"silo" that promotes a narrow mandate and fails to consider adequately the implications for other land use values and for cumulative impacts. Since shallow rights reversion will create incentives to increase the industrial footprint of oil and gas development in Alberta, it raises the very environmental management issues that are driving the LUF initiative.

A decision on shallow rights reversion should therefore be deferred until the LUF's regional plans are in place. The Department of Energy's policy proposal could then be evaluated in terms of its environmental and social impacts as well as its economic benefits, using the "triple bottom line" analysis that is promised by the LUF. Within each region, cumulative impact modelling could be used to determine whether the increase in surface disturbance that is likely from shallow rights reversion is consistent with the management thresholds and limits on cumulative impacts that are established by the regional plans. It would then be possible to assess the appropriateness of this change in the tenure regime and determine what restrictions on surface impacts, if any, should be attached to a decision to require shallow rights reversion.

Alberta Energy has generated a remarkably efficient regime for disposing of Crown mineral rights and maximizing energy development, but it is fundamentally inconsistent with the two key objectives that should guide the LUF. The oil and gas regime focuses on maximizing growth and revenue, rather than quality of life and long-term sustainability. It is also inconsistent with managing cumulative effects through integrated planning, directed to setting and achieving landscape-scale objectives. Success of the LUF will depend on measures to adapt Alberta Energy's oil and gas regime to Alberta's new land use system.

5.3 Access Management

Managing recreational use of public lands is a policy priority in the Draft LUF. Inadequate access management on public lands is an important obstacle to protecting ecological and social values that are likely to be identified as important in regional land use plans.

The Alberta government has a variety of tools for managing public access associated with industrial development.[22] For example, access restrictions can be specified for individual industrial dispositions on public land (e.g., licences of occupation for roads under the *Public Lands Act*) and in approvals issued by the Energy and Utilities Board. There is also a provision under the *Forests Act* for establishing Forest Land Use Zones, within which public access is permitted only along designated routes. Reclamation requirements, fish and wildlife regulations and other regulatory tools could also support access management in some circumstances.

Nonetheless, effective access management has been difficult to achieve in Alberta for several reasons. Strong lobbies in support of the public's "right" of access to public land have limited the use of regulatory mechanisms. Furthermore, once "traditional" access has been established — meaning access along any corridor that is not closed from the time of its development — the Alberta government's policy is to maintain access unless there are exceptional circumstances.[23]

---

[22] Steven A. Kennett and Michael M. Wenig, *The Legal and Policy Framework for Managing Public Access to Oil and Gas Corridors on Public Lands in Alberta, Saskatchewan and British Columbia*, Report prepared for the Canadian Association of Petroleum Producers, June 2004 (www.capp.ca/default.asp?V_DOC_ID=763&PubID=77025).

[23] Government of Alberta, Motorized access management policy on industrial dispositions, 1993.

From industry's perspective, options are limited because companies that create linear disturbances are in most circumstances unable to restrict the use of these corridors by recreational users, even when these companies are under pressure from regulators and stakeholders to reduce the direct and indirect impacts of their activities. These obstacles have contributed to a perception that the Government of Alberta lacks the regulatory tools and the "political will" to implement effective access management.[24]

Options for improving access management could take either regional or activity-specific approaches. The most obvious way to balance competing values and manage cumulative effects on a regional basis is access management planning. Alternatively, access issues could be addressed on a disposition-by-disposition basis through direct regulation or by granting resource companies greater authority to manage access on the access corridors that they create.

As noted above, however, fragmented and incremental decision making is the principal challenge for cumulative effects management. Achieving landscape-scale objectives in areas of increasingly intense activity will likely require a broader planning framework in addition to improved management of individual corridors. It follows that regional access management plans should be developed as thematic sub-plans for each of the regional management plans. Furthermore, a greater role for private companies in managing access to industrial corridors may require more protection from liability in the event that people using these corridors are injured or suffer property damage as a result of collision with physical access barriers. Finally, government action in support of access management could include public education and enhanced enforcement of access restrictions.

5.4 Existing Land and Resource Dispositions

The Draft LUF includes a brief paragraph on "lease-swapping and dealing with existing tenure rights in ecologically sensitive areas."[25] It states that "new incentives could be developed to encourage the expeditious removal of industrial activities or hydrocarbon resources from legislated protected areas or lands with high conservation value."[26]

This statement suggests that there may be some flexibility to reconsider existing tenures and land uses, but it falls short of a strong commitment with specific policy mechanisms and decision-making processes. The absence of flexibility to deal with existing dispositions was a major problem for previous land use initiatives in Alberta, such as protected areas planning under Special Places 2000. The LUF should include mechanisms for ensuring both flexibility and fairness in the adjustment of existing land and resource dispositions (e.g., mineral rights, water rights, timber quotas, forest management agreements) when a business as usual approach to these dispositions would unduly restrict planning options.

---

[24] Daniel Far *et al.*, *Al-Pac Case Study Report*, Prepared for the National Round Table on the Environment and the Economy (NRTEE), July 2004 (www.nrtee-trnee.ca/eng/publications/case-studies/boreal-forest/alpac-case-study/eng/index-alpac-case-study-eng.htm).

[25] Draft LUF, p. 20.

[26] Draft LUF, p. 20.

These mechanisms will be particularly important for the LUF because existing land and resource allocations to industry in parts of Alberta have already exceeded levels that are consistent with achieving environmental outcomes that may emerge from government policy direction and regional plans (e.g., maintaining water and air quality, wildlife and fish populations, recreational opportunities). Alberta's history of allocating rights to land, water and other resources without regional planning and without adequate consideration of cumulative impacts has left the LUF with a challenging legacy. The conflict between oil and gas development and caribou, discussed above, is but one example. Without mechanisms to adjust existing resource tenures and development plans, environmental and social values may once again be trumped by short-term economic considerations.

6. Supportive Policies

Successful implementation of the LUF will require policies that directly support the new planning system and that provide a favourable context within which it will operate. This section of the paper comments briefly on six areas where support for the LUF is particularly important.

6.1 Cumulative Effects Modelling

Sophisticated decision support tools are a cornerstone of outcome-based management, providing the capacity needed to understand the interactive effects of various land uses and management levers within large complex systems. Cumulative effects models and geographic information systems (GIS) are the two main decision support tools that are currently available to support the LUF. These tools have several roles. The first is to provide a level playing field for planners, land managers, and stakeholders to work from, in the form of commonly agreed-to assumptions about the landscape, land use trajectories, and management options. This provides a solid foundation for objective decision making and promotes acceptance of the results. It also ensures that all available information is brought to bear and that comparisons among management options are not confounded by differences in underlying assumptions or data sources.

The second role of models and geographic information systems is to provide projections of the state of the landscape and associated management indicators over time, based on the data and assumptions provided and fully accounting for cumulative effects. Planning teams can then explore and compare alternative management scenarios with respect to their ability to achieve desired outcomes (i.e., policy options for bending the cumulative impact curves). In so doing the strengths and weaknesses of alternative management approaches can be identified, providing a rational and defensible basis for decision making. It also facilitates the exploration of new approaches and highlights the inherent trade-offs that must be considered, whatever approach is selected. The social choices that lie at the heart of the planning process remain with the planning team, but the decision support tools ensure that decisions are made on the basis of the best available information.

The third role of decision support tools is to facilitate communication of management decisions to non-specialist audiences. Acceptance of difficult trade-off decisions will be greater if modelling results are available to help individuals understand how decisions will play out over time and how the selected approach stacks up in comparison to alternative approaches.

The LUF legislation and terms of reference for regional plans should formally incorporate cumulative impacts modelling and geographic information system support into the planning system in the following ways:

- In the development of regional plans, modelling should be used to establish a common database for decision making, identify key trade-offs, and identify the strengths and weaknesses of alternative management scenarios with respect to achieving desired land use outcomes (including the achievement of specified thresholds and limits).

- The modelling component of regional plan development should include the active participation of the Regional Advisory Council. Input from the Council should be used to help define land use trajectories and management options. The Council should have direct and timely access to interim and final modelling results.
- The actual modelling process should be contracted out to an independent third party with experience in cumulative impacts modelling. The entire process should be made open and transparent by providing all information available to the Regional Advisory Council to the public via the Internet.
- The Land-use Secretariat should be responsible for providing adequate funding and clear timelines to ensure successful and timely completion of the modelling efforts.
- Modelling efforts by the Land-use Secretariat, in collaboration with the Provincial Advisory Council, should also be undertaken at the provincial scale. The focus here would be on exploring how the outcomes of regional management plans will combine to achieve provincial land use outcomes. Where deficiencies are identified, efforts should be undertaken to develop alternative approaches (e.g., assigning special priority outcomes to individual regions).

The Terrestrial Ecosystem Management Framework

The Terrestrial Ecosystem Management Framework developed by CEMA's Sustainable Ecosystems Working Group provides an example of how cumulative effects modelling can be used to support land use planning.[27] Cumulative impacts modelling was not simply used a source of data, but as an organizing framework for the development of the plan. In the initial stage, the model required the team to given careful consideration to the outcomes they were interested in. This led to the development of a comprehensive list of measurable indicators. Next, the team had to initialize the model with the current state of the landscape and current land uses. This led to the sharing of datasets, agreement on sources and formats, and the development of a common set of assumptions concerning "business as usual." Through this process participants learned about aspects of land use they may not have previously considered, including the perspectives of other sectors. Finding this common "language" not only prepared the model for use, but set the stage for meaningful dialog among the participants. The final stage of modelling involved the simulation of alternative management scenarios. Here the team was able to explore of the effects of various management "levers" and the trade-offs inherent in alternative approaches. This led to additional learning that advanced the team's decision making far beyond what it might otherwise have been. For example, coming into the process it is unlikely that any of the participants would have anticipated that the team would ultimately recommend that 20-40% of the Regional Municipality of Wood Buffalo be protected (which they did). However, this decision became an obvious one to make once it became clear that environmental indicators were being severely degraded by industrial activities and that large increases in protection could be achieved without significantly impacting oil development, even under a doubling of the currently anticipated development trajectory.

[27] Sustainable Ecosystems Working Group, Terrestrial Ecosystem Management Framework (Cumulative Environmental Management Association, 2008).

6.2 Monitoring and Adaptive Management

The Draft LUF states that "a system of monitoring, evaluation and reporting is required to determine if our land use policies are achieving desired outcomes."[28] It proposes the establishment of a system to ensure accurate, timely and accessible information. This system will be comprehensive, practical, understandable, forward looking and adaptive. The Alberta Biodiversity Monitoring Program is to be a key component of this system. The Draft LUF also includes a commitment to a continuous improvement system that connects monitoring and evaluation to the periodic revision of land use objectives and plans.

The effectiveness of these initiatives is difficult to assess without more details regarding design and implementation. For example, monitoring in support of land use planning should generate information that relates directly to the land use objectives and associated indicators that are identified as important in provincial policy statements and regional plans. Given limited resources, monitoring should focus on the "need to know," not the "nice to know" from the perspective of planning and adaptive management. The mechanisms for ensuring this alignment should be spelled out in more detail. The results of monitoring should also be made available through an arm's-length reporting mechanism that will ensure timely and complete distribution of information.

The Alberta Biodiversity Monitoring Program has considerable promise, but other initiatives will also be needed to monitor a broader suite of objectives and indicators. Genuine Progress Indicators provide a useful template for developing indicators to monitor social, economic and environmental performance. Genuine Progress Indicators are particularly well suited to the LUF because they focus directly on quality of life and long-term sustainability. It is worth reiterating that well-defined measurable outcomes have yet to be defined in the LUF, and without these in hand monitoring will not be possible.

Monitoring should also be linked into an adaptive management system so plans and management decisions can be modified when outcomes are not being achieved. The systematic application of adaptive management experiments should also be used to assess the effectiveness of regulatory limits and other techniques for managing cumulative effects and achieving landscape-scale objectives. The legislation governing the LUF should include clear direction regarding plan renewal at regular intervals. The financial resources, personnel and institutional arrangements that are necessary for renewal of plans must also be made available.

6.3 Parks and Protected Areas

The Draft LUF states that "The Government of Alberta will address the gaps associated with conserving and protecting the biodiversity of Alberta's land base (Natural Regions and Sub-regions Framework), accommodate population growth and improve quality of life opportunities through development of a plan for provincial parks."[29] As with other elements of the LUF, this statement presents a positive policy direction, but the detail required for implementation is lacking.

[28] Draft LUF, p. 21.

[29] Draft LUF, p. 26.

The establishment of new protected areas should be based on a clear articulation of what protected areas are intended to achieve. The following are some of the key roles:

- **Recreation Opportunities.** Albertans love their parks. Parks are a prime destination for recreation and relaxation, supporting the high quality of life that Albertans enjoy. Alberta's parks are also the focus of tourism, Alberta's fourth largest industry, drawing large numbers of Canadian and international visitors annually.
- **Maintenance of biodiversity.** The decline in abundance and contraction in range observed in many of Alberta's fish and wildlife species indicates that the "multiple-use" approach to land management is not capable of maintaining biodiversity. A system of protected areas designed and managed to maintain ecological integrity can provide a refuge for species that are adversely affected by industrial activities and a source for repopulation of the industrial land base once deleterious activities are rectified.
- **Conservation of wilderness.** Polls have demonstrated strong public support for the preservation of wilderness (which implies the prohibition of industrial activities and associated road-building). Given that virtually the entire province of Alberta is of interest to the resource industry, protected areas are required to ensure that some regions of Alberta remain intact.
- **Ecological benchmarks.** Protected areas, acting as ecological benchmarks in which natural processes are maintained, can serve as experimental controls to help monitor the impacts of industrial activities on the industrial land base.
- **Research.** As the natural landscape becomes fragmented and modified by road building and resource extraction, it is becoming progressively more difficult to find study areas in which to investigate natural processes. Protected areas can also provide laboratories for studying the effects of climate change on Alberta's land, water and natural ecosystems. Consequently, protected areas are taking on an increasingly important role as study areas for scientific research.

The aforementioned objectives cannot be achieved if the selection of candidate protected areas is primarily based on the avoidance of resource interests. Although economic considerations do need to be taken into account, the selection process should be guided by following three design principles:

- **Representation.** To meet the habitat requirements of all species, protected areas must provide representation of the full spectrum of ecosystem types. At a coarse scale, this can be accomplished by establishing protected areas within each of the province's Natural Subregions. At a finer scale, specific landscape features, such as river valleys and sand dune complexes, must also be sufficiently represented.
- **Ecological integrity.** The survival of species is dependent not only on the availability of habitat, but also on the maintenance of ecological integrity (which incorporates the maintenance of natural ecological processes such as disturbance and renewal). Large size is the key requirement, as simulation studies have shown that in Alberta areas of several thousand square kilometers are required to maintain natural fire regimes. Other approaches for maintaining ecological integrity include: (1) prohibiting industrial activities, (2) limiting motorized activities and the development of new access routes, and (3) design that incorporates a buffer or special management zone. To ensure that natural processes are maintained indefinitely, boundaries must be permanent (i.e., legislated).

- **Connectivity.** Some species have such large area requirements that viable populations cannot be achieved in individual protected areas, even if they are several thousand square kilometers in size. Consequently, a system of protected areas must be designed to facilitate the movement of individuals among sites so that viable populations of all species can be achieved in the system as a whole. Connectivity among protected areas is also required to facilitate the movement of species in response to climate change. To facilitate movement between sites, special management of the intervening landscape will be required to ensure that high-quality habitat is maintained and barriers to movement are minimized.

The completion of Alberta's network of protected areas should be a priority component of the LUF implementation plan, because other land use decisions may quickly foreclose conservation options. Specific direction to this effect should be included in terms of reference for each regional plan — identifying protected areas gaps to be filled, criteria for selecting protected areas, and the standard of protection to be achieved. Overall coordination and direction should be provided through a provincial-level Plan for Parks, which in turn should be integrated with the nascent Provincial Biodiversity Strategy. In addition to providing direction for the establishment of new parks, the Plan for Parks should include measures for enhancing the integrity and effectiveness of existing protected areas (e.g., establishing buffer zones and prohibiting subdivision development along park boundaries).

6.4 Integration with Strategic Initiatives

The Draft LUF states that it "complements the province's water and air policies," including Water for Life, the Clean Air Strategy and the Climate Change Strategy.[30] However, it falls short of providing a roadmap for integrating these strategies at the policy level and bringing them within a single governance structure for planning and decision making.[31] Integration with the Water for Life Strategy, for example, is essential to address planning and governance issues that have limited the effectiveness of watershed planning. The LUF should also provide direction on integration with emerging strategic initiatives such as the Comprehensive Energy Strategy, the Plan for Parks, and the Biodiversity Strategy. Transportation and agricultural strategies should also be tied into the LUF.

Integration with the Water for Life Strategy should be a priority because of the time and effort that government and stakeholders have invested in that initiative. The Alberta Water Council (AWC) and the Watershed Planning and Advisory Councils (WPACs) have been developing recommendations on governance issues, notably relating to watershed planning. The AWC's recommendations for the renewal of the Water for Life Strategy focus particularly on the need for integrated management and improved governance. The AWC endorses watershed planning to address the cumulative impacts of development on surface and groundwater and notes that land and water cannot be managed in isolation. It states that, in order to adopt a "source-to-use" conservation ethic, "we must recognize and accept that water quality and quantity objectives are

[30] Draft LUF, p. 4.

[31] This issue is discussed in Danielle Droitsch, Steven A. Kennett and Dan Woynillowicz, *Curing Environmental Dis-Integration: A Prescription for Integrating the Government of Alberta's Strategic Initiatives*, Pembina Institute, April 2008 (www.pembina.org/pub/1625).

inextricably linked to land use decisions in watersheds and vice versa."[32] The AWC therefore concludes that "we need to integrate the Water for Life strategy with the province's Land-use Framework and other strategies, to enable a comprehensive and holistic approach."[33]

Institutions and policies developed under Water for Life and other strategic initiatives can play two roles in the LUF. The first is to provide strategic input to regional planning. The AWC and WPACs, for example, could provide information and recommendations from a water management perspective to inform the setting of regional outcomes and the identification of specific management thresholds and regulatory limits through regional planning. The second role is to contribute to sub-regional planning and operational decision making in support of the thematic regional planning objectives. Once objectives relating to water have been established under regional plans, WPACs could serve as leaders or key participants in developing water management sub-plans and identifying specific management strategies and policy tools to "bend the cumulative impact curves" relating to water quality and quantity.

The LUF will also add value to these more narrowly focused initiatives by providing the over-arching governance structure and integrative mechanisms that they are currently missing. It should force the articulation and reconciliation of objectives for air, water, biodiversity, energy development and other sectors at the regional scale. The regional planning process would provide a forum for testing whether or not the strategic objectives developed in these areas are mutually consistent and for determining how they should be integrated to achieve broader environmental, social and economic outcomes relating to quality of life and long-term sustainability. The LUF should also resolve governance issues by establishing a policy and planning hierarchy that is embedded in law. The LUF's regional plans should provide the legal framework within which sector-specific initiatives such as Water for Life could develop effective and legally binding management plans to guide operational decisions about specific land and resource uses.

6.5 Interim Measures

Interim measures will be needed to maintain land use values and options and to avoid a development rush during the planning process in areas of the province where important values are at imminent risk (e.g., northeast Alberta, southern east slopes). Options for interim measures include

- adjustments to land and resource tenures to alter the timing of development;
- incentives and requirements to minimize new disturbance and other impacts;
- restrictions on land re-zoning during the planning process;
- temporary moratoria on new land and resource dispositions and on project approvals;
- interim targets and thresholds for industrial activities;

[32] Alberta Water Council, *Water for Life: Recommendations for Renewal* (January 2008) (www.albertawatercouncil.ca/Portals/0/pdfs/WFL%20Renewal%20Report%20-%20For%20Web.pdf). p. 13.

[33] *Ibid*., p. 13.

- suspension of proposed initiatives that may be inconsistent with the principles and policy direction of the LUF (e.g., the Department of Energy's proposal for shallow rights reversion, discussed above in Section 5.2).

The Draft LUF makes no mention of interim measures. This omission is a major gap because of the risk that land use decisions made before planning is completed will foreclose options and undermine the planning process itself. This outcome has already occurred in some areas of the province (see text box). The implementation of the LUF may actually increase the risk of decisions that pre-empt land use options since the commitment to planning could increase incentives for development, particularly if proponents of development believe that future prospects will diminish once plans are completed.

Protected Areas in Northeastern Alberta

Protected area planning in northeastern Alberta provides a clear example of how a failure to implement interim measures can lead to undesirable outcomes. The issue dates back to the late 1980s, when a large swath of northern Alberta was allocated for timber harvesting. An expert panel reviewing the allocations stated: "The panel calls for boreal wilderness areas to be set aside and feels this should have been done before the extensive allocations of boreal forest management areas were made."[34] The Liege watershed (~2,000 km^2) was subsequently identified as a suitable candidate site within the new Al-Pac management area. Al-Pac agreed not to harvest in the Liege, and local forestry officials ensured that smaller operators did not receive timber quota there. The region was kept free of petroleum leases through an informal agreement with officials in the Department of Energy. When the Special Places 2000 process was initiated, Al-Pac nominated the Liege as prospective protected area. The petroleum sector perceived this step as a threat and responded with a development rush that saw the bulk of the Liege watershed leased in less than two years. Needless to say, the site was never protected.

The entire process was repeated after 2000, this time in the context of a management framework developed by the Cumulative Environmental Management Association (CEMA) for the same general region. Potential protected areas, free of petroleum leases, were identified and included in the cumulative effects modelling that was used to develop the management framework. No interim measures were enacted, although representatives from the Department of Energy and the petroleum industry were involved in the development of the management plan. By the time the plan was completed, the core candidate protected areas had again largely been leased to the petroleum sector, greatly reducing their prospects for protection. It is worth noting that the reason the candidate sites had not been leased earlier was because the underlying petroleum reserves are considered poor and cannot be profitably extracting using current technology.

The final LUF should include a clear commitment to interim measures, an illustrative list of these measures, and a well-defined legal and policy process for establishing and enforcing them. Interim measures could be put in place through the terms of reference for regional plans, but flexibility is needed to implement interim measures even earlier in areas facing acute development pressures or where there is evidence that the prospect of planning is fueling a land rush.

[34] Dancik et al., 1990. Forest management in Alberta: report of the expert review panel.

6.6 Budget and Institutional Capacity

The Draft LUF emphasizes the importance of strong provincial leadership in land use planning and recognizes that a new institutional structure is needed to implement the LUF. It also states that "the Government of Alberta will ensure that the Land-use Secretariat and regional planning processes are sustained through appropriate resourcing."[35] Making the LUF real will require a concerted effort to build institutional capacity and a tangible commitment to significant new and sustained funding for the core LUF functions and for support for regional planning from elsewhere in the government.

The challenge of institutional capacity should not be underestimated. Planning expertise within the Government of Alberta was almost eliminated in the 1990s with the dismantling of Integrated Resource Planning on public land and the Regional Planning Commissions on private land. The legacy of the government's abandonment of its planning responsibilities for over a decade is a scarcity of experienced planners within the public sector and in the province as a whole. Recruiting well-qualified people from outside the province and retaining experienced consultants could fill some of the gaps, but newcomers to government may find it difficult to work effectively within a political and bureaucratic system that will inevitably create obstacles as the LUF challenges the entrenched mandates and institutional cultures of some line departments. Planning expertise and the ability to navigate the shoals of bureaucratic and special-interest politics will both be necessary to bring about the transition from project-by-project incrementalism within fragmented decision-making processes to the integrated and planning-based cumulative effects management that is promised in the Draft LUF.

Capacity to support the LUF across the government as a whole is also a major concern. Government cutbacks in recent decades were particularly deep in the areas of environmental and resource management and these departments continue to be understaffed despite the development boom of recent years. In some areas, policy expertise was lost as attention shifted to "streamlining" regulation and processing project applications. Senior officials in the LUF initiative have indicated that technical support for the Land-use Secretariat will come from line departments, but departmental staff that is already stretched thin to manage regulatory issues may have difficulty providing effective and timely support to regional planning. While integrated regional planning should improve the efficiency of project review and regulatory processes over time, it is inevitable that the LUF will place new demands on line departments concerned with land use, resource management and environmental protection. Without new funding and capacity to meet those demands, LUF implementation will be hampered or other important functions will be neglected.

Key elements of LUF implementation that will require funding include:

- Establishment of the Land-use Secretariat, including staffing and the ability to secure outside expertise;
- Policy development, including legislative drafting, and associated public and stakeholder consultation throughout the design phase of the LUF;

[35] Draft LUF, p. 17.

- Development and use of planning and decision-support tools for planning (e.g., cumulative effects modelling, spatial analysis and mapping);
- Support for the design and implementation of the LUF through additional capacity within the line departments that will provide technical and policy advice to LUF;
- Establishment of mechanisms for stakeholder and public input to policy reconciliation process — ideally through a Provincial Advisory Council;
- Establishment of Regional Advisor Councils and implementation of the regional planning processes;
- Public and stakeholder consultation by Regional Advisory Councils throughout the planning process;
- Monitoring and enforcement processes and public reporting;
- Capacity and support for planning at the sub-regional, sectoral and municipal levels in order to ensure implementation of the LUF;
- Policy development and implementation of key initiatives to support the LUF by filling policy gaps and establishing a supportive policy context (e.g., revision of mineral tenure regime, parks and protected areas policy, strategy for transportation and utilities corridors; recreational land use and access management; etc.); and
- Independent implementation audit and reporting (described below).

The government's implementation protocol for the LUF should provide details on institutional capacity and new funding for these functions. The budget allocation to the LUF and the staffing provided to the Land-use Secretariat and to the line departments that will support LUF implementation will be very important indicators of the government's commitment to the success of this initiative.

7. Good Governance

The durability and credibility of the LUF will depend on adherence to principles of good governance, including effective public and stakeholder involvement, transparency and accountability in decision making, and systematic performance monitoring. Each of these issues should be addressed in policy direction, institutions and legislation that will establish the LUF.

7.1 Public and Stakeholder Input

The main roles of the LUF are to define desired land use outcomes and to create the plans and processes needed to achieve them. The public and stakeholder component of the LUF should provide input on both of these topics. Because of the hierarchical structure of the LUF, this input will be required at multiple levels, from provincial down to subregional.

Consensus-based decision making provides the greatest degree of stakeholder involvement. However, the scope, complexity, and conflicts among stakeholder values may be too great for the consensus approach to function effectively in the context of provincial and regional land use planning. Ongoing planning initiatives in northeastern Alberta provide useful insight into what can be expected. Since its inception eight years ago, the Cumulative Environmental Management Association (CEMA), a regional multi-stakeholder group with a consensus-based decision-making structure, has effectively been gridlocked.[36] The general failure of CEMA to advance land use planning in the northeast can be attributed to a combination of:

- very large scope, including highly complex issues;
- deep divisions and entrenchment among stakeholder groups;[37]
- lack of incentive structures for achieving consensus; and
- lack of active engagement by the government in land use planning.

To avoid replicating this failure, the LUF planning process should be led by government, with stakeholders actively engaged in a supportive capacity. Under this model, stakeholders would assist government planners by searching for common ground, providing workable solutions, and identifying areas of consensus and non-consensus. The government would be required to make political decisions on issues that cannot be resolved by stakeholders, ensuring that plans are completed within an acceptable timeframe.

---

[36] Steven A. Kennett, *Closing the Performance Gap: The Challenge for Cumulative Effects Management in Alberta's Athabasca Oil Sands Region*, CIRL Occasional Paper #18 (Calgary: Canadian Institute of Resources Law, May 2007) (cirl.ca/files/cirl/OP18Athabasca.pdf); Chris Severson-Baker, Jennifer Grant and Simon Dyer, *Taking the Wheel: Correcting the Course of Cumulative Environmental Management in the Athabasca Oil Sands*, Pembina Institute, August 2008 (www.pembina.org/pub/1677).

[37] Multistakeholder Committee, July 2007. Oil Sands Consultations: Final Report (www.oilsandsconsultations.gov.ab.ca/docs/FinalReport_MSCReport-lowres-july24.pdf).

Although the Draft LUF makes no mention of stakeholder input at the provincial level, inclusiveness and transparency at this point in the policy and planning hierarchy is a necessity. As recommended by the multi-stakeholder Planning and Decision Making Working Group, convened by Minister Morton to provide comments on the Draft LUF, a Provincial Advisory Council should be established with sectoral representation balanced across the three pillars of the triple bottom line.[38] The role of this group would be to provide input on the selection of provincial indicators, the reconciliation of conflicting policies, the articulation of provincial outcomes, and the development of terms of reference for regional plans. Structured debate within this group would help to frame issues, identify areas of broad agreement, and generate policy and management options for resolving points of conflict and other challenges.

No group of a workable size can represent all land use interests at the provincial scale. Therefore, the Provincial Advisory Council should be charged with soliciting and synthesizing the perspectives of interests that are not directly represented, including those of the public at large. It would not be feasible to do this on an ongoing basis, but it should be possible to do so at critical junctures in the decision-making process. The public consultation process led by the Oil Sands Multi-stakeholder Committee provides an example of how it could be accomplished. Value-based decision making within the LUF, such as the prioritization of desired land use outcomes at the provincial and regional scale, would clearly benefit from such input.

In addition to bringing public values into the provincial land use planning process, the Provincial Advisory Council should also help to move information in the other direction. It would do so by directly reporting to individual sectors and by serving as a public window into process, providing the transparency the LUF needs to achieve broad acceptance and support.

At the regional level, stakeholder input has been incorporated into the Draft LUF through the Regional Advisory Councils. The focus at the regional level is on the development of regional plans and it would be appropriate for stakeholders to have more of a "hands on" role here. The sectoral perspectives and expertise provided by stakeholders would be of particular value in supporting cumulative effects modelling, developing thresholds and targets, and resolving issues related to operational integration. Stakeholders could provide information on sectoral land uses and risk tolerances, suggestions for management scenarios, and feedback on the implications of trade-off decisions.

The Regional Advisory Councils should strive for consensus, but conflicts that threaten to stall the process should be referred to the government for political decision making once the issues and options have been clearly framed. If a majority of the members takes a common position, dissenting views should be documented and included in the final report to the Cabinet Committee. As with the provincial level, the Regional Advisory Councils should serve as conduits for interests that are not directly represented and as a public window on the decision-making process. The regional planning processes will also require separate processes for public and stakeholder consultation on the draft plans, along with measures to ensure appropriate Aboriginal consultation.

[38] Draft Interim Report of the Planning and Decision Making Working Group to the Minister of Sustainable Resource Development (June 10, 2008), pp. 5, 7, 11–12.

The Regional Advisor Councils should include a diverse array of people, including individuals with knowledge from different backgrounds and perspectives. Participants should be committed to finding solutions, not simply "towing the party line." They should bring relevant expertise to the table, particularly with respect to their sector. Time commitments will be significant, so financial resources and logistical support from the Land-use Secretariat will need to be made available to sectors with limited funding to ensure that they can be represented and participate effectively.

7.2 Transparency and Accountability in Decision Making

The Draft LUF states that land use decisions will be transparent and accountable, but provides few details about the practical implementation of these guiding principles.[39] A genuine commitment to these principles should be demonstrated through the rules of the game for planning and decision making and in the design of LUF institutions. Making transparency and accountability real within the LUF will require specific guarantees in four key areas.

The first step is to ensure that Regional Planning Councils, the Land-use Secretariat and the public at large have access to the best available independent science and cumulative effects modelling when determining the current status of land use values and reviewing alternative land use scenarios. The credibility of the LUF's Integrated Information Management System will depend on transparency about information sources and modelling assumptions and on secure funding so that there can be no suspicion of political interference in the collection and dissemination of data or the modelling of alternative land use scenarios.

An arm's length advisory council of leading independent scientists should be established to oversee the LUF's information and knowledge system. This role should include providing advice on the collection and interpretation of data and on cumulative effects modelling. The scientific council should have a peer review and public watch-dog role to ensure that the scientific information and modelling used for land use planning reflect the best available information and are transparent in terms of scientific methods and modelling assumptions. The scientific council should also oversee information dissemination to ensure a level playing field for all participants in the LUF. The results of its oversight functions should be reported to the public annually.

A second way to promote transparency and accountability is to make value choices, priority setting and trade-off decisions as transparent as possible. This culture of transparency should be reinforced by clear requirements to release draft decision documents for public comment and to provide written explanations of final decisions. This procedure should be followed at each stage of the LUF's policy and planning hierarchy: articulation of provincial outcomes, establishment of terms of reference for regional plans, preparation of draft plans by the Land-use Secretariat and Regional Advisory Councils, and final approval of plans by the Cabinet Committee. Decision documents at each stage should explain what information and values were considered, how options were evaluated, why specific priorities were established and trade-offs made, and how public and stakeholder comments on the draft documents were addressed.

[39] Draft LUF, pp. 9–10.

Third, accountability and transparency should be built into LUF institutions at all stages. The Draft LUF has two significant deficiencies in this respect. One is the risk that the Cabinet Committee and Land-use Secretariat will act as black-box decision makers, particularly when setting provincial outcomes and addressing policy collisions. As noted above in Section 7.1, the multi-stakeholder Planning and Decision Making Working Group recommended the establishment of a Provincial Advisory Council to facilitate stakeholder input at this stage and to provide a public window on decision making. The other major accountability gap in the Draft LUF is at the level of operational integration, discussed above in Section 4.2. A new institution, responsible for integrated land and resource management within each planning region, should be accountable for ensuring that tactical planning and operational decisions across all land uses in the region yield cumulative outcomes that are consistent with regional plans.

Finally, the LUF should include clear legal guarantees of transparency and accountability. The public's right to relevant information, including a credible appeal process when requests for information are denied, should be clearly established in LUF legislation. Decisions documents should be subject to administrative and ultimately judicial review where relevant information is not considered or made publicly available or where decisions are not supported by an adequate rationale.

Legal appeal mechanisms are the ultimate guarantee of accountability in hierarchical planning and decision-making systems. The Draft LUF states that "Albertans expect municipalities and provincial ministries to act in a way that is consistent with regional directions and plans" and it promises that processes to appeal decisions that are inconsistent with regional plans will be created.[40] To be credible, these processes must be accessible, effective and fair. The logical solution is to create a single appeal tribunal to adjudicate planning appeals under the LUF. This tribunal would have specialized planning expertise and would operate under rules of procedure that are tailored to the LUF, including broad rules of standing and funding for public interest appellants and interveners. Judicial review would be available on issues of administrative and constitutional law.

Simply relying on existing administrative appeal mechanisms and opportunities for judicial review will not be sufficient for the LUF. In some instances, opportunities to appeal important land use decisions are limited or non-existent. Decisions to issue mineral leases are one example. For other decisions, narrow rules of standing determine who can participate in decision-making processes and therefore who can appeal the resulting decisions. The Energy Resources Conservation Board applies rules of standing that give preference to individual land-owners who qualify under a narrow "directly affected" test. On this basis, the Board has refused to grant standing to stakeholder organizations (e.g., landowner, environmental and citizen groups) and municipal governments on the grounds that they are not directly affected by applications before the Board. The public interest organizations and elected bodies that will often be best placed to appeal the Board's decisions on the grounds of inconsistency with the applicable regional plan may therefore be denied standing under current rules.

[40] Draft LUF, p. 16.

7.3 Independent Implementation Audit

Full implementation of the LUF will be a challenging and long-term process. Institutional inertia may impede the significant changes to land and resource management that are promised in the Draft LUF. Powerful interests that benefit from the status quo may work quietly within and outside of government to subvert implementation. Political commitment to follow through may decrease over time as Ministers change portfolios and new issues emerge. The public's ability to evaluate the success of LUF implementation may be limited because of the complexity of this initiative and its long time frame relative to other issues that attract public and media attention.

One way to keep the LUF on track is to require regular implementation audits. These audits should be prepared by independent experts with the mandate and resources to provide a credible assessment of the LUF, including its success in achieving the government's stated objectives, progress in delivering on specific commitments and meeting timelines, and adherence to general principles of good governance. The independent audit could also include a broader sustainability assessment of land use in Alberta, using Genuine Progress Indicators and monitoring information to assess Alberta's progress toward the provincial and regional outcomes defined through government policy and the LUF's regional plans.

Implementation audits are not a new idea. Independent oversight was recommended for land use planning in British Columbian in the 1990s by the Commission on Resources and Environment (see text box). The *Mackenzie Valley Resource Management Act* in the Northwest Territories (NWT) requires the responsible minister to "have an environmental audit conducted at least once every five years by a person or body that is independent."[41] That audit must review the effectiveness of environmental management and evaluate information collected and analyzed by the NWT's cumulative impact monitoring program, another initiative required by the Act. The NWT's first environmental audit was completed in 2005.[42]

Implementation reporting was also recommended by the multi-stakeholder Monitoring and Evaluation Working Group that was convened by Minister Morton to comment on the Draft LUF. The Working Group recommended an implementation audit "that assesses whether those charged with implementing the LUF, within the GoA [Government of Alberta] and outside of it, are actually doing what they committed to do."[43] The Working Group also recommended periodic "state of sustainability" reporting on how the goals of the LUF are being achieved across the regions and provincially.

Requiring regular and independent implementation audits for the LUF would send a clear message that the Government of Alberta is committed to the success of this initiative. The government's track record of regular reporting on land use initiatives has not been impressive. Government progress reports were rare and independent implementation audits non-existent for important initiatives such as the Cumulative Environmental Management Association and Regional Sustainable Development Strategy for the Athabasca Oil Sands Area, the Northern East

[41] *Mackenzie Valley Resource Management Act*, 1998, c. 25, s. 148.

[42] See nwt-tno.inac-ainc.gc.ca/nwt-a_e.htm.

[43] *Interim Report of the Monitoring and Evaluation Working Group to the Minister of Sustainable Resource Development* (June 10, 2008), p. 15.

Slopes Strategy, and Integrated Resource Planning on public lands. This pattern should not be repeated for the LUF.

Independent implementation audits should be legally required by the LUF legislation. The broad issues to be addressed should be identified in legislation, with terms of reference for each audit to be set by the Cabinet Committee. The Land-use Secretariat and Provincial Advisory Council should jointly oversee the audit process and the draft terms of reference for each audit should be released for public and stakeholder comment. The final audit report should be a public document and government should provide a written response to its findings and recommendations.

Independent Oversight

A fundamental safeguard in our society is that there be independent oversight of the fairness and effectiveness of government administration. This is reflected in such offices as the Auditor General, the Ombudsman and special purpose commissions of inquiry. In the highly sensitive area of land use and resource and environmental management, such independent oversight is also necessary to establish the required level of public confidence.

— B.C. Commission on Resources and Environment, 1994[44]

[44] Commission on Resources and Environment, *The Provincial Land Use Strategy Volume 1 — A Sustainability Act for British Columbia* (November 1994), p. 50.

8. Legal Foundation

A new land use planning act is needed to provide the legal foundation for integrated regional planning in Alberta. Legislation is necessary to achieve integration, ensure continuity and demonstrate commitment.[45]

Strong implementing legislation is essential to making the LUF real because the structural problems that this initiative is intended to address require legal solutions. Fragmented and incremental decision making stem from departmental mandates and decision-making processes that are rooted in existing laws and institutions. Filling the current planning vacuum at the regional level will require the establishment of new institutions and the incorporation of existing decision-making processes into an integrated policy, planning and decision-making hierarchy. The failure of past attempts at integrated land and resource management can be traced in part to the fact that these initiatives failed to penetrate below the level of broad policy statements to tackle the root causes of unmanaged cumulative effects.

Legislation is also essential to provide continuity and durability for the LUF. This initiative will not achieve the ultimate objective of putting land and resource use in Alberta on a more sustainable trajectory if it proves to be a flash in the pan. There will inevitably be temptations to subvert the planning process and undermine long-term sustainability in response to short-term political and economic pressures. The Draft LUF recognizes this risk, stating that "Decision-making criteria and processes will be clearly defined, consistently followed, and not subject to political expediency."[46] Legislation that sets procedural rules, limits discretionary decision making, reinforces accountability and transparency, and provides for meaningful public participation is necessary to achieve this objective.

Finally, the implementing legislation for the LUF will be a litmus test for the government's commitment to this initiative. The dismal record of past policies directed to integrated land and resource management in Alberta provides legitimate grounds for doubting the government's resolve if it fails to give the LUF a solid legal foundation.

Legislation implementing the LUF should address the following important areas:

1. **Substantive issues** — including legislative purpose and principles, guidance on outcome-based management and requirements for the content of terms of reference and regional plans;
2. **LUF institutions** — mandate, specific roles and responsibilities, composition , membership selection, decision-making authority (if any), reporting relationships (if any) and other attributes of the bodies directly involved in LUF policy, planning and decision making;

---

[45] The general rationale for a legislative foundation for land use planning and sustainability initiatives is described in: Commission on Resources and Environment, *Provincial Land Use Strategy Volume 1 — A Sustainability Act for British Columbia* (November 1994), pp. 39–42.

[46] Draft LUF, p. 10.

3. **Planning and decision-making processes** — including the rules of the game for regional planning and the processes for articulating provincial outcomes to guide regional planning and for addressing policy collisions;
4. **Policy, planning and decision-making hierarchy** — establishing a legally defined hierarchy that connects higher-level policy direction, outcomes defined through regional plans, and lower level-planning and operational decisions, notably by making regional plans binding on all lower-level plans and land use decisions;
5. **Accountability and transparency** — specific requirements in areas such as access to information, independent science and modelling, reasons for decisions, independent implementation audits, appeal processes and enforcement mechanisms;
6. **Obstacles to the LUF** — changes to existing decision-making processes in areas such as energy development and access management where existing approaches are inconsistent with the objectives of the LUF;
7. **Interim measures** — legal framework for establishing and enforcing interim measures to ensure the integrity of the planning process and maintain land use options by protecting important land use values that are at risk prior to the completion of regional planning;
8. **Transitional issues** — provisions to address issues such as phased implementation of management thresholds and regulatory limits, removal or limited grandfathering of non-conforming uses, and review of applications already in project review processes;
9. **Consequential amendments** — to ensure that existing legislation is consistent with the LUF and supports the implementation of integrated regional planning and cumulative effects management.

The commitment to a new planning act should be included in the final version of the LUF policy statement that is scheduled to be released in the fall of 2008. The accompanying implementation protocol should provide specific direction on the content and timetable for this legislation. The preparation of LUF legislation should also provide opportunities for public and stakeholder input, notably through opportunities to comment on the proposed legislative design and the detailed drafting instructions before they are finalized.

Appendix: Cumulative Impact Curves and Implementation Issues

Cumulative impact curves offer a management framework and modelling tool for addressing many of the key implementation challenges confronting the LUF.

Fragmented and Incremental Decision Making

Decisions on land and resource uses are typically made one at a time, without reference to overall objectives and by decision makers who consider only one sector or type of activity (i.e., departmental "silos'). Cumulative impact curves provide a strategic framework for addressing fragmentation and incrementalism because they are explicitly integrative and outcome based.

Using these curves to explore cumulative effects scenarios under different assumptions about the drivers and policy responses affecting land and resource users allows decision makers, stakeholders and the public at large to see how changes in one or more land use over time affects cumulative impacts. The cumulative impact modelling underlying the curves thus provides a tool for integrated analysis of policy and management options. It is important to note, however, that this ability to undertake integrated analysis does not translate directly into integrated decision making. There is still a need to coordinate the multitude of decisions that affect the cumulative impact curves and to determine what combination of policy instruments should be used to achieve the desired outcomes. This issue is addressed above in Section 4.2.

Permanent or Long-Lasting Impacts

The difficulty of keeping cumulative impacts within regulatory limits is likely to increase when there is an accumulation over time of permanent or long-lasting impacts or sources of impacts. Long-lasting disturbances accumulate over time, contribute to cumulative impacts and reduce the "space" available for new development. Seismic lines may be used only briefly for geophysical exploration, but can persist on the landscape for decades. Other types of linear disturbances, such as transportation corridors, are essentially permanent. In some cases, the impacts continue long after the disturbance in question has ceased to have any economic or other value — as is the case with seismic lines or access roads to abandoned well sites. In other instances, ongoing impacts may be the result of uses of the disturbance that have little or no relationship to the original reason for creating it. Use of seismic lines and forestry roads for public access is an illustration of this phenomenon. If cumulative impacts are to be managed through regulatory limits on total area of disturbance or linear disturbance density, the accumulation of these disturbances over time is a significant problem.

Decisions that create long-lasting sources of impacts create a similar challenge for cumulative effects management. These sources include land and resource uses that require ongoing resource inputs or that produce discharges or emissions. As more of these uses are approved within a given area, limits will be approached and there will be less scope to accommodate new activities. For example, the accumulation of extractive water uses along a river may eventually make it impossible to make any new allocations without significant consequences for aquatic ecosystems and, eventually, other users. Without mechanisms to reallocate water use among existing users, the accumulation of approved uses will eventually choke off further development that requires water as a resource input.

The proposed management framework highlights the problem of long-lasting impacts because the cumulative impact curves take into account the duration of impacts and show graphically how "space" under thresholds and limits is progressively used up. As noted above, the slope of the curves is determined by the type of impacts and by offsetting factors such as reclamation. Shortening the life-span of long-lasting impacts is therefore a way of bending the curves. The cumulative impact curves sends a clear signal to decision makers and land users that preventing and removing long-lasting impacts and sources of impacts can contribute to keeping total impacts below thresholds or limits.

Early Entrants and Incentives to Consume "Space" under Thresholds and Limits

The implementation of thresholds and limits means that decision makers and land users must consider their actions in light of a present or future "impact constrained" world. For society as a whole, "space" within the limit on cumulative impacts is scarce and therefore valuable. This space may be subject to over-use and misallocation if it is treated as what economists refer to as a public good.

Public goods tend to be over-consumed and misallocated because, unlike private goods, their use is not subject to the constraints and incentives that are associated with private property rights and market signals for reallocating resources. If there is open access to public goods, their scarcity and the differences in social value between competing land uses may not be reflected in the incentives facing individual users.

Early entrants pose particular problems for thresholds-based or limits-based management because they may occupy space and thereby foreclose other options for land and resource use later on. Individual land and resource users may face incentives to maximize their own use of that space, but without regulatory direction or price signals there may be no incentives to ensure that these activities make efficient use of the land and generate the socially desirable outcome. Space that is ultimately scarce from a societal perspective may be wastefully consumed by early entrants who do not perceive the opportunity costs of their actions. Taking space for lower value uses makes sense to the individual decision maker or land user who benefits. However, the calculation of costs and benefits that drives individual uses of that space may not reflect broader social values. Space within the limit may be occupied by low value land uses that get in first, to the exclusion of higher valued ones.

Alternatively, some early entrants may use their position to gain competitive advantage by strategically occupying space (e.g., securing their own development footprints) in advance of other land and resource users. Proposals to implement thresholds-based or limits-based management may trigger a rush to secure access to land and resources before more onerous restrictions on impacts are imposed. For an open-access public good, there is no guarantee that this rush will lead to a socially optimum mix of land and resource uses.

The combination of long-lasting impacts, entrenched land and resource rights and an absence of market incentives to shift toward higher value land uses may make it very difficult to remove low value land uses once they are in place. Regulatory and market-based mechanisms are therefore needed to ensure that the allocation of space within the threshold reflects the broader societal values associated with use of that public good and that the mix of land uses can be altered over time to reflect changes in relative value from a societal perspective.

These problems are highlighted by the cumulative impact curves and can be addressed through policies directed at reducing its slope. The key implication of the problem of early entrants consuming socially valuable space under the curve is that cost-effective measures to reduce the slope of the curve should be used from the onset of development that places net impacts on an upward trajectory. These measures could include regulatory controls, incentives for efficient land use, and market-based instruments that attach a price to consuming space under the curve.

Adapting to Changes in Context and Information

The management strategy for achieving objectives must be adaptive in order to respond appropriately to changes in information and context. Several types of changes may affect either the slope of the cumulative impact curves or the appropriate management responses.

First, new information may emerge regarding the scientific and management assumptions underlying the cumulative impact curves. For example, assumptions about the rate of reclamation of land disturbances or the amount of new disturbance associated with certain activities may prove to be incorrect. If assumed reclamation rates are shown over time to be overly optimistic, the cumulative impact curves will be steeper than originally thought and additional policy or management actions may be required to flatten the curve. Conversely, if it is shown that the footprint required by certain land uses has been overestimated when drawing the cumulative impact curves, it will be flatter than expected.

Second, the drivers that determine the slope of the cumulative impact curves may change over time. Changes in the pace, type and intensity of land use will affect cumulative impacts and should therefore be reflected in the policy and management responses to an upward slope. For example, increases in the price of oil may stimulate increased exploration and development activity, including the reopening of previously producing wells to undertake enhanced recovery. These types of changes may have important implications for the rates of new disturbance and reclamation, making the cumulative impact curves steeper and requiring policy and management responses.

Third, new options for bending the curves may to emerge over time. For example, technological advances and economies of scale may produce cost-effective ways of dramatically reducing the land disturbance associated with certain types of activities. Techniques for low-impact and no-

impact seismic exploration have evolved significantly in recent decades. Implementation strategies should be adjusted to include requirements or incentives for the adoption of these types of changes in order to promote efficient use of space within the management thresholds and limits.

Finally, societal values may change over time regarding the appropriateness of certain land use practices and the relative priority among different land uses. Mechanisms to allocate space within the management thresholds and limits should adjust accordingly.

The use of tiered thresholds is one way of formalizing an adaptive approach to implementation. When the cumulative impact curves reach certain pre-determined levels, changes in policy and management are set in motion.