

# Curing Environmental Dis-Integration

A Prescription for Integrating the Government of Alberta's Strategic Initiatives

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Water Matters  
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PEMBINA  
institute 

Danielle Droitsch • Steven A. Kennett • Dan Woynillowicz

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The Pembina Institute creates 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. More information about the Pembina Institute is available at <http://www.pembina.org> or by contacting [info@pembina.org](mailto:info@pembina.org).

## About Water Matters



Water Matters is a newly formed province-wide organization with a mission to be a catalyst for watershed protection in Alberta. Water Matters will accomplish this by organizing, participating in, and advancing projects designed to preserve, promote, protect, and restore watersheds, and further sustainable watershed management, educating the public and increasing the understanding of sustainable watersheds and their management by the public, institutions, industries, businesses, and strengthening progressive public policy with respect to watershed protection. Water Matters has identified integrated land and water management as a key issue requiring attention to protect the province's water resources. More information about Water Matters is available at <http://www.water-matters.org/>.

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# Executive Summary

The Government of Alberta lacks the regulatory ability to manage the cumulative environmental impacts of the industrial development and other human activities now occurring across Alberta's landscapes. A new approach to environmental decision-making is needed to avoid continued decline in key indicators of environmental quality and depletion of Alberta's natural capital.

A series of strategic government initiatives launched in response to growing environmental concerns clearly signal that Alberta's existing decision-making processes need more than a simple fine-tuning in order to address current environmental challenges. The Water for Life strategy, the first of these government initiatives, was launched in 2003 in response to growing evidence of the need to plan for secure water supplies and to manage the encroaching impacts on Alberta's watersheds. The Land-Use Framework initiative is also presented as a call to action in light of growing land-use pressures and cumulative effects. A third initiative, Alberta Environment's proposed regulatory framework for managing cumulative effects, describes the "need for action" in terms of significant risks to the environment and to the economy. The same types of concerns are behind the government's clean air and energy strategies that are also under development.

This paper argues that the Alberta government's inability to manage cumulative impacts can be traced to the lack of integration in decision-making. This paper begins with the symptoms of the problem, presenting evidence of the growing impacts of human activities on Alberta's landscapes by way of short case studies examining the southern foothills, southern watersheds, province-wide impacts of oil and gas development, oil sands development in northeastern Alberta, and the planned expansion of upgrader ally in central Alberta.

The paper then provides the diagnosis, identifying two structural obstacles to managing cumulative environmental effects. The first is the fragmentation of environmental decision-making along departmental lines. This 'silo' effect occurs because government departments and agencies tend to focus on individual environmental media – air, land and water – or on their narrow mandates to manage specific resources such as forestry, water, energy, agriculture, transportation or public land. The second obstacle is the incrementalism that occurs when decision makers issue individual permits, leases, approvals and licenses making way for the addition of new human activities on the landscape.

Incremental decisions within departmental silos are generally made without long-term objectives for Alberta's landscapes and without considering the significant *cumulative impacts* of the many individual activities that are occurring simultaneously on a shared land base. The end result is that Alberta's environment is the victim of a 'tyranny of small decisions' – the future is shaped by the unplanned and unintended consequences of the government's individual decisions, rather than by conscious choice based on Albertans' fundamental values, priorities and long-term vision.

The Alberta government's ongoing and proposed strategic initiatives are then briefly discussed. The problem of unmanaged cumulative impacts is a common thread running

though all of these initiatives. The strategic initiatives are also converging on key elements of the appropriate solution: the need for better integration of decision-making, with integrated regional planning as a key mechanism for achieving this goal.

Despite this convergence, these strategic initiatives will be unable to address the fundamental problem of fragmented and incremental decision-making if they do not deliver the integrated and effective planning process that is central to cumulative effects management—defined here as the ability to set and achieve landscape-scale objectives when multiple activities affect important land and resource values. At the present time, however, there is no prescription for this type of integration. Departmental silos may prevail over integration, and the governance structure for effective planning is not yet in place. In fact, there is a risk that separate strategies proceeding on parallel tracks could create obstacles to better integration of planning and decision-making.

The solution to this problem is the convergence of the government's strategic initiatives around a single system of integrated regional planning for Alberta. The paper concludes by arguing that regional planning is the key to setting objectives for cumulative effects management and can be a driver for integrated decision-making. New legislation is needed to place regional planning firmly at the heart of the integrated governance system for land and resource management. This legislation should include a statement of principles and objectives for regional planning, a legal framework to ensure that plans are binding on subsequent decision makers, and the basic procedural attributes of the planning process.

# Curing Environmental Dis-Integration

## A Prescription for Integrating the Government of Alberta's Strategic Initiatives

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# 1. Introduction

The Government of Alberta's system for managing the implications of human activity and development on air quality, land and wildlife, and surface and groundwater is broken. The Government lacks the regulatory ability to manage the cumulative environmental impacts of the multitude of activities now occurring across Alberta's landscapes. To avoid continued decline in key indicators of environmental quality and depletion of Alberta's natural capital, a new approach to environmental decision-making is needed, from broad policies and regulations through to specific land-use decisions. The status quo is no longer acceptable.

"...today's hyper-growth in population and economic activities is putting unprecedented pressure on Alberta's landscapes...these new realities call for new approaches to managing land, resources and our natural environment."

- Honourable Ted Morton, Minister of Sustainable Resource Development, introducing the Land-Use Framework Initiative (Understanding Land Use in Alberta, p. i).

Sweeping statements acknowledging the problem of cumulative environmental impacts are now relatively uncontroversial, even within the Alberta government itself. A series of strategic government initiatives launched in response to growing environmental concerns clearly signal that the measures needed to address Alberta's current environmental challenges go far beyond fine-tuning existing decision-making processes.

The Water for Life strategy, the first of these initiatives, was launched in 2003 in response to growing evidence of the need to plan for secure water supplies and manage the encroaching impacts on Alberta's watersheds. The Land-Use Framework initiative is also presented as a call to action (see text box). A third initiative, Alberta Environment's proposed regulatory framework for managing cumulative effects, describes the "need for action" in terms of significant risks to the environment and to the economy.

This paper argues that the Alberta government's inability to manage cumulative impacts can be traced to the lack of integration in decision-making. While 'integration' conjures up many definitions, for purposes of this paper it refers to the deliberate and strategic merger of decisions that together are designed to reach desired outcomes at a 'landscape' scale – using the term 'landscape' to encompass terrestrial landscapes, watersheds and airsheds. To reach these desired outcomes, whether they are environmental, social, economic, or cultural, it is necessary to understand current and future cumulative environmental impacts of human activities on the landscape.

The need for integrated decision-making to achieve desired outcomes is widely recognized. For example, the Sixth Conference of the Parties to the Convention on Biological Diversity defined the 'ecosystem approach' as "a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way."<sup>1</sup> Implementing the 'ecosystem approach' in Alberta

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<sup>1</sup> Sixth Conference of the Parties to the Convention on Biological Diversity, Decision V/6, Annex A, section 1.

is currently impossible because of the government's 'disintegrated' system of environmental decision-making.

This paper begins with the symptoms of the problem, presenting evidence of the growing impacts of human activities on Alberta's landscapes by way of several short case studies. The paper then provides the diagnosis, making the case that fragmentation and incrementalism in decision-making are at the origin of the inability to manage cumulative impacts.

The Alberta government's ongoing and proposed strategic initiatives, including Water for Life, the Land-Use Framework and the regulatory framework for cumulative effects, are then briefly discussed. The problem of unmanaged cumulative impacts is a common thread running through all of these initiatives. The strategic initiatives are also converging on key elements of the appropriate solution: the need for better integration of decision-making, with integrated regional planning as a key mechanism for achieving this goal.

Despite this convergence, these strategic initiatives will be unable to address the fundamental problem of fragmented and incremental decision-making if they do not deliver the integrated and effective planning process that is central to cumulative effects management, defined here as the ability to set and achieve landscape-scale objectives when multiple activities affect important land and resource values. At the present time, however, there is no prescription for this type of integration among these strategies, and among the other strategies dealing with air and energy that are also being developed. More significantly, none of these initiatives by itself will resolve the problem of unintegrated decision making between government ministries. In fact, there is a risk that separate strategies proceeding on parallel tracks could create obstacles to better integration of planning and decision-making.

To avoid this risk, Albertans need a government-wide commitment to bring together the various 'cross-ministry' initiatives and departmental strategies. Integration of environmental management across water, land and air requires structural changes that would allow an "ecosystem approach" to governance, not simply information exchange and 'alignment' among Water for Life, the Land-Use Framework and the other initiatives. In particular, these strategic initiatives must be strengthened through the establishment of a single legislated planning process accompanied by a robust governance structure.

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# 2. Symptoms

## 2.1 Province-wide Environmental Degradation

The following examples illustrate the current and projected consequences that are symptomatic of the intensification of land and water use throughout Alberta and the growing public concern regarding government mismanagement of the resulting cumulative environmental impacts.

### 2.1.1 The Southern Foothills

The recently released Southern Foothills Study provides clear evidence of disturbing environmental trends in this part of the province.<sup>2</sup> The study illustrates how the intensification of land uses under a ‘business as usual’<sup>3</sup> scenario is producing “a slow but steady loss of environmental health and ecological integrity” for the foothills region of southern Alberta.<sup>4</sup> (p. 2). The trends in key indicators are clear<sup>5</sup>:

- Degrading fresh water quality;
- Reduced fresh water availability due to increased demand within the study area despite full allocation downstream, creating pressure for over allocation;
- Ongoing loss and degradation of native fescue resulting from a variety of activities and impacts including invasion by prolific, non-native plant species;
- Increasing fragmentation of the landscape due to new roads, industrial development from the energy and forest sectors, and an increasing number of residential acreages; and
- Reduced quality of habitat for selected wildlife species.

The study notes that scenario projections, developed using the ALCES<sup>®</sup> cumulative effects model, “suggest that decline in indicator performance will continue unless different planning and development approval strategies are adopted.”<sup>6</sup> It also includes survey results showing significant public concern for water and water quality and support

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<sup>2</sup> *The Changing Landscape of the Southern Alberta Foothills*, Report of the Southern Foothills Study Business as Usual Scenario and Public Survey (1997), available at [http://www.salts-landtrust.org/sfs/sfs\\_reporting.html](http://www.salts-landtrust.org/sfs/sfs_reporting.html) (hereinafter ‘SFS’).

<sup>3</sup> The ‘business as usual’ or ‘base case’ scenario for projecting environmental trends in the Southern Foothills Study is based on two decisions: “to be conservative on growth trajectories (to select growth rates at the low end of expectation), and to select an optimistic landscape reclamation rate (which has not been the case historically).” SFS, p.12.

<sup>4</sup> SFS, p.2.

<sup>5</sup> SFS, p.19.

<sup>6</sup> SFS, p.19.

for a requirement that regulatory agencies take cumulative effects into account when reviewing development proposals.<sup>7</sup>

### **2.1.2 Southern Alberta's Watersheds**

A key indicator demonstrating the growing pressure on Alberta's landscapes is its water supply. In rivers throughout the South Saskatchewan River Basin (SSRB) the Government of Alberta has over-allocated flows, permitting more water to be withdrawn than is ecologically sustainable. This over-allocation, in combination with the implications of climate change, threatens to reduce water flows and place stress on aquatic ecosystems in periods of low natural flow. In addition to the environmental consequences for the aquatic ecosystem, this raises the real possibility of significant water shortages and conflicts among water users in the future.<sup>8</sup>

From 1953 through 2001, allocations on Alberta's southern rivers encroached considerably on the volume of water available in the SSRB system, particularly during years in which flows were lower than usual. In 2001, for the first time, the amount of water flowing through rivers in the SSRB was less than the amount the Government of Alberta had allocated for withdrawal.<sup>9</sup> Recognizing the over-allocation of two of Alberta's southern most rivers, the Bow and Oldman, the Alberta government placed a moratorium on any new government-issued water licenses.

Alberta is rapidly approaching carrying capacities of natural environment systems, especially with regard to the regional water supply. At today's water consumption rates, several communities face water licensing shortages within the 2030 planning horizon as their projected growth exceeds their existing licensed allocations. According to research conducted for the Calgary Regional Partnership, if the water conservation objectives of Alberta Environment's Water For Life Strategy (30% improvement in water efficiency and productivity by 2015) were adopted by all communities in the Calgary Region, five communities would face water shortages between 2006 and 2016.<sup>10</sup>

### **2.1.3 Oil and Gas Development Throughout Alberta**

The explosion of the oil and gas industry in Alberta as a result of high oil and gas prices combined with declining reserves has resulted in more impact intensity as more and

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<sup>7</sup> SFS, p.26.

<sup>8</sup> Water Allocations Compared with Natural Flow. Fact Sheet and Chart. Accessed October 17, 2007; [http://www3.gov.ab.ca/env/soe/water\\_indicators/27\\_allocation\\_vs\\_natural.html](http://www3.gov.ab.ca/env/soe/water_indicators/27_allocation_vs_natural.html); South Saskatchewan River Basin Water Management Plan. October 2006. Alberta Environment; L. Martz, J. Bruneau, J. Rolfe. Climate Change and Water. SSRB Final Technical Report. April 2007. Accessed on October 17, 2007 at [http://www.usask.ca/geography/giservices/images/SSRB\\_Final\\_Report.pdf](http://www.usask.ca/geography/giservices/images/SSRB_Final_Report.pdf)

<sup>9</sup> *South Saskatchewan River Basin Water Allocation*. Regional Services. Southern Region. Alberta Environment. May 2003 (Revised January 2005), pg. 2.

<sup>10</sup> Calgary Regional Partnership Report on Growth Management Issues in the Calgary Region, August 2007. The following communities would still face license shortages within the 2030 planning horizon: Redwood Meadows (2006), High River (2012), Okotoks (2012), Strathmore (2015), and Turner Valley (2016).

more drilling is increasingly required in order to find less and less gas. In 2006 alone, a record 19,800 wells were drilled in Alberta, an increase from 9,444 wells in 1999.<sup>11</sup> Similarly, the number of licenses issued by the Alberta government increased 61 % from 2000 to 2005.<sup>12</sup>

The increased drilling activity goes hand in hand with more seismic exploration, more well access roads, gathering pipelines, processing facilities and oilfield waste disposal. Alberta has approximately 227,000 non-abandoned wells, 20,690 oil batteries and associated satellites, 817 gas plants, and 12,243 gas batteries, 4,726 compressor stations and a pipeline network of more than 392,000 kilometres.<sup>13</sup>

The growing density of wells has translated into a greater environmental footprint, particularly with respect to land, water and air resources. Oil and gas development in Alberta is contributing to significant landscape-scale changes through the proliferation of linear corridors (e.g., seismic lines, roads, pipelines) and small patch disturbances (e.g. well sites and other facilities) that fragment forest areas, result in stream crossings and increase public access to previously remote areas.<sup>14</sup> Health and safety problems are also aggravated, as are other socio-economic impacts such as impacts on Aboriginal people, noise pollution, decreased property values and conflicts with other land uses such as forestry and recreation.<sup>15</sup>

The cumulative impacts of oil and gas development are being felt across Alberta. For example, within Alberta's boreal forest, the extent and intensity of industrial development is fragmenting forests, reducing habitat quality for species such as woodland caribou.<sup>16</sup> The road network associated with this growing human footprint also requires numerous stream crossings. The culverts used from many of these crossings alter stream flow and erosion, leading to a proliferation of 'hanging' culverts that fragment fish habitat by creating barriers to movement.<sup>17</sup> Increased human access facilitated by this expanding network of roads and other linear disturbances (such as seismic lines and pipeline rights of way) places even more pressure on fish and wildlife populations.

<sup>11</sup> Canadian Association of Petroleum Producers: [http://www.capp.ca/default.asp?V\\_DOC\\_ID=675](http://www.capp.ca/default.asp?V_DOC_ID=675).

<sup>12</sup> Energy and Utilities Board. Alberta Drilling Activity Monthly Statistics. December 2000-2005. <http://www.eub.gov.ab.ca/BBS/energystats/drilling/ST59.htm>

<sup>13</sup> EUB (2007) 2006 Year in Review, Alberta Energy and Utilities Board, p. 37.

<sup>14</sup> <sup>14</sup> S.A. Kennett et al. 2006. *Managing Alberta's Energy Futures at the Landscape Scale*, Report prepared for Alberta's Energy Futures Project, Institute for Sustainable Energy, Environment and Economy (ISEEE), University of Calgary, p.21 (available at [www.iseee.ca/images/pdf/ABEnergyFutures-18.pdf](http://www.iseee.ca/images/pdf/ABEnergyFutures-18.pdf))

<sup>15</sup> *Ibid.*, pp.35-42.

<sup>16</sup> S.J. Dyer et al. 2007. Avoidance of industrial development by woodland caribou. *Journal of Wildlife Management* 65: 531-542; E. Dzus. 2001. Status of the woodland caribou (*Rangifer tarandus caribou*) in Alberta. Alberta Environment, Fisheries and Wildlife Management Division, and Alberta Conservation Association, Wildlife Status Report No. 30, Edmonton Ab. 47 pp.

<sup>17</sup> S.A. Kennett et al. 2006. *Managing Alberta's Energy Futures at the Landscape Scale*, Report prepared for Alberta's Energy Futures Project, Institute for Sustainable Energy, Environment and Economy (ISEEE), University of Calgary, pp.24-28 (available at [www.iseee.ca/images/pdf/ABEnergyFutures-18.pdf](http://www.iseee.ca/images/pdf/ABEnergyFutures-18.pdf))

### 2.1.4 Oil Sands Development in Northeastern Alberta

The oil sands industry is already a significant land use in northern Alberta and is poised to expand significantly in the coming decade. Oil sands deposits underlie approximately 142,000 square kilometers of boreal forest (20% of Alberta). Of these deposits, about 3,000 square kilometers are shallow enough to allow exploitation through surface strip-mining. The remainder is and will be accessed through a dense network of wellpads, above ground pipelines and processing facilities that inject steam into the deposit and pump bitumen to the surface.

Current oil sands production stands at 1.2 million barrels per day (bpd), but an additional 1.3 million bpd of production has been approved by the Government of Alberta and there are plans to increase production to 5 million bpd by 2030. In addition, as of July, 2005 the Government of Alberta had issued oil sands leases to oil companies for 3.6 million hectares of boreal forest. All of these project approvals and leasing of mineral rights have occurred without sufficient assessment or management of the environmental implications for the region's air quality, boreal forest, wildlife and water resources.

According to the Government of Alberta, the oil sands industry has directly impacted 47,832 hectares of boreal forest and wetlands to date. Of this, 6,498 hectares are undergoing reclamation, however no reclaimed land has been certified as such by the Government. Loss of habitat (both directly from clearing and effectively from fragmentation) and biodiversity (due to reclamation limitations that will reduce the proportion of wetlands in the reclaimed landscape) are already occurring and will only increase as this industry expands across the northern part of Alberta.

Oil sands air pollution, both within Alberta and transboundary, is rapidly increasing. Since 2003, Alberta has been the industrial air pollution capital of Canada. Pollutants include nitrogen oxides (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>), volatile organic compounds (VOCs), and particulate matter (PM), all of which are emitted in large volumes. Modeling of the impacts of approved oil sands development, which includes three operating mines and three operations at various stages of planning and construction, shows that maximum predicted ambient air concentrations of NO<sub>x</sub> and SO<sub>2</sub> would exceed provincial, national and international guidelines. Emissions of volatile organic compounds such as benzene are also on the rise because of both emissions from burning fossil fuels (e.g., natural gas, diesel, coke) and the growing number of tailings ponds. The costs of such air pollution have not been considered.

Oil sands mining operations withdraw 2 to 4.5 barrels of fresh water from the Athabasca River for every barrel of oil they produce. Current operations are permitted to withdraw approximately 359 million cubic metres of water per year, a volume equivalent to the amount required by a city of 2 million people. The combination of climate change and rapidly rising demand from oil sands production suggests that water volumes in the Athabasca River may be insufficient to support healthy aquatic ecosystems during the winter.<sup>18</sup> This is exacerbated by the fact that, unlike municipal effluent waters which are

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<sup>18</sup> J. Bruce, T. Tin. Implications of a 2° C global temperature rise on Canada's water resources: Athabasca River and Great Lakes as case studies. The Sage Centre. October 2006; D.W. Schindler, W.F. Donahue, J.

treated and released back into the river, oil sands processing effluent becomes so contaminated that it must be impounded in tailings ponds, which already currently cover 50 square kilometres of land and contain millions of cubic metres of toxic waste.

### **2.1.5 Upgrader Alley in Central Alberta**

The first upgrading facility in the Heartland region of Central Alberta (just north of Edmonton) opened in 2003 when Shell added an upgrader to its refinery at Scotford to process bitumen from the Albian Sands Muskeg River Mine. The Scotford facility can handle 155,000 barrels of bitumen per day, and it is currently being expanded.

Companies have plans to build five more upgraders. If they are all approved it will increase the upgrading capacity at least nine fold. The planned and disclosed operations will increase capacity to 1,420,400 barrels per day.

In addition to the conversion of agricultural land for industrial development, upgraders impact the environment through their voracious consumption of fresh water and emission of air pollution and climate-changing greenhouse gases. The Government of Alberta is currently piloting a new approach to addressing cumulative environmental impacts in the Upgrader Alley region.<sup>19</sup>

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Thompason. *Running out of Steam? Oil Sands Development and Water Use in the Athabasca River-Watershed: Science and Market based Solutions*. University of Alberta. May 2007.

<sup>19</sup> Source: <http://environment.alberta.ca/1933.html>. Accessed November 28, 2007.



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# 3. Diagnosis

## 3.1 Individual Government Decisions: Fragmented and Incremental

The above examples illustrate only a sample of the profound changes placing unsustainable pressures on Alberta's landscapes, including fresh water and air quality. The problem of unmanaged (and mismanaged) cumulative environmental impacts on Alberta's landscapes is not new, but it is more serious than ever because of Alberta's rapid economic, industrial and population growth. It can be traced to two structural characteristics of decision-making in Alberta. The first is the fragmentation of decisions among departmental 'silos'. The second is the incrementalism that occurs when decision makers issue individual permits, leases, approvals and licenses making way for the addition of new human activities on the landscape.

These decisions are made without long-term objectives for Alberta's landscapes and without considering the significant *cumulative impacts* of the many individual activities that are occurring simultaneously on a shared land base. The end result is that Alberta's environment is the victim of a 'tyranny of small decisions.' The future is shaped by the unplanned and unintended consequences of the government's individual decisions, not by conscious choice based on Albertans' fundamental values, priorities and long-term vision.

### 3.1.1 The 'Silo Effect' Plagues Government Departments

The first structural obstacle to managing cumulative environmental impacts is the fragmentation of environmental decision-making along departmental lines. This 'silo' effect occurs because government departments and agencies tend to focus on individual environmental media – air, land and water – or on their narrow mandates to manage specific resources such as forestry, water, energy, agriculture, transportation or public land.

Ministries with resource development mandates often set objectives for growth in each sector without considering how the growth in all sectors simultaneously will affect important values on a shared land base. For example, Alberta Environment issues thousands of water permits incrementally, without regard to the potential impact of the land use or the purpose for which the water is used. The residential development of land is increasingly the result of proposals from developers rather than a planned vision for the protection of watersheds. The impact on water resources, whether to provide a water supply or assure a high level of wastewater treatment, is often an 'afterthought' but has growing and unintended impacts to the quality and quantity of water based on cumulative growth. The 'silo' effect also forces a fragmented approach to individual projects when decision-makers treat impacts on air, land and water separately.

It is important to remember that land, water and air – and their attributes – are what Albertans *value*; but what the government can *manage* are human activities. Most of the

significant land uses in Alberta affect two or all three of the environmental media (land, water, air). Forestry in the foothills and northern Alberta, conventional oil and gas development, oil sands mining and in situ production, the expanding network of linear disturbances (e.g., roads, seismic lines, pipelines), and recreational land use all have effects on land, water and, in many cases, air quality. The government cannot protect values linked to fresh water without paying attention to land uses within watersheds and affecting groundwater. Likewise, fresh water quality and quantity will be increasingly important constraints on land uses.

Setting objectives at the landscape scale and managing cumulative impacts therefore requires integrated decision-making that breaks down departmental silos. The government can no longer afford to make departmental decisions independently, without considering how all activities combine to shape the future of Alberta's landscapes, watersheds and airsheds.

### **3.1.2 Resource Disposition and Project-by-Project Incrementalism**

The second structural obstacle to cumulative impact management lies in the day to day decision-making of government on the disposition of resources and the related issue of project development. New growth often begins with the issuance of resource rights—water, land, or mineral—to private interests. With these resource rights in hand, proponents will then seek to develop these resources by proposing individual projects such as residential development, oil and gas operations, or wastewater treatment plants. With every new project, the incremental growth and impact of development increases on Alberta's landscapes.

By their very nature, project level evaluations tend to treat the project or activity under review as isolated both in space and time from other land and resource uses. In some cases, the project review process may require consideration of cumulative impacts. However, project-level cumulative effects assessment generally occurs in the absence of objectives and environmental thresholds at a landscape scale. Consequently, project proponents and regulators cannot meaningfully consider the acceptability of individual projects in terms of the desired outcome for the landscape.

For example, the leasing of mineral rights by the Department of Energy and the project reviews by the Energy Resources Conservation Board consider leasing requests and project applications one at a time. Similarly, Alberta Environment routinely issues water rights for industrial and domestic development exceeding environmental thresholds. In southern Alberta, the government issued water permits until long after the ecological thresholds for the protection of instream flows were determined.<sup>20</sup> For most of Alberta, water rights continue to be issued in the absence of established ecological limits.<sup>21</sup> Similarly, water rights are also issued without any 'set asides' for future domestic water

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<sup>20</sup> Instream Flow Needs Determinations for the South Saskatchewan River Basin, Alberta, Canada. December 1, 2003. Alberta Environment.

<sup>21</sup> Instream flow need studies have only been conducted for the South Saskatchewan River Basin.

needs. The issuance of these permits continues the myth of water abundance in a region with limited water availability.<sup>22</sup>

These incremental processes cannot effectively consider the appropriate pace, scale and intensity of energy development or water allocation, let alone the cumulative impacts on environmental, social, and cultural values. Furthermore, they focus decision-making on mitigating the effects of individual projects rather than on managing total land and resource uses in light of objectives and priorities defined through land-use policy and planning. As the pace and intensity of development increase, unintended and undesirable environmental impacts may occur even if the government is requiring those undertaking projects and activities to do the best possible job of minimizing their individual impacts.

The government's inability to escape project-by-project incrementalism by taking a longer term and more holistic approach to land and resource use is linked directly to deficiencies in its decision-making system. In particular, the current policy and planning vacuum around cumulative impacts requires the government to operate solely in a reactive mode. The result is that attempts to lessen the intensity of impacts will be frustrated. Alberta continues to lack an overarching and integrated decision-making system linking broad land-use policy and planning to specific decisions about the allocation and use of land and water resources.

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<sup>22</sup> L. Martz, J. Bruneau, J. Rolfe. Climate Change and Water. SSRB Final Technical Report. April 2007. Accessed on October 17, 2007 at [http://www.usask.ca/geography/giservices/images/SSRB\\_Final\\_Report.pdf](http://www.usask.ca/geography/giservices/images/SSRB_Final_Report.pdf)

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# 4. Prognosis Without Treatment

## 4.1 A Review of Alberta's Strategic Initiatives

Thinking strategically about where Alberta is headed and how to get there will involve consideration of how the government currently approaches, or plans to approach, cumulative environmental impacts. The Alberta government has initiated several strategic environmental initiatives to address these issues:

- Water for Life and its recent renewal process is premised on the need for watershed-based planning with an eye toward land use impacts to water resources
- Proposals for a Land-Use Framework are being developed through a cross-ministry initiative led by the Minister of Sustainable Resource Development.
- The Department of the Environment has released a discussion paper outlining a proposed regulatory framework for cumulative environmental effects.
- Alberta's Clean Air Strategic Alliance (CASA) has launched a multi-stakeholder process to update the clean air strategy for the province.
- The Department of Energy is working on a comprehensive energy strategy.

These strategic initiatives are an implicit acknowledgment that the current approach to managing land use and natural resources is not working. A key question is whether this proliferation of strategies will yield progress toward integrated decision-making and effective management of cumulative environmental impacts.

These initiatives acknowledge the need for integrated governance to manage cumulative impacts and the Land-Use Framework is explicitly promoted as a 'cross-ministry' initiative. Nonetheless, each one has its lead minister and specific champions. There is a risk, therefore, that the silos from which they emerge and their implementation processes will perpetuate fragmented and incremental environmental decision-making.

### 4.1.1 Water for Life

Alberta's Water for Life strategy, now in its fourth year of implementation, has the longest track record of the various strategic initiatives noted above. Responding to emerging threats on the provincial water supply, the need for safe drinking water, and the assurance of healthy aquatic ecosystems, the strategy is founded on the principle of regional watershed planning. In 2007, Alberta Environment initiated a 'renewal' of Water for Life to assess the strategy's successes and challenges. While the strategy explicitly recognizes the problem of fragmented environmental decision-making and the challenge of integration with the land use framework, there is no law, policy, or governance framework that will address this most fundamental issue.

The strategy establishes a planning and advisory structure based on a central principle of ‘shared governance.’ This structure includes the Alberta Water Council, Watershed Planning and Advisory Councils (WPACs,) and Watershed Stewardship Groups (WSGs). Benefits of the ‘shared governance’ approach include:

- Local engagement on local watershed issues through WPACs or WSGs;
- Increased dialogue among a greater number of stakeholders on key legal and policy issues;
- Shared responsibility for watershed protection by not only the provincial government but other actors including industry and local government;
- Heightened public knowledge and concern about water management;
- New and strengthened relationships among stakeholders; and
- Increased public engagement in water management and planning.<sup>23</sup>

**“Integrating strategies for air, land and water management – Air, land and water are connected and their management should be integrated to achieve desired environmental outcomes. The AWC [Alberta Water Council] must encourage and promote the integration of sectors to achieve better air, land and water management.”**

Alberta Water Council 2006 – 2009 Business Plan, p. 4.

The evolution to date of Water for Life has included a progressive broadening of focus. Initially, the strategy appeared to address water management planning for water quantity. Participants in the strategy recognized that meeting objectives for both instream flow (i.e. water quantity) and water quality would require a watershed focus that included understanding and evaluating the implications of land use on surface and groundwater within the watershed. Consequently, the Alberta Water Council has made it clear that it intends to approach watershed planning with both land and water resources in mind.<sup>24</sup>

It is no surprise that integration across environmental media (air, land and water) and activities has been recognized as an important issue for the renewal of Water for Life, particularly under the “shared governance” principle. The Alberta Water Council has identified integration with other strategies as a key challenge (see text box). Going forward the Council is seeking to address this issue through its governance subcommittee which will be releasing its new framework for watershed management in 2008.

#### **4.1.2 Land-Use Framework**

The Land-Use Framework (LUF) initiative, launched in 2006, is intended “to set forth an approach to govern and manage public and private lands and natural resources to help achieve Albertans’ long-term social and economic goals, based on a foundation of sound

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<sup>23</sup> Bow Riverkeeper et al. Recommendations for Renewal of Water for Life: Alberta’s Strategy for Sustainability. October 2007. Accessed November 27, 2007 at <http://www.bowriverkeeper.org/docs/water-for-life-renewal-analysis-brk.pdf>.

<sup>24</sup> Alberta Water Council. Review of Implementation Progress of Water for Life, 2005-2006. p. 3 March 7, 2007. Accessed November 27, 2007 at [http://www.waterforlife.gov.ab.ca/awc/docs/Review\\_Report\\_05-06.pdf](http://www.waterforlife.gov.ab.ca/awc/docs/Review_Report_05-06.pdf).

environmental management.”<sup>25</sup> The Alberta government identified the following land-use challenges to be addressed:<sup>26</sup>

- Growth, mounting land-use pressures and cumulative effects;
- Competing demands for land – and resulting land-use conflicts;
- The need to ensure long-term sustainability; and
- The need for integrated land-use policies.

The LUF initiative has involved several phases of public and stakeholder consultation, including reports by multi-stakeholder working groups on Planning and Decision-Making Processes, Growth and Resource Management, Conservation and Stewardship, and Monitoring and Evaluation. These reports were submitted to the government on October 9, 2007, and the draft Land-Use Framework is expected to be released in the spring of 2008.

The need for an integrated decision-making structure including regional land-use planning is a central theme in public and stakeholder consultations for the LUF initiative.<sup>27</sup> There is also considerable overlap on this point among the reports of the working groups. Integrated regional planning is at the heart of the recommendations from the LUF working group that examined Planning and Decision-Making Processes. This group also raised the question of how planning within the LUF would be integrated with the watershed planning role that appears to be developing for WPACs under Water for Life. The government’s response to the challenge of integrating these initiatives will be a key litmus test for the LUF.

#### **4.1.3 A Proposed Regulatory Framework for Cumulative Effects**

The Minister of Environment’s ‘mandate letter’ from Premier Ed Stelmach includes responsibility for developing a regulatory framework for managing cumulative environmental effects.<sup>28</sup> In October, 2007, Alberta Environment released a policy paper announcing its intention to discharge this mandate by introducing new legislation, to be called the *Environmental Sustainability Act*.<sup>29</sup> The proposed regulatory framework is being developed in parallel with the Land-Use Framework initiative and the renewal of Water for Life. Its purpose is to “to establish an environmental management system that sets desired objectives for environmental quality for defined parts of the province and ensures human activity is managed to achieve those objectives.”<sup>30</sup>

<sup>25</sup> Government of Alberta, *Land-use Framework Workbook* (2007), p.1.

<sup>26</sup> Government of Alberta, *Understanding Land Use in Alberta* (2007) p.5.

<sup>27</sup> The Praxis Group and Canada West Foundation, Summary Report, *Provincial Land-use Framework Initiative Cross-sector Forum, Red Deer – December 4-6 2006* (2006), p.19.

<sup>28</sup> <http://www.gov.ab.ca/acn/200612/209149C8DA42D-B5BD-1F00-52A0A0AB234256AE.html>

<sup>29</sup> Alberta Environment, *Towards Environmental Sustainability: Proposed Regulatory Framework for Managing Environmental Cumulative Effects* (2007).

<sup>30</sup> *Ibid.*, p.10.

The policy paper describes the proposed regulatory framework in general terms, but does not provide many details on design or implementation. It proposes a ‘results-based’ approach to environmental sustainability that will involve setting objectives within regional planning areas and developing environmental sustainability strategies to manage cumulative effects so as to meet those objectives. This approach is contrasted with “the existing regulatory system, which is primarily based on managing and mitigating the impacts of individual projects, often through legislation aimed at specific resources, such as timber or water.”<sup>31</sup>

The paper refers briefly to roles and accountability within the proposed legislative framework, the identification of planning areas and the development of sustainability objectives and strategies. Multi-stakeholder organizations and government-appointed advisory committees are two options proposed for developing objectives and strategies.

The policy paper mentions the government’s other strategic initiatives including Water for Life and the Land-Use Framework. It states that the proposed regulatory framework for cumulative effects “can contribute to the progress of those other initiatives” and affirms the need for a “cooperative approach across all related departments.”<sup>32</sup> The policy paper also states that “a common planning base would support integrated planning for air, land, water and biodiversity.”<sup>33</sup>

Since this initiative is in its very early stages (soliciting public comment on the policy paper), it is difficult to determine whether the proposed legislation will address the root causes of fragmentation within our system of environmental decision-making. The debate over this regulatory framework and its enabling legislation will prove a testing ground for whether there will be meaningful integration that results in effective management of activities that contribute to cumulative environmental impacts.

#### **4.1.4 Clean Air and Energy Strategies**

Unmanaged cumulative impacts and the need to address the structural problems of fragmentation and incrementalism in decision-making are likely to be universal themes as Alberta’s other strategic initiatives roll out. Clean air and energy strategies appear to be next in line.

Alberta’s Clean Air Strategic Alliance (CASA) has established a multi-stakeholder project team to develop a new clean air strategy for Alberta. Integration is on the agenda from the outset: The ‘statement of opportunity’ from Alberta Environment initiating this process stated that the clean air strategy is required “to align with government initiatives on land and water.”<sup>34</sup>

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<sup>31</sup> Ibid., p. 6.

<sup>32</sup> Ibid., pp.4,9.

<sup>33</sup> Ibid., p.11.

<sup>34</sup> Alberta Environment, Statement of Opportunity: A CASA Project Team to Develop a Clean Air Strategy for Alberta (March 2007), p.3.

The discussion of ‘alignment’ with other strategies should lead the CASA initiative to consider structural integration through planning and other decision-making processes. The quality of air that Albertans breathe in the future will be determined in large measure by important land-use decisions on issues ranging from the design of urban areas and transportation infrastructure to the number and location of bitumen upgraders for the oil sands industry. The deployment of technology in each of these areas will also be a key determinant of air quality, again requiring strategic direction and planning.

Decisions on urban design, transportation, oil sands upgrading and a multitude of other issues affecting air quality will have major implications for Alberta’s land and water as well. Keeping neatly within Alberta Environment’s departmental silo that corresponds with its air management mandate is not a satisfactory option for CASA’s clean air strategy.

The Comprehensive Energy Strategy, currently under development by the Department of Energy, is another example of a departmental strategy where the silo mentality will inevitably conflict with the need for integrated planning and decision-making to manage cumulative environmental impacts. Given the dominant role of energy development in shaping the economic and environmental future of Alberta, it is critically important that energy be included along with other major land and resource uses within an integrated governance structure.

The absence of an overall policy and planning framework for cumulative environmental impact management and the entrenched incrementalism and narrow departmental focus of decision-making at the resource allocation (mineral rights issuance) and project review stages are particularly acute for the Department of Energy. An explicit or implicit policy that energy development should occur everywhere, all the time in Alberta and that the imperative of immediate access to energy resources trumps all other land-use values is inconsistent with an integrated approach to land and resource management. These issues need to be addressed both within a Comprehensive Energy Strategy and through linkages between that strategy and other initiatives.

## **4.2 Obstacles to Integration within the Strategies**

The Alberta Government’s strategic initiatives on water, land-use, cumulative effects, air and energy are an acknowledgement that the status quo is no longer acceptable. However, there is a real risk that these strategies will fail to address some of the key sources of fragmentation and incrementalism outlined above. Meaningful progress towards integrated decision-making requires measures to break down departmental silos and fill the governance vacuum.

### **4.2.1 Departmental ‘Silos’**

Experience in Alberta and elsewhere has shown that simply relying on coordination or partnerships among departments will be insufficient to achieve meaningful integration if legal mandates, policy objectives and the resulting organizational incentives remain unaltered. Despite references to ‘integration’ and ‘alignment’, the strategies are either undefined or vague on how current policies and institutions will be transformed to achieve truly *integrated decision-making*.



The tendencies of departments to pursue narrow mandates and to ‘protect their turf’ remain entrenched to some degree within each of the existing strategies. Water, air and energy strategies are being developed within traditional departmental mandates and Alberta Environment is the lead department on the regulatory framework for cumulative effects (*Environmental Sustainability Act*). Although the Land-Use Framework is promoted as a ‘cross ministry’ initiative, it is led by the Minister of Sustainable Resource Development.

The involvement of other key departments in these initiatives and the commitment of their Ministers to meaningful change remain unclear. In particular, the ability of these initiatives to break down the decision-making silo within which the Department of Energy promotes oil and gas development through energy policy, mineral rights leasing and project approvals has yet to be tested. Fundamental changes to the way this department makes decisions about energy development are essential to manage cumulative environmental impacts and to achieve the vision of integrated landscape management that is driving the Water for Life and Land-Use Framework initiatives.

#### **4.2.2 The Governance Vacuum: Case Study of Water for Life**

The second key challenge is to fill the governance vacuum that surrounds these strategic initiatives and risks separating them from key decision-making at the planning and operational levels of land and resource management. Integrated planning and decision-making requires a well defined governance structure.

Water for Life illustrates the perils of ignoring governance issues. As noted above, planning has an increasingly central place in this strategy through the work of the Watershed Planning and Advisory Councils (WPACs). Water for Life, however, is not on a path that would result in integrated decision-making guided by the watershed planning process or would achieve integration across environmental media (e.g. land, water, energy) to address cumulative effects. As of November 2007, there is no indication that the government will institutionalize the unfolding watershed planning framework currently under development by the Alberta Water Council in a manner that would guide day-to-day decision making by government departments and agencies.

Watershed planning by WPACs through the ‘shared governance’ model is emerging without adequate legal foundations, procedural requirements and linkages with decision-making. The potential for confusion and frustration is enormous. Important governance issues that remain to be addressed include:

- The selection, composition, representativeness and accountability of WPACs;
- The roles, responsibilities and authority of stakeholder participants;
- The decision-making processes used for watershed planning, including the use of a consensus model, methods for addressing issues where consensus is not possible, and guarantees of transparency and information sharing;
- The legal authority of WPACs and their planning decisions within an overall decision-making hierarchy, including their relationship to municipal planning; and

- The legal and policy tools for implementing, monitoring and enforcing watershed plans; notably where these plans have important implications for the responsibilities and authority of government departments and agencies.

“There is currently the opportunity to have multiple and potentially-conflicting planning processes in place in Alberta. Further, current policy development may prove to be in conflict with watershed planning objectives. These conflicts in policy and planning tools must be integrated or there must be expressed acknowledgement of the relative hierarchy of policy tools within the Alberta Government. For example, watershed plans may end up conflicting with the land use framework or with policies being produced by Alberta Energy. Clarity as to whether a hierarchy of policy will be recognized by the Government of Alberta is essential to informed participation of public under *Water for Life*.”

Environmental Law Centre, Submission on Water for Life Strategy Renewal, August 24, 2007, p. 10.

Perhaps the most important governance issues arise from the fact that watershed plans cannot effectively address protection of Alberta’s water resources without integrating land use decisions into their fold. Watershed management necessarily involves decisions about a multitude of land uses including energy development, forestry, agriculture, recreation, transportation and urban design, all of which have direct and significant implications for surface and ground water. Of course, these decisions also affect our land and air; hence the need for a governance structure that includes integrated policy and planning.

It appears, however, that the Alberta government has handed a watershed planning process to the WPACs without any indication that their work will directly guide decision-making. The link between planning and decision-making must be addressed within *Water for Life* and as a broader matter of integrated land and resource management. Similar governance issues will arise within and between each of the government’s other strategic initiatives outlined above.



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# 5. Proposed Course of Treatment

## 5.1 Towards Integrated Decision-making

Faced with compelling evidence that our existing decision-making processes are incapable of adequately managing cumulative environmental impacts and are therefore yielding increasingly unacceptable results, it makes sense to pursue integrated decision-making. The ultimate goal must be an integrated legal and policy framework for the important decisions on land and resource use affecting our land, water and air. Achieving this goal requires removing the structural barriers to cumulative impact management (i.e., fragmentation and incrementalism) through the establishment of regional planning. Regional planning also provides the key for achieving convergence of Alberta's strategic initiatives.

## 5.2 Regional Planning as the Driver of Integrated Decision-making

Managing cumulative environmental impacts requires setting landscape-scale objectives to guide day to day decision-making by government. Planning is fundamental to this process because it focuses explicitly on setting objectives. Planning can also be a powerful integrative mechanism, involving the consideration of the multitude of existing and potential land and resource uses within the planning area. Furthermore, it is a key stage in the decision-making hierarchy, providing a link between broad policies and strategies for land and resource use and the specific decisions (e.g., land and resource allocation and project review) that determine what happens on the ground.

A unified provincial policy framework will be needed to guide regional planning, notably on issues where important provincial (or national) interests are at stake or where decisions within one planning region may have spill-over effects in other regions. Unlike current departmental policies, this broader framework will have to address overall objectives at the landscape scale and it will have to set priorities and explicitly consider trade-offs among different land and resource uses.

Taking planning seriously will also drive better integration with subsequent stages of decision-making. In particular, integrated decision-making requires legal guarantees that decisions to issue resource rights (e.g., mineral rights, water rights) and to approve projects and activities (e.g., project reviews by the Energy Resources Conservation Board and the Natural Resources Conservation Board) will conform with planning objectives and take account of the full range of values and interests associated with different uses of land and resources. The relationship between regional planning and existing municipal planning will also need to be defined.

Planning on its own is not, of course, sufficient to achieve fully-integrated decision making. A commitment to implement integrated planning will, however, drive integration throughout the decision-making hierarchy that begins with a broad policy on land and resource use and ends with project review and regulatory decisions on specific projects and activities.

The need for one process for integrated regional planning will need to be resolved amidst the existence of a disjointed set of planning initiatives which separately address watersheds, land-use, cumulative effects, airsheds and other sectoral activities. As Water for Life, the Land-Use Framework, the regulatory framework for cumulative effects (*Environmental Sustainability Act*) and other strategies converge on the idea of regional planning, they should also converge on a unified governance structure to put that idea into practice.

While the exact prescription for successful integration has yet to be fully defined, the first step is clear. Any proposed system to deal with the issue of cumulative environmental impacts must include a single system of integrated regional planning that is established by new legislation.

### **5.3 New Planning Legislation**

The status quo is failing Albertans because the very structure of the government's decision-making processes impedes integration. New legislation is needed to place regional planning firmly at the heart of the integrated governance system for land and resource management. An initiative of this magnitude warrants the public debate and political profile that can only be achieved through the enactment of new legislation. Furthermore, a firm statutory foundation and legal 'teeth' are essential to overcome the fragmentation that is firmly entrenched within government departments and agencies and in existing legislation, policies and decision-making processes.

In order to be effective and durable, planning must be based on more than policy documents or strategies that provide only guidance but have no legal effect, are not binding on other decision makers, and leave the planning process to be determined through ad hoc political and administrative decisions. Alberta's disappointing experience with the outdated, incomplete and under-funded Integrated Resource Planning on public lands shows the risks of relying on an ad hoc and policy-based planning process. The governance vacuum around Water for Life also highlights the perils of initiating planning processes without a statutory governance structure.

New legislation should include a statement of principles and objectives for integrated regional planning, a legal framework to ensure that plans are binding on subsequent decision makers (including necessary amendments to other legislation), and the basic procedural attributes of the planning process. Embedding planning in a legally defined hierarchy of decision-making will advance both transparency and accountability. The enactment of new planning legislation will also provide an opportunity to simplify and streamline other statutes and decision-making processes governing land and resource use.

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# 6. Next Steps Toward a Cure

A complete prescription for successful integration will, of course, require further refinement to ensure that today's problems are truly "cured." Establishing regional planning within an integrated governance structure is a major undertaking given the planning vacuum at the regional scale and the causes of fragmentation and incrementalism that are entrenched in current decision-making processes and governance structures. The challenges in each area warrant careful attention, but they are by no means insurmountable.

Strategies that focus on specific departmental mandates, issues areas and environmental media (e.g., water, air, land, biodiversity) could continue to play two important roles within an integrated governance structure. The first role is to collect information and provide overall strategic direction at the policy level regarding specific sets of issues. The second role of these more-narrowly focused strategies is to explore specific policy and management options. For example, a strategic initiative dealing with water could focus on the use of specific management tools such as regulatory and market-based instruments to the allocation and transfer of water rights. In this way, these strategies could provide useful information to the integrated planning process regarding specific management options and they could also enhance the capacity of departmental decision makers to achieve the objectives set by regional plans.

The structural integration of Water for Life, the Land-Use Framework and other strategies through a legislated regional planning process does not, therefore, imply complete integration of all components of these initiatives. However, planning legislation provides an opportunity for bringing important elements of the government's strategic initiatives within a unified governance structure.

The issues raised by this paper—integrated decision-making, cumulative impacts management and convergence of the government's strategic initiatives—are complex and will require more public discussion. The first step in making progress in these areas, however, is for the Premier and Cabinet – speaking for the Alberta government as a whole – to make a firm commitment to integrated regional planning backed by legislation as the foundation of a comprehensive approach to managing cumulative environmental impacts. A single new planning statute would provide the focal point for the regional planning components of Water for Life, the Land-Use Framework and the cumulative effects regulatory framework (*Environmental Sustainability Act*) and could also integrate the planning components of forthcoming sectoral strategies focusing on air, energy and eventually other departmental mandates and issue areas. Once this endpoint is clearly identified by the government, attention can shift to the details of design and implementation.