



The Path We Share

A Natural Resources Strategy for Nova Scotia
2011–2020

©Crown copyright, Province of Nova Scotia, 2011

All rights reserved. Permission is granted to reproduce all or part of this publication for non-commercial purposes, as long as you cite the source.


Recommended citation

Nova Scotia Department of Natural Resources (August, 2011). *The Path We Share, A Natural Resources Strategy for Nova Scotia 2011-2020*, Nova Scotia Department of Natural Resources

This strategy and related documents are available at www.gov.ns.ca/natr/ or by calling the Nova Scotia Department of Natural Resources Library at (902) 424-8633.

Internal reference number: Report DNR 2011-01

ISBN: 978-1-55457-431-5



The Path We Share

**A Natural Resources Strategy for Nova Scotia
2011–2020**



Contents

Minister’s Message	4
1. Why a Natural Resources Strategy?	7
The context	9
How the strategy was developed.....	10
How the strategy is organized.....	10
2. A New Approach to Natural Resource Management.....	11
The vision	12
The overarching goals	12
The context.....	13
Collaborative leadership.....	13
Sustainable resource development.....	16
Research and knowledge sharing	19
Good governance	21
3. Biodiversity.....	23
The goals	24
The context.....	24
Good governance	28
Research and knowledge sharing	29
Ecosystem approach	30
Education and shared stewardship	31
4. Forests	33
The goals	34
The context.....	34
Ecosystem approach.....	35
Research and knowledge sharing	37
Shared stewardship.....	38
Sustainable resource development.....	40
Good governance	41

5. Geological Resources	45
The goals	46
The context	46
Sustainable resource development	47
Life-cycle planning	50
Research and knowledge sharing	52
Education and shared stewardship	53
Good governance	54
6. Provincial Parks	57
The goals	58
The context	58
Shared stewardship	61
Far-sighted planning	62
Protection	63
Education	64
Recreation	64
7. Next Steps	67
Working together	68
A Final Word	69
Appendices	70
A. Strategy Development Process	70
B. Glossary of Terms	73
C. References	76

Figures in this strategy

2-1. Levels of engagement	15
3-1. Components of biodiversity	26
3-2. Biodiversity outcomes: What we want to achieve	27
6-1. Nova Scotia's provincial parks and park reserves (Spring 2011)	59
6-2. Mandate for Nova Scotia's provincial parks	59
A-1. Snapshot of the Strategy Development Process	70

Minister's Message

Nova Scotians have always understood that to prosper we need to adapt. Keeping an eye on the turning tides so that we know when to adjust our course has helped our province through challenging periods in the past. The same is true today. That's why I am excited to be putting forward this transformative 10-year strategy for managing our natural resources.

The Path We Share, A Natural Resources Strategy for Nova Scotia 2011–2020 is about doing important things differently. The call for change comes from Nova Scotians of all ages and walks of life who care about our natural resources. Some are experts, some care about an individual beach, park, or woods near their home. By listening to the voices of the Mi'kmaq, key interest groups, economic and scientific specialists, and others, the panels that helped the department draft this strategy arrived at a key conclusion: the status quo is not acceptable. The Department of Natural Resources and the government of Nova Scotia agree.

Times change; public values change. We have listened carefully. It has become apparent through the innovative three-phase development of this strategy that our economic, environmental, and societal values are out of balance. With this strategy, we have set goals to restore that balance; to ensure our province is a place where a diverse mix of life—biodiversity—thrives and contributes to economic growth for our children and their children.

This strategy embraces five key values related to our natural resources, values that Nova Scotians have told us they hold dear: sustainability, transparency, diversity, collaboration, and informed decision making. These values will be hallmarks of future plans for managing our biodiversity, forests, geological resources, and parks.

This strategy points the way to a future in which industries are more innovative and sustainable, in which Nova Scotians enjoy good jobs, and in which the biodiversity of our environment is healthy, protected, and enjoyed. On the way to that future, we will keep listening. We want the conversation to continue.

Our new approach emphasizes collaboration and partnerships, research and knowledge-sharing, outreach, and innovation and investment in sustainable jobs that are long-term and 'greener.' We are seeking a transformation; change based on relationships, trust, accountability, and shared stewardship with everyone who cares about Nova Scotia's natural resources.

On behalf of the province, I extend our sincere gratitude to the panels of expertise and the steering panel for their work on this strategy. To the volunteer committee from Phase 1, and to all Nova Scotians who joined in the unique, consultative process and thus helped to achieve this long term strategy, thank you for your contributions to the future of our great province.

A handwritten signature in black ink that reads "Charlie Parker". The signature is fluid and cursive, with the first name "Charlie" and the last name "Parker" clearly distinguishable.

*The Honourable Charlie Parker
Minister of Natural Resources*



1. Why a Natural Resources Strategy?



Forestry workers, St. Margarets Bay area, Nova Scotia

1. Why a Natural Resources Strategy?

The natural resources of the province belong to all Nova Scotians, and all share the responsibility of ensuring the survival and good health of those resources for future generations. The government is presenting this strategy, but its fate is in the hands of thousands of others – owners of large and small tracts of land, industry leaders, communities, environmental groups, municipal leaders, the Mi'kmaq, the next generation of political leaders, teachers, researchers, and academics. They and many other Nova Scotians will play a vital role, including the making of decisions that determine the future of woodlots, mining ventures, the living environment, parks, and protected land.

For decades, managing Nova Scotia's natural resources meant promoting forestry and mining. Government's goal was to support good jobs and successful industries that would help communities prosper. For a time, and in many ways, communities and industries did prosper. But times have changed. Jobs and a vibrant economy are still vital for Nova Scotia's future, but to ensure that prosperity is sustainable, we need to change the way we collectively manage the province's natural assets.

Our natural environment is threatened, and traditional practices in many resource-based industries are not sustainable. Markets have changed. The future of our resource sectors, and of our natural resources themselves, demand that we change too.

Every step of the way, this strategy attempts to strike the right balance. The economic, environmental, and social values of our natural resources, so often in conflict in the past, now need to coexist through balanced and sustainable management practices. This strategy rejects outright any suggestion that economic development and a healthy environment are mutually exclusive. Social progress now requires careful attention to their mutual dependence.

This strategy marks a departure from traditional natural resource management and is inspired by the vision of a sustainable and prosperous future, a vision described to us by Nova Scotians and reflected in *jobsHere: the plan to grow our economy*. As the foundation for the government's extensive program of change, the principles inherent in that economic plan give direction to this strategy and the actions that flow from it.

This strategy is not prescriptive. It is inclusive. As in the rest of our economy, it is time to be innovative, to think differently about our most traditional sectors, our resource industries. Decisions today can affect generations of Nova Scotians, and so the responsibility is great. Our choices must be based on evidence and on knowledge

from the most reliable sources. With these things in mind, this strategy reflects confidence that Nova Scotians will make the right decisions and strike the right balance, for today and for generations to come.

The context

The natural resources strategy reflects commitment to the Environmental Goals and Sustainable Prosperity Act (EGSPA). It is also a component of Nova Scotia's Climate Change Action Plan and essential to *jobsHere: the plan to grow our economy*. Building skills, innovation, and competitiveness—the priorities highlighted in *jobsHere* are critical to the success of businesses operating in the natural resource sectors. Nova Scotia's abundant resources are an economic asset, but innovative, sustainable development of those resources can provide competitive advantages, not just today but for future generations. Actions in this strategy support the creation of high-value jobs in the forest and mineral-related sectors. Actions related to provincial parks and biodiversity will help Nova Scotians develop marketable skills and innovative ways to maintain and protect these assets.

The strategy is directly linked to other provincial strategies and priorities, including:

- *Toward a Greener Future: Nova Scotia's 2009 Energy Strategy* (a companion to the Climate Change Action Plan)
- *Renewable Electricity Plan*, 2010
- *Water for Life: Nova Scotia's Water Resource Management Strategy*, 2010
- coastal strategy (in development)
- wetland policy (in development)
- *Homegrown Success: A Ten-Year Plan for Agriculture*, 2010
- *A Treasured Past, A Precious Future: A Heritage Strategy for Nova Scotia*, 2008–2013
- 12% goal of the land-protection process

The message in the natural resources strategy is clear: We need to do things differently—to seize opportunities to grow the economy, to enhance social well-being, and to improve natural-resource stewardship and sustainability. The emphases on sustainability, shared stewardship, and mutual accountability recognize that economic prosperity and a healthy environment—in balance—contribute equally to the well-being of our society.

How the strategy was developed

The natural resources strategy was developed in consultation with thousands of Nova Scotians.

- Phase 1 – Citizen engagement
- Phase 2 – Stakeholder engagement/Technical expertise
- Phase 3 – Government’s response: a 10-year plan for collaborative stewardship

See Appendix A for background and links to more information about the process, including the reports from Phases 1 and 2.

How the strategy is organized

This strategy is grounded on the values of sustainability, diversity, collaboration, transparency, and informed decision making, values expressed by Nova Scotians in Phase 1 (see Appendix A, Strategy Development Process).

To breathe life into these values demands a new approach to natural resource management, an approach guided by four overarching goals: collaborative leadership, sustainable resource development, research and knowledge sharing, and good governance. These goals are described in detail in the section that follows. In addition, the strategy sets specific goals and actions for four vital natural resources: biodiversity (section 3); forests (section 4); geological (mineral) resources (section 5); and provincial parks (section 6).

2. A New Approach to Natural Resource Management



The Islands Provincial Park, Nova Scotia

2. A New Approach to Natural Resource Management

The vision

This strategy entails a new approach to natural resource management for Nova Scotia, inspired by a vision for a sustainable and prosperous future.

In 2020 and beyond

- Nova Scotia is rich in natural resources—including biodiversity, forests, geological resources, and provincial parks.
- Individuals and groups interested in our natural resources work with government to manage these resources wisely.
- All Nova Scotians benefit from the natural health and wealth of the province.

The strategy sets 23 goals for achieving long-term economic gains while ensuring a healthy natural environment, now and for future generations. Each goal is supported by specific actions. The goals and actions commit government to an integrated ecosystem approach that involves everyone in the shared stewardship of Nova Scotia's natural resources.

The overarching goals

Collaborative leadership. Build a culture of collaboration, innovation, and mutual accountability that equips government to implement the natural resources strategy.

Sustainable resource development. Manage Nova Scotia's natural resources to achieve a sustainable balance of economic, environmental, and social benefits for current and future generations of Nova Scotians.

Research and knowledge sharing. Strengthen research capacity and knowledge sharing so that government and interested groups are well informed about issues affecting our natural resources.

Good governance. Ensure that laws and policies are clear and effective.

The context

The new approach to natural resource management is collaborative, far-sighted, and holistic. Contributors to the strategy development process made clear that the status quo is not acceptable. Government must work collaboratively with stakeholders to set priorities and ensure good governance. Government departments must coordinate their programs, services, and planning. And the Department of Natural Resources must equip people to understand our natural environment and weigh the benefits and costs of natural resource development.

The Department of Natural Resources will lead by example, using an ecosystem approach in the management of Crown land.

Goal: Collaborative leadership

Build a culture of collaboration, innovation, and mutual accountability that equips government to implement the natural resources strategy.

Actions:

- Identify and develop leaders and other contributors to work on resource management priorities.
- Include interested groups in planning and decision making about natural resources.
- Develop and share best practices to engage citizens and interested groups in meaningful ways.

This strategy commits the Department of Natural Resources to a culture of shared stewardship and mutual accountability. The term *stewardship* refers to the responsible use and conservation of natural resources in a way that takes full and balanced account of the interests of society, future generations, and other species. The term *shared stewardship* describes the work ethic necessary to achieve the vision of a province rich in natural resources, where government and interested groups work together and all Nova Scotians benefit. In a culture of shared stewardship, people do more than advocate for their own interests; they collaborate to find common ground

and achieve a healthy balance in the choices they make and the actions they take. All parties are accountable to each other. They share responsibility for the wellbeing of the economy, the environment, and society.

This marks a fundamental change—a transition from the limited partnerships that government and industry relied on in the past, to a broadly inclusive and collaborative way of working. The pressures of competing interests and limited resources made it tempting to favour control over collaboration and to withhold rather than share information. But those approaches severely limited the ability to solve complex problems and find new opportunities. All Nova Scotians with an interest in our natural resources need to strengthen their resolve to collaborate in good faith.

The Department of Natural Resources will work with other government departments and interested groups to ensure that the goals and actions in this strategy are fulfilled and measured. Interested groups include these and others:

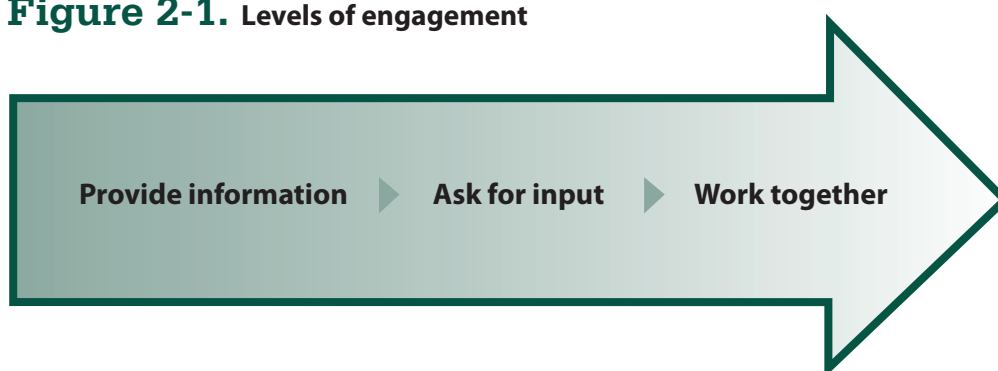
- the Mi'kmaq of Nova Scotia*
- land owners
- business and industry representatives
- environmental groups
- community groups
- academics
- municipalities

**Government affirms the existing aboriginal and treaty rights in section 35 of the Constitution Act (1982). We will continue to consult with First Nations, using the Mi'kmaq–Nova Scotia–Canada Consultation Terms of Reference, whenever decisions being considered might affect these rights.*

Engagement

Engagement describes the act of bringing people together to address issues that affect them in order to solve shared problems and make positive changes. It may be as simple as reporting information in a public forum, or it may involve actively working together to solve problems, and perhaps ultimately turning an issue over to communities to manage and resolve. (See Figure 2-1.) The level of involvement depends on many factors, including the urgency of the issue and the potential impact of the decision.

Figure 2-1. Levels of engagement



When true engagement happens people who might have previously been left out of political and policy debates are included. Engaged people get involved in deliberation, dialogue, and action on public issues that matter to them.

Engagement helps all interested groups—especially leaders and decision makers—to better understand the scope of the issues, the range of solutions, and the impact of their decisions and actions. It also inspires more people to commit to the shared stewardship of the province’s natural resources.

Engagement is often about decision making, but it can also be about implementation. Committed volunteers serve an important role in many environmental stewardship programs, such as the nest monitoring and protection program for the Blanding’s turtle. The Department of Natural Resources will continue to support a broad range of volunteer programs, and will look for ways to strengthen and connect these programs.

Goal: Sustainable resource development

Manage Nova Scotia's natural resources to achieve a sustainable balance of economic, environmental, and social benefits for current and future generations of Nova Scotians.

Actions:

- Use an ecosystem approach to strengthen land use planning and natural resource management throughout the province.
- Redesign the integrated resource management (IRM) process to guide resource management on public and private land.
- Explore complementary ways to use provincial Crown land (e.g., innovative economic development, wind power generation, recreation, carbon management).

Sustainability is essential to a robust economy, a healthy environment, and a bright future. Sustainable development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”¹ This principle is deeply embedded in aboriginal culture. The Mi’kmaq call it *Netukulimk*, described as using the natural bounty provided by the Creator for the self-support and well-being of the individual and the community, with consideration for the next seven generations.²

Sustainability requires that decision makers work toward an equitable, long-term balance of economic, environmental, and social priorities. In Phase 2 of the strategy development process, the steering panel defined balance as a “state of equilibrium between multiple forces—that point at which the negatives of those forces are minimized.”³ The panel noted that balance allows for stability.

Stability does not mean standing still. The natural world is dynamic, and so are the markets for our resources and products. Change is inevitable in the years ahead. The challenge is to find potential in new circumstances. To compete effectively, we need to innovate.

1 World Commission on Environment and Development (“the Brundtland Commission”) (1987).

2 Unama’ki Institute of Natural Resources (2010).

3 *A Natural Balance* (April 2010), Steering Panel Report, p. 11.

Ecosystem approach

To strengthen long-range planning, the Department of Natural Resources commits to an ecosystem approach to natural resource management. The United Nations Convention on Biological Diversity defines an ecosystem approach as “the integrated management of land, water and living resources [to provide] sustainable delivery of ecosystem services in an equitable way.”⁴ An ecosystem approach considers a site in relation to the larger landscape, from the watershed up to and including the entire province, if appropriate. Considerations include wildlife species, genetic resources, habitats, ecosystems, and ecological processes. These are described in more detail in section 3, Biodiversity.

The department already measures many aspects of our resources, including effects upon ecosystems, through its integrated resource management (IRM) process for Crown land. The natural resources strategy improves the effectiveness of IRM by expanding its scope and engaging more interested groups. (See the IRM sidebar.)

In Nova Scotia, *Crown land* is defined as land under the administration and control of the Minister of Natural Resources. This includes many areas that are suitable for forestry and other resource uses, most of the submerged lands along the coastline, the system of provincial parks and park reserves, and former rail corridors that are now maintained as public trails. Other provincially owned lands—including wilderness areas, highways, roads, and provincial buildings—are managed by other departments and are not considered Crown land.

4 United Nations Convention on Biological Diversity (2010, October 21).

Changes to integrated resource management (IRM)

An ecosystem approach to land management helps decision makers understand and capitalize on the diversity and interconnectedness of the natural environment. Just as healthy landscapes are connected, land planning needs to be connected too.

Integrated resource management is an example of an ecosystem approach to land management. IRM offers a way to identify the potential uses of and benefits from the land, and make informed decisions about which resources to develop, which to protect, and what combination of uses to allow. The intent of IRM is for interested groups—in government and beyond—to work together to make decisions that balance economic, environmental and social impacts.

The Department of Natural Resources has been using integrated resource management since the mid-1990s to inform decisions about Crown land. IRM's scope has included planning for minerals, forests, recreation, wilderness and wildlife protection, energy, and provincial parks. The goal has been to maximize the long-term sustainable benefits of resource management while balancing competing interests. However, the process has been applied in limited ways.

In its Phase 2 report, the steering panel recommended that the department “complete, implement, and work toward the full adoption of the integrated resource management process on both public and private lands.”⁵

The natural resources strategy commits the department to redesign IRM to improve stewardship of Crown land and to help private land owners learn about and use IRM on their own lands. The expanded IRM process will be more inclusive. It will improve coordination among government departments, support collaboration with interested groups, involve scientific review, and encourage cooperation and mutual accountability.

5 A Natural Balance (April 2010), Steering Panel Report, p. 23.

Goal: Research and knowledge sharing

Strengthen research capacity and knowledge sharing so that government and interested groups are well informed about issues affecting our natural resources.

Actions:

- Establish an external advisory panel to (1) share new and innovative research; (2) share practices for collecting and managing data; and (3) encourage cross-disciplinary analysis that connects social, scientific, community, and traditional Mi'kmaq knowledge.
- Develop and implement a science and research plan that sets priorities and guides the allocation of resources for research on natural resource development and conservation.
- Develop standards for organizing data and sharing information about natural resources.
- Identify and support the research and development of new sustainable uses of natural resources and green technologies and practices.

Informed decision making was one of the five key values expressed by Nova Scotians in Phase 1 of the strategy development process. In Phase 2, the steering panel made *research capacity and knowledge sharing* a strategic priority. The clear message is that better information leads to better decisions. Resource management plans and decisions must consider all available information. Collaboration brings more knowledge to the table.

The role of the Department of Natural Resources is to lead the process. The department will build the capacity to find and share the best available evidence, and that evidence will inform decisions that balance the legitimate needs and expectations of interested groups.

Providing open access to information is critical. Systematic, province-wide inventory and monitoring programs, and networked databases, will enable the department to encourage and support innovation in various areas, including ecosystem management, mineral exploration, silviculture, and land-use planning and management.

Nova Scotia's economic plan emphasizes the adoption of new technologies, new energy opportunities, digital leadership, the mentoring and incubation of new ideas, entrepreneurship, and commercialization as building blocks of a prosperous future.⁶ As indicated in *jobsHere*, Nova Scotians can succeed in the international marketplace both by applying innovation to our products, services, and processes here at home, and by exporting that expertise. There are myriad opportunities to become innovators, and exporters of innovative techniques and expertise in the resource sectors.

Mi'kmaq elder Albert Marshall teaches about *two-eyed seeing*. He says one eye sees with the strength of indigenous knowledge and the other eye with the strengths of science. Using both eyes together is to the benefit of all.⁷ The goal of research and knowledge sharing challenges government to practice two-eyed seeing and offer ways to share the consequent depth perception with others.

Education

When the Phase 2 steering panel identified education as a strategic priority, it meant education in the broadest sense: informal as well as formal, and for all Nova Scotians. One goal of education as conceived by the panel is to plant the seeds for a culture of shared stewardship.

Education can take many forms, from nature-based experiences in our provincial parks to online learning about biodiversity, silviculture, and geological mapping. In some cases, the Department of Natural Resources delivers programs or educational opportunities directly. More often, its role is to support other departments, communities, or non-government organizations by sharing expertise, providing access to information, and offering help with the development of innovative programs.

To compete effectively in the global marketplace, it is vital that Nova Scotians continually upgrade skills and master new technologies. As emphasized in *jobsHere*, skills and technological prowess are key ingredients to the competitive advantages that can set us apart in that marketplace. Advanced knowledge, skills, and technology in the resource-based economy can make the difference between traditional low-value and emerging high-value jobs; between historic boom-and-bust cycles and the promise of sustainable economic growth in our rural communities. Learning and innovation will help us maximize the economic benefits from our resource sectors, while ensuring they survive and thrive for the benefit and enjoyment of future generations of Nova Scotians.

⁶ *jobsHere: the plan to grow our economy*, Nova Scotia (2010, November), p. 11.

⁷ Bras d'Or Lakes Collaborative Environmental Planning Initiative website (n.d.).

Goal: Good governance

Ensure that laws and policies are clear and effective.

Actions:

- Review and improve laws and policies related to the development and conservation of Nova Scotia's natural resources.
- Work with interested groups to improve levels of compliance with natural resource laws and policies.

The issues affecting natural resource management are complex. The Phase 2 steering panel identified depleted or otherwise jeopardized forests, eroding coastlines, species at risk, and growing energy demands as among these issues and concluded that a new relationship between us and nature is essential.⁸ It's time to renew provincial laws and policies so they reflect the necessity of sustainable resource management and the values of shared stewardship for those resources. This work will require coordinated efforts across government and with a broad array of communities of interest beyond government.

The Minister of Natural Resources has a variety of legislative responsibilities, including those related to Crown lands and mineral resources. Nova Scotia Environment is responsible for designated wilderness areas, water resources, and air, and is the lead department for the Climate Change Action Plan. The Department of Energy is active in climate change issues, and is the lead department for most energy-related resources. The overlapping responsibilities of provincial departments, as well as the various laws and policies governing natural resources, can be confusing for Nova Scotians. We cannot eliminate the complexity of natural resource management, but we can clarify who is responsible for what and make it easier for people to work together to achieve a healthy balance of economic, environmental, and social goals.

Changes to laws and policies must reflect the spirit of Nova Scotia's Regulatory Management Policy, which aims to protect public health and safety, the environment, and workplaces, while supporting a prosperous business climate.⁹ The policy commits government to helping citizens and industry comply with laws by providing clear information and timely education. When law enforcement is necessary, the policy calls on enforcement agencies to act consistently and to seek ways to improve voluntary compliance in the long term.

8 *A Natural Balance* (April 2010), Steering Panel Report, p. 11.

9 Nova Scotia Treasury and Policy Board (2008, May).

What's happening already?

"12%" Technical Committees

Under the 2007 Environmental Goals and Sustainable Prosperity Act (EGSPA), the province is committed to legally protecting 12 per cent of Nova Scotia's land base by 2015. Considerable work has been done to evaluate and rank lands that might contribute to the 12 per cent goal. Building on the efforts of the Colin Stewart Forest Forum, the government established joint committees from the Department of Natural Resources and Nova Scotia Environment to oversee the identification of lands that will ultimately be protected. These two departments have been reviewing lands and are now initiating a consultation and review that will lead to one of Nova Scotia's greatest conservation achievements.

3. Biodiversity



Eastern Bumble Bee, Annapolis Valley, Nova Scotia

3. Biodiversity

The goals

Good governance. Establish clear and effective leadership and governance related to biodiversity in Nova Scotia.

Research and knowledge sharing. Increase and share knowledge about biodiversity to help governments and interested groups make informed decisions and take responsible action.

Ecosystem approach. Work together to maintain and restore healthy wildlife populations, ecosystems, and ecosystem processes.

Education and shared stewardship. Engage Nova Scotians in understanding, appreciating, and taking care of the province's biodiversity.

The context

Biological diversity is essential to life on earth. The term *biodiversity* is a concise way to describe the variety and interconnectedness of all life, including all plants, animals, and other organisms, the genes they contain, and the systems and processes that link them.¹⁰ Disrupting the balance of biodiversity can have dramatic and unpredictable results.

Nova Scotia's natural resources strategy is rooted in the recognition that healthy, natural biodiversity is one of our most important natural resources. Biodiversity provides many goods and services we take for granted (see Figure 3-1), as well as the raw materials for our resource industries. We must understand, value, and preserve the richness of these assets.

Threats to the province's biodiversity include climate change, pollution and waste, invasive alien species, residential and industrial development, agriculture, forestry, mineral extraction, over-harvesting of species, and road network and infrastructure development. Over many decades, land ecosystems, freshwater ecosystems, and coastal zones have degraded, with serious long-term social, environmental, and economic consequences. In Nova Scotia there are more than 60 species at risk (including both national and provincial listings), old growth forest has largely been lost, and many wetlands have been altered. Recent comprehensive studies document these problems for the region¹¹ and for Canada.¹²

¹⁰ Environment Canada, Biodiversity Convention Office (1995).

¹¹ Ecosystem Status and Trends Report Secretariat (2011), and McAlpine and Smith (2010).

¹² Federal, Provincial and Territorial Governments of Canada (2010).

Components of biodiversity in Nova Scotia

Species: red spruce, yellow birch, cranberry, mayflower, Atlantic salmon, lobster, blue jay, bald eagle, moose, chipmunk, soft-shelled clam, rockweed, piping plover, Euvira Micmac (a beetle), and many more. Along with plants and animals there are extraordinary uninvestigated communities of microbes in Nova Scotia.

Ecosystems: sand dunes, lakes and rivers, white-pine and red-oak forest, bogs, swamps, heath barrens, caves, cliffs, alder swale, salt marsh, and many more.

Ecological processes: soil formation, nutrient cycling, pollination, predation, forest succession, decomposition, and many more.

Genes: unique genetic forms of shrews and turtles, diverse forms of raspberry and blackberry, many coastal and marine organisms with potential pharmaceutical uses, and more.

Source: Adapted from *A Natural Balance* (April 2010), Biodiversity Panel Report, p. 5

Figure 3-1. Components of biodiversity



Figure 3-2. Biodiversity outcomes: What we want to achieve

WHAT we want to achieve	WHY it matters
Healthy and diverse ecosystems Reduce human impact and fix damaged ecosystems to make them more productive and resilient, and to preserve natural resources.	Healthy ecosystems provide services and goods essential for human well-being, such as clean water and food.
Viable populations of species Preserve all native species in sustainable numbers to maintain the structure and function of ecosystems. Working at the ecosystem level is the most effective means, but special attention is needed for species at risk.	Wildlife populations (including plants) provide food, fibre, and cultural and recreational opportunities.
Genetic resources and adaptive potential Value the untapped potential in our genetic resources and pass the benefits on to future generations. Nova Scotians can work to restore and maintain genetic diversity.	Genetic diversity makes ecosystems more adaptable to change and provides insurance for future production and innovation.
Sustainable use Maintain stable jobs, traditional ways of life, long-term food security, and human health by using natural resources sustainably.	The sustainable use of biodiversity helps to ensure prosperous and healthy communities, and preserves traditional ways of life.

Adapted from Environment Canada (2006). *A Biodiversity Outcomes Framework for Canada*.

Nova Scotia will use the Biodiversity Outcomes Framework for Canada as the guide for moving forward and improving the coordination of our strategic planning and action for biodiversity (Figure 3-2). Federal, provincial, and territorial governments—including Nova Scotia—committed themselves to this framework in 2006. The framework identifies what needs to be achieved regarding biodiversity, and how humans will benefit from these achievements. It describes an adaptive ecosystem approach to biodiversity, and emphasizes the importance of engaging others in this important work.

Goal: Good governance

Establish clear and effective leadership and governance related to biodiversity in Nova Scotia.

Actions:

- Lead and work with others to improve the conservation and sustainable use of biodiversity.
- Implement new laws and update existing laws to support biodiversity.
- Develop and implement policies and practices that support biodiversity conservation and sustainable use.
- Collaborate with the Mi'kmaq of Nova Scotia on the conservation and sustainable use of biodiversity.
- Work with others to achieve sustainability by balancing economic, environmental, and social values.

Biodiversity is everybody's business. The issues cut across the interests and responsibilities of provincial, federal, municipal, and Mi'kmaq governments. With the introduction of this strategy, the provincial government commits itself to working with Nova Scotians to clarify each group's roles and responsibilities and to develop ways to ensure the best use, protection, and preservation of our province's biodiversity.

Since 1995, Nova Scotia has made efforts to align programs and policies with the United Nations Convention on Biological Diversity and the Canadian Biodiversity Strategy. The natural resources strategy will extend these efforts and establish the groundwork for the Department of Natural Resources to lead the process, and work with others, to improve the conservation and sustainable use of biodiversity in Nova Scotia.

Goal: Research and knowledge sharing

Increase and share knowledge about biodiversity to help governments and interested groups make informed decisions and take responsible action.

Actions:

- Develop expertise, methods and systems that will improve biodiversity knowledge and promote the sharing of knowledge.
- Integrate biodiversity values into planning and decision making, including the economic valuation of ecosystem goods and services.
- Provide ecological classification systems and other tools that support the ecosystem approach for land, freshwater, and coastal environments.
- Conduct and coordinate high-priority inventories and monitoring of biodiversity.
- Report regularly on the state of biodiversity in Nova Scotia.

All decisions about the conservation and sustainable use of biological resources must be based on the best and most up-to-date science and other knowledge, or must take a precautionary approach if the science is inconclusive. Better information systems and expertise are needed to help us prioritize and act on the most pressing issues affecting biodiversity.

We have barely begun to understand and assess the true biological, economic, and social values of Nova Scotia's biodiversity. Efficient management of our natural resources requires knowing how much we have and how it is changing. Currently there are no readily accessible databases of the province's species, habitats, communities, and ecosystems. We need to collect information on biodiversity wherever it is lacking or insufficient. We need to organize, synthesize, and monitor the

limited existing biological information that is dispersed among many government departments, academic institutions, communities, industries, and non-government organizations. And we need to share this information widely.

Goal: Ecosystem approach

Work together to maintain and restore healthy wildlife populations, ecosystems, and ecosystem processes.

Actions:

- Promote and apply an ecosystem approach within the department and in partnership with other departments and interested groups.
- Integrate an ecosystem approach into wildlife species management.
- Improve efforts to support the recovery of populations of species at risk.
- Collaborate with others to complete a network of conservation areas to support the protection of biodiversity and the connectivity of landscapes.
- Assess the cumulative impact of human activities on biodiversity and help to avoid, mitigate, or compensate for biodiversity loss, whenever possible.

The natural resources strategy will support more holistic and integrated treatment of biodiversity and other natural resource matters. Using an ecosystem approach, we will consider wildlife species, genetic resources, habitats, ecosystems, and ecological processes, and we will link together various aspects of conservation and sustainable use, such as protection for species at risk and management of wildlife diseases.

Goal: Education and shared stewardship

Engage Nova Scotians in understanding, appreciating, and taking care of the province's biodiversity.

Actions:

- Provide opportunities for Nova Scotians to learn more about biodiversity and to commit themselves to its stewardship.
- Work with educators, communities, youth, and non-government organizations to develop and deliver biodiversity education programs.
- Support action on priority issues, including alien invasive species, climate change, species at risk, habitat protection, wildlife management, and protected areas.
- Work with others to identify and address emerging biodiversity issues and opportunities for innovation.
- Cooperate with communities as they identify and implement local actions addressing biodiversity.

The more aware we are of the biodiversity web of life that sustains us, the more committed we become to preserving it. This wisdom is deeply embedded in the culture of the Mi'kmaq of Nova Scotia. Nova Scotians of all ages and cultures need opportunities to experience the richness of our natural heritage and biodiversity. The Department of Natural Resources works actively with many other provincial and federal departments, universities, resource and conservation groups, community groups, land owners, and the public to encourage volunteer stewardship of species, habitats, and ecosystems in the province.

What's happening already?

General Status of Wild Species

In 2000, 2005 and 2010, Nova Scotia's Department of Natural Resources and other jurisdictions reported on the status of wild species, including plants, fish, reptiles, dragonflies, butterflies, mollusks, and many other species groups in Nova Scotia and across Canada (see www.wildspecies.ca). The 2010 report provides the status for nearly 12,000 species across the country, and about 4,200 from Nova Scotia. Nova Scotia uses a traffic-light system (Red, Yellow, Green) to prioritize species in support of biodiversity conservation and sustainable use. This traffic-light system informs environmental impact assessments, the issuing of land/water permits and licenses, ecosystem priorities and practices, and stewardship. Many species experts from within the Nova Scotia government have helped to ensure that the assessments are based on the best available knowledge.

Ecosystem Classification

The Department of Natural Resources initiated an ambitious project to classify Nova Scotia's diverse ecosystems. Grasslands, coastal salt marshes and dunes, cliffs, forests, wetlands, heathlands, and many other ecosystems are being surveyed and defined by field ecologists, in collaboration with university and federal government scientists. The classification will provide a standardized reference framework for ecosystem research, monitoring, and reporting, and will further establish Nova Scotia as a national leader in ecosystem management and conservation planning.

4. Forests



Trees, Middle Sackville, Nova Scotia

4. Forests

The goals

Ecosystem approach. Work together to maintain healthy forests.

Research and knowledge sharing. Increase knowledge to help governments and other interested groups make better decisions about forest management.

Shared stewardship. Involve many in the shared stewardship of Nova Scotia’s forests.

Sustainable resource development. Support the sustainable development of the province’s forest resources in order to attract investment, create high-value jobs, and grow the economy.

Good governance. Provide clear and effective laws and policies to ensure that forestry is economically, environmentally, and socially sustainable.

The context

Forests dominate much of Nova Scotia’s landscape. Over three-quarters of the total area of the province (approximately 4.3 million hectares)¹³ is forested. Our forests include many species of trees growing in a broad range of soil and climatic conditions, from shallow, acidic moist soils at high elevations to deep, well-drained rich valleys.

Forests provide more than timber and jobs. They draw carbon dioxide from the atmosphere and give us much of the oxygen we breathe. Their dense root systems hold water and prevent soil erosion, flooding, and drought. A healthy forest supports biodiversity by sheltering many species of animals, birds, insects, and plants—priceless biological resources that provide food and medicine, each with its own place in the web of life. These benefits are hard to quantify and impossible to replace.

The costs and benefits of forest use and forest protection are complex and often in conflict with one another. We need good jobs to support mostly rural communities and valued ways of life. At the same time, much of that which we value is derived from the natural beauty, enjoyment, and health benefits provided by our environment.

¹³ Nova Scotia Department of Natural Resources (2008).

Balancing social and economic costs and benefits, while not always easy, will ensure our forests are both economically and environmentally sustainable. This requires improvements in our forest management practices, to build an ecologically wise culture for the 21st century.

Nova Scotians called for changes in forest management, and the government listened. The Department of Natural Resources is moving forward with new policy and legislation to ensure that forest harvesting practices are sustainable, and to balance economic, environmental, and social values.

Government affirms the existing aboriginal and treaty rights in section 35 of the Constitution Act (1982). We will continue to consult with First Nations, using the Mi'kmaq–Nova Scotia–Canada Consultation Terms of Reference, whenever decisions being considered might affect these rights.

The Policy Framework for the Future of Nova Scotia's Forestry, announced in December 2010, signaled change, including changes to forest harvesting practices, notably clearcutting, and changes to the extent that forest biomass would be used for energy. These steps move the province toward a true ecosystem approach to managing its forests. Implementing the policy framework will require intense collaboration across many interest groups.

Goal: Ecosystem approach

Work together to maintain healthy forests.

Actions:

- Fully implement an ecosystem approach to forest management.
- Apply the Code of Forest Practice on publicly and privately owned woodlands.
- Help private land owners understand and use an ecosystem approach to manage their woodlands.
- Develop comprehensive risk management strategies to support healthy forests.
- Align Nova Scotia's forest principles and actions with national strategies.
- Report regularly on the state of Nova Scotia's forests.

An ecosystem approach to forest management begins by understanding the complexity of forest ecosystems. It addresses questions like, What is the nature of the soil, the air quality, the changing climate, and the vegetation? How did the present forest get there? What is its carbon potential? How is the forest evolving? What might it become? What varieties of vegetation could this ecosystem support? Understanding forest ecosystems sets the context for exploring forestry options and addresses questions such as, How will the forest respond to treatment? What are the risks and opportunities of management? What timber and non-timber uses are possible? An ecological approach also considers the ecosystems in the surrounding landscapes. What types of forest are in short supply? Is there enough old growth? What are the wildlife habitats? Is there enough timber available for harvesting?

The Code of Forest Practice presents an ecosystem-based approach. The Forest Ecosystem Classification of Nova Scotia provides the site, soil, and vegetation descriptions necessary to assess options for forests. The Nova Scotia Ecological Land Classification provides the ecosystem mapping required for landscape-level (large-scale) planning. Integrated resource management provides a systematic way to consult with interested groups about multiple uses of the same site, and to assign values to those uses.

Healthy and diverse forests are less susceptible to natural and human-caused disturbances. They can store more carbon for longer periods than diseased and dying forests. An ecosystem approach to forest management provides the science to better understand natural processes and decide when, or if, intervention is necessary. Managing the risks of wildfires, insects, and diseases has always been a cornerstone of forest management. An ecosystem approach reinforces and extends this essential work, and better equips us to address other complex risks, such as climate change and acid rain.

What's happening already?

Old-Growth Forests Throughout the Province

Nova Scotia's policy concerning old forests was developed to identify and protect the best old forests on Crown lands and to support the long-term restoration of old-growth forests in the province. The target of eight-per-cent representation in each of the province's 39 ecodistricts has been achieved or exceeded in all but eight districts. Work continues in those districts to identify and select the best sites.

Goal: Research and knowledge sharing

Increase knowledge to help governments and other interested groups make better decisions about forest management.

Actions:

- Expand research and knowledge sharing in these areas:
 - supporting forest biodiversity
 - mitigating and adapting to climate change
 - using the carbon cycle in forests to maximize carbon storage, minimize the release of carbon dioxide, and help manage the effects of climate change
 - understanding factors affecting long-term forest productivity
 - understanding the economic and social values and impact of forest products (such as timber) and ecosystem services (such as oxygen generation and carbon management)
 - controlling pests and disease
- Develop standards and collect, share, and use information about forest resources.

This strategy recognizes the importance of managing the province's public carbon resource, and of conducting planning and other reviews of forest management practices to ensure the amount of carbon stored in Nova Scotia's forests will increase over time.

The Nova Scotia government is committed to reducing the province's harmful impact on climate change. This strategy recognizes that our forests play an important role in that effort. As our forests grow and mature they capture and store carbon. Because too much carbon dioxide in the atmosphere contributes to climate change, Nova Scotia's forests can help fight climate change by removing carbon dioxide from the air and storing it as forest carbon.

Sustainable forest management practices can help increase the overall carbon storage of our forests. We will gain a better understanding of the current state of carbon storage in our forests and review current forestry management practices to evaluate their impact on the amount of carbon released and stored. The Department of Natural Resources will track current levels of carbon in Nova Scotia's forests and monitor changes in those levels. Department staff, woodlot owners, and the forest industry can then use this information to help make forest management decisions.

Thinking and acting ecologically begins with a deep understanding of the natural environment and the impact of resource development, resource use, climate change, and other complex variables. The Department of Natural Resources has an important but underdeveloped role in bringing interested groups and experts together to share their knowledge and do new research.

To ensure that the province's forest science and information do support sustainable development, it will be necessary to rethink our priorities and reallocate some resources. We must continue to develop our capacity to monitor indicators of forest health, such as species diversity, age distributions, and the presence of ground cover and deadwood for wildlife habitats. Knowing what we have in our forests, where it is, and how it is changing over time will help us to better predict the impact of climate change, acid rain, and other variables. For example, from recent research we can predict changes in the distribution and abundance of certain trees, and anticipate having fewer black spruce and balsam fir in the province, and more black cherry and red oak.¹⁴ We can use knowledge like this to make better predictions about carbon storage, watershed health, soil nutrient capacity, and sustainable harvest levels.

The Forests Act requires the Minister of Natural Resources to gather certain information about the state of the province's forests and wood supply. A minor change to the act would ensure that this information is updated regularly and made available to the public.

Goal: Shared stewardship

Involve many in the shared stewardship of Nova Scotia's forests.

Actions:

- Involve interested groups and individuals in developing policies about Nova Scotia's forests.
- Provide support to owners of small private woodlots, particularly through their organizations.
- Focus education and outreach programs on shared stewardship.
- Explore ways to establish and operate working community forests on Crown land.

14 Bourque, Hassan, and Swift (2010, January).

The stewardship of Nova Scotia's forests is a shared responsibility, with roles for government, the Mi'kmaq of Nova Scotia, industry, small woodlot owners, environmentalists, and other interested groups and individuals. The Department of Natural Resources plays a key role as facilitator, enabler, and leader—encouraging collaboration, building on current relationships, and forging new partnerships. This means that the department and all interested groups will have to find new ways to work together.

Historically, the opportunity to harvest timber on provincial Crown land was limited to a few large companies. The focus was on finding wood to meet needs identified by those companies. Community groups and other interested groups have called on the government to revise the current ways of distributing timber licences and other rights to provincially owned forest resources. Community working-forests and working-forest conservation easements offer two options for improving the economic, environmental, and social balance. The department will work with interested groups to develop and test these approaches.

The Phase 1 and 2 reports identified the need for the Department of Natural Resources to work more closely with small woodlot owners. The department will explore options, such as:

- outreach services, including seminars and online information about sustainable forestry
- better coordination of forest management and silviculture programs
- support for professional associations of service providers
- forest certification services
- regional merchandising centres for small producers

Land owners can make better decisions and contribute to better stewardship by seeking professional forestry advice and obtaining management plans. While the Department of Natural Resources does not require land owners to have management plans, it does encourage their use as an essential part of woodland management. A management plan should:

- outline the land owner's objectives
- list essential information about the woodland, such as
 - tree composition, age, and volume
 - quality of individual stands
 - soil type
 - landscape details, including trails and watercourses

This information can be used to determine what activities should take place on the woodland and when they should occur.

Goal: Sustainable resource development

Support the sustainable development of the province's forest resources in order to attract investment, create high-value jobs, and grow the economy.

Actions:

- Encourage innovative ways to increase the value of harvested timber by turning it into higher-end products.
- Revise the way forest resources on provincial Crown land are allocated and managed in order to improve the economic, environmental, and social benefits to Nova Scotians.
- Support the promotion and marketing of forest resources and resource development.

These have been unsettled times for forestry. The industry has been through one of the deepest economic downturns in several generations. Sharp declines in demand and prices for most forest products have led to the closure of Canadian mills and the loss of thousands of jobs.¹⁵ Nova Scotia's forest industry has experienced some serious losses, but the industry here has fared better than in other places. An economic impact analysis commissioned by the government in the fall of 2010 confirmed that the long-term outlook for the industry is strong, with positive gains being forecast for 2011 and onward.¹⁶

Consistent with the direction set in *jobsHere*, the forest products industry must adapt and innovate if it is to continue to play a strong role in Nova Scotia's economy. When considering ways to grow the forestry and related manufacturing sectors in Nova Scotia, it is important to learn from the past and plan for the future. With the right investments in the right areas, the forest industry can generate greener, more sustainable, higher-value jobs, provide cleaner sources of renewable energy, and produce raw materials and finished products for Canadian and international markets.

Government can do its part by working collaboratively with industry to develop better ways to manage and allocate wood from Crown land and encourage private woodlot owners to participate in the forest industry. As well, provincial and federal governments can help industry to identify export markets and explore new technology and innovative ways to increase productivity and support diversification.

¹⁵ Forest Products Association of Canada (www.fpac.ca/index.php/en/industry-outlook/).

¹⁶ Woodbridge Associates (2010, December).

Goal: Good governance

Provide clear and effective laws and policies to ensure that forestry is economically, environmentally, and socially sustainable.

Actions:

- Reduce clearcutting and establish a harvest tracking system.
- Review and redesign silviculture programs.
- Limit herbicide use.
- Clarify the use of forest biomass for energy.
- Establish the rules for whole-tree harvesting, and incorporate this into the Code of Forest Practice.
- Evaluate the effects of implementing an Annual Allowable Cut (AAC)—the amount of wood permitted to be harvested—to ensure the sustainability and productivity of Nova Scotia's forests.

Throughout the strategy development process, concerns about forest harvesting often dominated the public dialogue. Many Nova Scotians challenged government to protect the province's forests from unsustainable harvesting practices. Others cautioned government to consider the vital contribution the forest industry makes to Nova Scotia's economy. This strategy affirms that the best approach is one that strikes the right sustainable balance, that allows Nova Scotians to make a good living from our natural resources while ensuring that future generations can enjoy similar benefits.

The document, *Policy Framework for the Future of Nova Scotia's Forestry* gave the Department of Natural Resources its first opportunity to put the principles of sustainability and shared stewardship to a practical and public test.¹⁷ The policy framework outlined six strategic directions for future forestry policy. Government committed itself to making the first changes to legislation in 2011.

17 Nova Scotia Department of Natural Resources (2010, December).

Clearcutting

Currently, 96 per cent of all forested lands are harvested by clearcutting. An ecosystem-based analysis of the province's forests showed that about 50 per cent of these lands are suited for uneven-aged management, or non-clearcutting. The policy framework set a target for reducing clearcutting to no more than 50 per cent of all harvests. The target, to be phased in over five years, will be set in regulation.

With the release of this strategy, the province's definition of clearcutting, in non-technical terms, is this: *The removal of all trees in an area at one time, except those required to be left uncut under the Wildlife Habitat and Watercourses Protection regulations.* At the time of publication, a technical definition of clearcutting was being developed.

A system will be put in place requiring that the Department of Natural Resources be notified of commercial harvests. This harvest tracking system will be among the first results of the department's new direction for forest management. Post-harvest reports will be required to verify harvesting areas and to provide data for public reporting.

Various supports will be developed to help private land owners and industry adapt to the changes in harvesting policy. These supports will include education and silviculture programs that will focus on how best to make appropriate uneven-aged harvests of a site.

Silviculture programs

The Department of Natural Resources will continue to support silviculture programs on both private and Crown land. These programs provide funding for forest management practices that promote forest growth and ways to increase the value of the trees in forests, and thereby increase their potential to generate high value-jobs and other economic benefits.

Over time, the Department of Natural Resources and interested groups will work together to use these programs to help implement the Policy Framework for the Future of Nova Scotia's Forestry, with a focus on:

- activities that support reduced clearcut harvesting
- the implementation of ecosystem-based forestry
- the adoption of the Code of Forest Practice on all lands

Eligibility rules and assistance funding will be shifted to promote positive change in forest practices. Funded activities could include support for technical assistance and hands-on training for woodland managers and forest workers. The plan is to make financial assistance more available for uneven-aged management techniques and gain valuable and marketable expertise in sustainable forestry practices.

Weed control

Public funds will continue to be available to support sustainable weed control practices, such as manual weeding, so that naturally and artificially regenerated areas will survive and thrive. However, public support will no longer be extended to the use of herbicides. Woodland owners and operators may use herbicides at their own expense and in compliance with all safety and environmental regulations.

Forest biomass for energy

In Phase 2 of the strategy development process, the steering panel urged government to exercise great caution in the use of biomass (wood fibre) for power generation. It also urged government to encourage the exploration and expansion of other sustainable methods to generate power, while continuing to conserve energy and reduce demand.

The cap set for new consumption of forest biomass for renewable electricity generation has been reduced to 350,000 dry tonnes per year, from the original 500,000 dry tonnes per year. The earlier cap was set as part of the Renewable Electricity Regulations, released in October 2010. Those regulations require that the Department of Natural Resources advise the Minister of Energy when any new forest biomass-based applications have a fuel procurement plan that will meet sustainable harvesting requirements.

In its Renewable Electricity Plan, the government of Nova Scotia committed itself to a cautious approach to the use of forest biomass for electricity production. The natural resources strategy reaffirms that commitment.

Rules for whole-tree harvesting will be developed as part of an ongoing legislative and policy review, consultation, and engagement. Requirements for the use of tree stems—for electricity generation only—have been completed and added to regulations and policy documents. Regulations under the Forests Act will be revised to ensure that harvesting practices (i.e., whole-tree harvesting) and the use of forest biomass for energy and fuel will meet commitments made in the Policy Framework for the Future of Nova Scotia's Forestry. Other regulatory changes will be made to include biomass users as registered buyers. This will require their following the same rules as other buyers in the forestry sector. Standards for removing forest biomass from sites will be clearly identified in the Code of Forest Practice.

All users of the resource have a fair share of responsibilities under the Forests Act. Clear definitions and reporting requirements will be added, so that the use of all primary forest fibre, including biomass, is well monitored.

Annual Allowable Cut (AAC)

The Policy Framework for the Future of Nova Scotia's Forestry called for an analysis of options regarding a province-wide Annual Allowable Cut (AAC). Most provincial governments do a wood supply analysis and set an AAC every five years. Simply put, the AAC amounts to the number of trees that can be cut down in a year. The rate is based on available trees, as well as economic, environmental, and social considerations. In analyzing the AAC options for Nova Scotia, the Department of Natural Resources will consult with Nova Scotians and will carefully consider the rights of owners of small private woodlots.

What's happening already?

Nutrient Budget Modeling

Since 2008, the Department of Natural Resources has been working with scientists at the University of New Brunswick to develop a nutrient budget model for Nova Scotia forests. This model integrates forest inventory data with information on provincial soil types, soil weathering rates, and atmospheric inputs, in the effort to predict the impact of various harvesting options on nutrient levels. When completed, this model will give forest managers a tool to better assess sustainable harvest levels on a stand-by-stand basis and integrate the knowledge acquired into provincial wood supply modeling.

5. Geological Resources



Communications Nova Scotia/Shirley Robb

Exploring the Joggins fossil cliffs on the Bay of Fundy, Nova Scotia

5. Geological Resources

The goals

Sustainable resource development. Support the sustainable development of the province’s geological resources in order to attract investment, create high-value jobs, and grow the economy.

Life-cycle planning. Align mineral exploration, mining, and land reclamation practices with leading government and industry standards.

Research and knowledge sharing. Provide leadership in the collection and use of earth-science research and knowledge to benefit and protect Nova Scotians.

Education and shared stewardship. Help interested groups become better stewards by strengthening their understanding of Nova Scotia’s geology.

Good governance. Provide clear and effective laws and policies that support sustainable geological resource development.

The context

We have a complex relationship with the earth’s geology. It provides the foundation for our natural environment and the minerals and hydrocarbons that form the basis of our built environment. Rock formations contain the elements and store the groundwater necessary to sustain life. But rock formations can also be the source of dangerous radon levels in our homes and high arsenic levels in our drinking water. Geological processes create the varied landscapes and habitats that support biodiversity. These same geological processes are responsible for hazards such as landslides, coastal erosion, and sinkholes. Mining brings economic and social benefits, but improperly regulated mining can damage our natural environment.

Nova Scotia’s geological diversity is a rich natural inheritance that profoundly affects our lives and communities. We must understand and manage this inheritance in order to protect our health and safety and achieve the best possible balance of economic, environmental, and social benefits from our geological resources.

Our mineral wealth is a potential source of growth and prosperity in the province. But, as with any development of natural resources, mineral exploitation requires that we find the right balance between economic, social, and environmental interests. Again, the direction provided by the province’s economic plan, heard repeatedly during the

consultations undertaken to develop this strategy, points the way. Innovation and knowledge hold the keys to new opportunities in the mining sector.

Government affirms the existing aboriginal and treaty rights in section 35 of the Constitution Act (1982). We will continue to consult with First Nations, using the Mi'kmaq–Nova Scotia–Canada Consultation Terms of Reference, whenever decisions being considered might affect these rights.

Goal: Sustainable resource development

Support the sustainable development of the province's geological resources in order to attract investment, create high-value jobs, and grow the economy.

Actions:

- Continue to lead research on the province's geology, mineral resources, and opportunities related to the full mining life cycle.
- Identify and promote innovative uses and secondary processing of Nova Scotia's mineral resources.
- Identify and promote new ways to gain social and economic benefits from our cultural and physical geoheritage.
- Continue to provide technical and financial assistance to prospectors to help them attract investment for mineral exploration and development.

The sustainability principle for minerals

Nova Scotia's mineral resources have the potential to sustain an economically vibrant mineral industry for hundreds of years to come. Good geological resource planning will give investors the stability they need to make smart mining decisions. There is enough gypsum, anhydrite, salt, aggregate, coal, and carbonate in Nova Scotia to keep mines operating for more than 100 years.

Mineral resources are not renewable, but mining practices can be sustainable. The key is far-sighted planning that transforms mined land to other valued uses, and creates high-value jobs at all stages of the mining cycle, from exploration to land reclamation and beyond. Working closely with affected communities at all stages of the mining cycle in order to understand community needs and build strong partnerships is vital to the success of a mine, from economic, environmental, and social perspectives.

Mineral production

Minerals have been valued and used in Nova Scotia for a long time. Mi'kmaq culture is deeply rooted in respect for the earth. The Mi'kmaq ancestors used rocks and minerals for both practical and spiritual purposes, shaping, for example, agate and onyx into tools for hunting and other purposes, and using red clay ochre in ceremonies. Likewise, minerals have been extracted and used continuously since the first European settlement. Archaeological evidence suggests that coal mined at Joggins helped heat the Port Royal settlement in the early 1600s. Today, the major geological resources produced in Nova Scotia are gypsum, anhydrite, salt, limestone, construction aggregates, and coal.

Over the years, Nova Scotia has produced more than 20 different minerals for domestic and export markets. Since the 1990s, industrial minerals and building materials have dominated, while coal and metal mining has declined. Metals have been produced intermittently in the past 10 years, but interest has been revived recently by rising prices.

The provincial economy benefits from mineral production in two ways: through primary or direct activity, such as mining and exploration, and through spin-off or multiplier effects. The combined impact of primary and secondary mining activities on Nova Scotia's Gross Domestic Product (GDP) is comparable to the impact of other resource sectors, such as fishing, forestry, and farming.

Many communities benefit from employment in the mineral industry. Most mining jobs in the province are permanent and year-round, and the average weekly wages are the highest of all those earned in resource sectors. The average wage in the primary mining sector is more than 40 per cent higher than that of all economic sectors in the province.

Mineral exploration

Exploration is an important part of the mining cycle and is necessary for a sustainable mining sector. Nova Scotia competes with other places in Canada and around the world for investments in mineral exploration and development. Therefore, we must be strategic in attracting and working with investors. Mineral deposits, by their very nature, are mostly hidden below the earth's surface and can only be identified by costly exploration methods, such as high-technology geophysical and geochemical techniques and rock-core drilling. Since 1990, investors have spent between \$5 million and \$20 million per year on mineral exploration in Nova Scotia.

Since the discovery of new deposits sustains the industry, the Department of Natural Resources should continue to identify and promote new opportunities for mineral exploration. In addition, the department should continue to provide technical and

financial assistance to prospectors to help them attract investment for mineral exploration.

Secondary processing

Most materials recovered through mining or quarrying need some refining or processing to make them marketable. Nova Scotians have been doing this valuable work for more than 100 years. Examples from the past and present include plaster and wallboard produced from gypsum; Portland cement and concrete products from limestone; refined salt products; bricks from clay deposits; building stone from marble, slate, sandstone and granite; and steel from iron ore. Today, there are 11 industrial minerals and rocks mined in Nova Scotia that are used to manufacture finished products. Most of the value-added products, such as bricks, Portland cement, and refined salt products, are used in Atlantic Canada.

New and emerging green technologies, such as wind turbines and electric cars, offer the potential for new industries in the province. New industries mean new markets for raw materials and new opportunities for secondary processing. Possibilities like these are raising interest in finding and developing resources such as rare-metal and rare-earth elements.

The Department of Natural Resources leads the provincial government in identifying and promoting innovative, value-added uses of the province's mineral wealth. The department continues to identify potential secondary manufacturing opportunities, including the production of high-tech and high-value products.

Geoheritage opportunities

Geoheritage can be defined as the geological features or historic events that inform us about our relationship with the earth. Our *cultural geoheritage* includes historic mines, stone works, stone monuments carved in place, and spiritual sites. Our *physical geoheritage* includes landscapes that are valued for their beauty, including actual sites described in Mi'kmaq legends, and locations that teach us about earth's history or natural processes.

Nova Scotia has a rich geoheritage, including a lengthy mining history, world-class fossils sites, mineral collecting sites, and spectacular landscapes and landforms. There are many potential geoheritage opportunities that could benefit local communities and economies throughout the province. Over the past 20 years, staff in the Department of Natural Resources has increasingly provided information and advice to help develop our geoheritage resources. Examples include the development of the Joggins Fossil Institute and the Fundy Geological Museum; information panels regarding the geological interpretation of the rocks at Peggy's Cove; and the development of a guide for rock, mineral, and fossil collecting in the province.

The Nova Scotia Department of Communities, Culture and Heritage is the lead department for preserving, protecting, and promoting our natural and cultural heritage. The Department of Natural Resources will continue to work with other government departments and interested groups to identify opportunities for Nova Scotians to benefit from their geoheritage.

Goal: Life-cycle planning

Align mineral exploration, mining, and land reclamation practices with leading government and industry standards.

Actions:

- Review, monitor, and promote the use of best practices for mineral exploration and mining.
- Address biodiversity in reclamation plans for new mineral-related development.
- Work with interested groups to find better ways to manage mine tailings and reclaim land.
- Share knowledge about, and participate in research and reclamation of, orphaned and abandoned mine sites.

In mineral resource development, life cycle planning involves looking at the mining operation from exploration to closure and reclamation of the site. In its fullest sense, it includes the life cycle of the products and byproducts that result from the mining operation, addressing the impact of transportation and final recycling or disposal. The process aims to be far-sighted and holistic. Mining industry associations and government agencies continue to develop best practices for responsible mineral development. It is crucial that these developments are reviewed and monitored and, as appropriate, adopted for Nova Scotia.

Historically, mining practices focused on the economic benefits, with little attention given to environmental impact. This has left a legacy of contaminated or unstable mine sites and a distrust of mining in some communities. Since 1975, mining companies have been required to post reclamation bonds, with amounts set by the government and held in security until mining activities are completed. Under the reclamation plans, mining companies have been required to grade and replant trees

on their sites. However, there are concerns that these efforts do not go far enough to support biodiversity or land-use opportunities for communities.

Government, industry, and academics are now working together to find better ways to reclaim mine sites. In several cases, communities have been involved in reclamation designs and have benefited from new infrastructure, including recreation facilities. The Department of Natural Resources is leading a collaborative research project at the site of the Point Aconi and Little Pond coal mine, where a variety of methods have been tested to improve the reintegration of mined lands. This research includes large-scale reforestation tests that conserve and use existing plant life during the reclamation process.

Research like this helps to improve the social benefits of mineral extraction, from the exploration phase through to post-mining uses of the land. More work is needed to ensure that reclamation helps lead to healthier communities and a rich resource base for future generations.

Cleaner mining practices

Globally, mining associations continue to develop best practices for all stages in the mining life cycle. For example, the Prospectors & Developers Association of Canada has developed *e3 Plus: A Framework for Responsible Exploration*,¹⁸ consisting of best practices for mineral exploration. Similarly, the Mining Association of Canada has a program of best practices for mining, called *Towards Sustainable Mining 101: A Primer*.¹⁹ These and other initiatives provide guidance for responsible mineral exploration and development.

Orphaned and abandoned mines

Addressing environmental, social, and economic issues related to historic mining activity is a major challenge for the industry worldwide, and Nova Scotia is no exception. Mines that operated before regulations were put in place to protect the environment, and were then orphaned or abandoned, have contributed to public distrust of mining.

New and emerging practices for reclaiming old mine sites provide opportunities to address environmental and social concerns. For example, new processing and recovery techniques can be used to extract minerals and metals from previously processed tailings, helping to pay for site reclamation.

18 Prospectors and Developers Association of Canada (2010).

19 Mining Association of Canada (2010).

Government has an important role in sharing knowledge about, and participating in research and reclamation of, orphaned and abandoned mine sites. The Department of Natural Resources works to cap or seal abandoned mine openings on Crown lands and inform the public of hazards associated with abandoned mines.

Goal: Research and knowledge sharing

Provide leadership in the collection and use of earth-science research and knowledge to benefit and protect Nova Scotians.

Actions:

- Continue to provide information and knowledge about the geology of Nova Scotia.
- Expand groundwater mapping: (a) to identify water resource potential and associated risks; and (b) to provide advice and direction for future development and land-use decisions.
- Conduct and share results of earth -science research that helps us to understand and protect Nova Scotia's biodiversity.
- Assess and report the potential for geohazards, such as radon, arsenic in drinking water, abandoned mine openings, sinkholes, landslides, and coastal flooding to help protect the health and safety of the public.
- Continue to map Nova Scotia's coastal geology and advise communities about adapting to and mitigating the effects of sea-level rise, coastal erosion, and flooding.

The bedrock and surface geology of our province is, literally, the foundation on which a healthy environment is built, and the source of our natural resource wealth. The Department of Natural Resources is the principal source of geoscience information and advice within the Nova Scotia government. The department works collaboratively with other government offices and outside agencies and groups on a wide range of matters related to earth science.

Water is an essential resource that must be valued, used wisely, and protected. In *Water for Life*, Nova Scotia's water resource management strategy, the province commits itself to being a national leader in water resource management. To achieve this goal we must understand how much water we have and how much we are using.

Nova Scotia Environment is providing leadership in coordinating research on our surface and groundwater resources. Working with partners within and outside of government, Nova Scotia Environment is ensuring that we acquire the knowledge we need to make informed water resource management decisions.

Nova Scotia has impressive geological diversity that, through millions of years of geological processes, defines our modern landscapes and plays an important role in our biodiversity. Earth-science research provides important information for understanding and protecting the province's biodiversity.

Government geoscientists must work collaboratively with researchers from other agencies and academia to identify, research, and develop strategies for a wide range of environmental and public safety issues. Elevated radon in our homes, arsenic in drinking water, landslides, and sinkholes are all examples of hazards that are directly influenced by geology. Of particular interest to many Nova Scotians are the threats that we face along our coast because of climate change. These threats include an increased risk of flooding and erosion caused by more frequent storms. Systematic evaluation of the province's coastal geology will help Nova Scotians understand the risks that coastal communities face and will help municipalities develop plans for adapting to these risks.

Goal: Education and shared stewardship

Help interested groups become better stewards by strengthening their understanding of Nova Scotia's geology.

Actions:

- Engage Nova Scotians in planning projects and making decisions about mineral resource development that affects their communities.
- Provide information about the geology of the province to help in provincial and municipal land-use planning and decision making.
- Work with educators to increase awareness—particularly among young people—of the vital importance of earth sciences and geological resources.

The government has a role in helping Nova Scotians understand the province's geology and enhancing their ability to participate in mineral resource stewardship. The Department of Natural Resources has a role in making complex geoscience information understandable and accessible, especially for communities most directly affected by proposed resource developments.

Increasing public awareness and understanding of earth science is a challenge for government. One approach is to educate teachers about the vital importance of earth sciences and geological resources so that they, in turn, can teach young people.

Goal: Good governance

Provide clear and effective laws and policies that support sustainable geological resource development.

Actions:

- Review and update the Mineral Resources Act.
- Review and improve legislation related to renewable energy that uses the province's geological resources, such as geothermal energy from mine waters.
- Develop underground coal gasification laws and policies.

The Nova Scotia government owns and administers all resources designated as minerals under the Mineral Resources Act (MRA), on both Crown and private lands. At present, this includes all metals (e.g., gold, silver, copper, lead, zinc, tin), coal, and many industrial minerals, including industrial clays, quartz, anhydrite, and marble. The act also covers the extraction of renewable geothermal energy from flooded mines. Other geological resources are not currently administered under the MRA. For example, petroleum resources are administered by the Department of Energy. The MRA should be reviewed and revised to ensure that it reflects the goals of sustainable resource management and the values of shared stewardship.

Nova Scotia has coal resources that present development opportunities, both as an energy source and for use in steel production. As clean-coal technologies are developed, opportunities will open up to develop this resource with minimal harm to the environment. One emerging technology—underground coal gasification—requires an effective legislative framework in order to proceed. This is an innovation worth pursuing for its economic potential, provided that risks to people and the environment can be effectively mitigated.

What's happening already?

Surface Coal Mine Reclamation Study

Since 2006, the Department of Natural Resources has been working with university researchers and the Pioneer Coal Company to study best practices for reclaiming surface coal mine sites. Research has focused on innovative techniques for preserving biodiversity on reclaimed lands, including methods to incorporate forest regeneration during reclamation. This contrasts with the more traditional practice of creating grasslands on reclaimed lands.

Coastal Mapping

The Department of Natural Resources has started a cooperative mapping project with several partners, including other departments, the Nova Scotia Community College, and municipal governments, to study bedrock and overlying geological materials. The purpose is to identify portions of the province's coast that are especially susceptible or resistant to erosion and flooding. This information will provide guidance for coastal management plans.



6. Provincial Parks



Hikers at Blomidon Provincial Park, Nova Scotia

6. Provincial Parks

The goals

Shared stewardship. Challenge Nova Scotians to work together to create a sustainable park system for 2020 and beyond.

Far-sighted planning. Work collaboratively to guide the planning, management, and operation of a sustainable provincial park system.

Protection. Make protection of Nova Scotia’s natural and cultural heritage a priority of the provincial park system.

Education. Deepen public understanding and appreciation of Nova Scotia’s natural and cultural heritage.

Recreation. Provide nature-based recreation that supports a healthy way of life for Nova Scotians, while protecting our natural and cultural heritage.

The context

The natural resources strategy addresses lands designated as provincial parks or park reserves under the Provincial Parks Act. (See Figure 6-1.) These lands form an important part—but not all—of Nova Scotia’s diverse system of parks and protected areas. The entire system includes protected areas administered by Nova Scotia Environment, as well as federal and municipal parks, and lands protected by private land trusts (e.g., Nova Scotia Nature Trust; Nature Conservancy of Canada). An important goal of this strategy is to improve the management of provincial parks in the context of this entire system.

Figure 6-1. Nova Scotia's provincial parks and park reserves (Spring 2011)



Nova Scotia's provincial parks protect and showcase the province's natural diversity and cultural heritage, and encourage nature-based recreation, education, and tourism. (See Figure 6-2)

Figure 6-2. Mandate for Nova Scotia's provincial parks



The current provincial park system entails more than 120 operating parks, including 20 campgrounds, more than 100 day-use parks, and 1,500 km of rail corridor. In addition, there are 163 park reserves that have been set aside for possible future park development. In total, provincial park lands represent approximately 0.5 per cent (30,000 hectares) of Nova Scotia's land base.

Parks are a valuable asset—economically, environmentally, and socially. They play an important role in conserving Nova Scotia's biodiversity. They also provide special places for Nova Scotians to enjoy, learn about, and care for our natural heritage.

Provincial parks attract more than 1.5 million visitors annually. At least 65 per cent of Nova Scotians visit a park at least once per year, with many more returning to their favourite trail or beach several times a year. Many visitors, of course, come from outside the province, with 30 per cent of campers coming from beyond our borders.

Park use is generally free. Only the camping parks and one community-operated park generate revenue. In total, the park system generates approximately \$1 million in direct revenues, an amount that only partially offsets the more than \$3 million it costs to provide park staff and keep the campgrounds, washrooms, boardwalks, roads, and other conveniences in good shape for public use. Limited budgets over the past 10 years have made it difficult to do more than critical repairs to the \$60-million park infrastructure. There is demand to create new park experiences and enhance existing park features; however, funding is limited and choices must be made. Periodic opportunities, like the Federal-Provincial Stimulus program, which allowed the Nova Scotia government to invest more than \$5 million in our parks, are helpful but still provide only a small portion of what is needed.

Nova Scotians want more from the parks than the Nova Scotia government can realistically afford to deliver. There are not enough people and funds to maintain or expand all the existing washrooms, trails, campsites, and other park structures. As well, the mandate to protect the land can sometimes be in direct conflict with the mandate to provide recreation. As an example, some Nova Scotians put a high priority on protecting habitats for piping plovers, while others want greater access to the beaches where the birds live.

The parks cannot be all things to all people. We need to decide which parks will focus on protection; which will provide recreation; and which might be separated into clearly designated sections that have distinct roles. We also need to decide such important matters as where to invest taxpayers' funds and what land to divest.

Government affirms the existing aboriginal and treaty rights in section 35 of the Constitution Act (1982). We will continue to consult with First Nations, using the Mi'kmaq–Nova Scotia–Canada Consultation Terms of Reference, whenever decisions being considered might affect these rights.

Goal: Shared stewardship

Challenge Nova Scotians to work together to create a sustainable park system for 2020 and beyond.

Actions:

- Engage the public at provincial, regional, and community levels in a focused dialogue about provincial parks.
- Inform Nova Scotians about the current park system—what the parks offer and what they cost—and ask Nova Scotians what they value.
- Involve Nova Scotians in setting priorities for a sustainable park system, addressing the issues of protection, education, recreation, and tourism.
- Develop stable, mutually accountable partnerships.

Nova Scotians have high expectations for their provincial parks. The Nova Scotia government must find new ways to address the expectations of park users within the constraints of limited funds.

The land base in Nova Scotia is limited, and more pressure is being put on our natural spaces to allow more public use. This creates a dilemma: How do Nova Scotians continue to experience what they love, if the experience itself puts unsustainable pressure on the land? A balance is needed here, as well.

Strong partnerships are essential. There are currently more than 60 unique partnerships affecting trails and parks across Nova Scotia. The partnerships include “Friends of” groups for particular parks; groups that deliver interpretive and educational programs; groups interested in a particular activity or event unique to a park; and groups dedicated to creating new trails and recreational opportunities. These partnerships build an important sense of community; they also foster education, increased understanding of biodiversity and stewardship, and greater interest in outdoor recreation. The successful Parks Events program (formerly Parks are for People) is a collaboration of government agencies, recreation clubs, and community organizations. It has engaged hundreds of volunteers and more than 20,000 park users every year. The department must do more to integrate our current partnerships, explore new relationships, and support and recognize our many volunteers.

Goal: Far-sighted planning

Work collaboratively to guide the planning, management, and operation of a sustainable provincial park system.

Actions:

- Make an inventory of the biological diversity, cultural and heritage values, including Mi'kmaq archaeology and archaeological sites, and opportunities for nature-based recreation and education in provincial parks.
- Evaluate each park for its provincial, regional, and local contribution to the parks mandate (protection, education, recreation, and tourism).
- Identify parks that are essential to the provincial parks mandate, parks that are of secondary value to the mandate, and parks that are outside the mandate.
- Identify gaps in the park system, and ways to fill the gaps.
- Involve municipal and federal government parks representatives when preparing the provincial park system plan.
- Monitor the implementation of the park system plan.

A system plan identifies the relative priority of lands from provincial, regional, and local perspectives, based on the various ways in which the lands may be valued. A system plan provides direction and priorities for planning and development. It also looks at the ways in which parks can fill a gap in the protection of our natural and cultural heritage or in recreation services. In a system plan, a single park is valued for its contribution to a group of parks.

The department has done some preliminary review of lands against the mandate for parks as defined in the legislation. Government needs to expand the discussion so as to actively involve park users and communities located near parks.

Goal: Protection

Make protection of Nova Scotia's natural and cultural heritage a priority of the provincial park system.

Actions:

- Update laws and policies to emphasize protection in the planning and management of provincial parks.
- Ensure that park planning, development, and operations protect significant natural and cultural heritage assets.
- Monitor the protection of natural and cultural heritage assets.
- Work with Nova Scotia Environment to integrate the planning and reporting of the parks and protected areas programs.

Sustainable use is a key issue in parks management. Parks provide valued places for people to explore and enjoy nature, but they also play an important part in conserving Nova Scotia's ecological diversity. Protection of Nova Scotia's natural and cultural heritage must be an overriding priority of the provincial parks system. Nova Scotia's parks need to reflect an ecosystem approach that incorporates ecological integrity, biodiversity conservation, and the impact of park use.

The Provincial Parks Act must be updated to reflect current issues and the priorities of the natural resources strategy. The ecosystem approach to resource management will have to be supported by policy that provides direction for the department and clarity for people interested in park management issues.

Provincial parks contribute to the target of protecting 12 per cent of Nova Scotia's land base, set by the Environmental Goals and Sustainable Prosperity Act (EGSPA).

Goal: Education

Deepen public understanding and appreciation of Nova Scotia's natural and cultural heritage.

Actions:

- Create new opportunities for people to explore and experience the province's natural and cultural heritage.
- Work with communities and other partners to showcase and interpret significant aspects of Nova Scotia's culture and heritage.
- Inform Nova Scotians and visitors about the wealth of learning and recreational opportunities in our provincial parks.

Our world is changing. Nova Scotians need to gain a deeper understanding of our natural and cultural heritage and our responsibilities as shared stewards of the environment. Our provincial parks system has an important role to play in educating and engaging the public in this important work.

Goal: Recreation

Provide nature-based recreation that supports a healthy way of life for Nova Scotians, while protecting our natural and cultural heritage.

Actions:

- Identify new nature-based recreational opportunities in each park.
- Ensure that recreation activities are environmentally sustainable.

Changing demographics—such as an older, more urban population—have shifted expectations and created new opportunities for nature-based recreation, education, and tourism. For example, people are showing more interest in hiking, walking, and wildlife viewing. New high-technology activities, such as geocaching (orienteering using global positioning systems), are opening up the outdoors to new visitors. There has been a shift in the types of camping equipment people use, with recreational vehicles becoming more common.²⁰

20 MT & L Public Relations. (2007).

What's happening already?

Story Circles: A Mi'kmaq Programming Plan

In 2010, the Department of Natural Resources and the former Department of Tourism, Culture and Heritage partnered with the Mi'kmaq Association for Cultural Studies to produce a Mi'kmaq interpretive plan for provincial parks. The interpretive plan shows how Nova Scotia's provincial parks could be used to increase awareness and understanding of Mi'kmaq heritage and culture.



7. Next Steps



Communications Nova Scotia/Les Krizsan

Sable Island, Nova Scotia

7. Next Steps

The natural resources strategy vision:

In 2020 and beyond

- Nova Scotia is rich in natural resources, including biodiversity, forests, geological resources, and provincial parks.
- Individuals and groups interested in our natural resources work with government to manage these resources wisely.
- All Nova Scotians benefit from the natural health and wealth of the province.

A companion document entitled *From Strategy to Action, An Action Plan for the Path We Share, A Natural Resources Strategy for Nova Scotia*, released with this strategy, lists the actions the Nova Scotia government will take in the next 24 months. Some of the actions relate to the management of all natural resources, while others are specific to the areas of biodiversity, forests, geological resources, and provincial parks.

Working together

The Department of Natural Resources is committed to working with colleagues from across government, with the Mi'kmaq of Nova Scotia, and with all other interested groups or individual Nova Scotians to put this strategy into action.

We will need help implementing this strategy, reporting on it, and measuring its success. We will enlist the help of others who will oversee our work from outside government, including an external advisory panel, and government's *jobsHere* leadership teams.

Government affirms the existing aboriginal and treaty rights in section 35 of the Constitution Act (1982). We will continue to consult with First Nations, using the Mi'kmaq–Nova Scotia–Canada Consultation Terms of Reference, whenever decisions being considered might affect these rights.

A Final Word

The natural resources of Nova Scotia are a priceless heritage, a source of employment and new wealth, an endowment we must protect for future generations, and an asset that sustains life. That is too much to risk on short-term gain or because of a lack of attention or interest. This strategy, informed by public consultation and expert advice, attempts to bridge the divide between interests that have historically been in competition over the use of those resources, and strike the right balance between resource use and protection.

Throughout this strategy, we hope it has been clear that government understands its limited custodial responsibility for natural resources, and that ownership rests with all the people of the province. Implementation of this strategy will be an inclusive undertaking, involving all those Nova Scotians with an interest or a desire to be involved.

Appendix A. Strategy Development Process

The natural resources strategy was developed in three phases, starting in 2008. Below is a summary of the development process.

Figure A-1 illustrates the publications that resulted from each phase of the strategy development process. For the full documents, go to www.gov.ns.ca/natr

Figure A-1 Snapshot of the Strategy development process



Phase 1: Citizen engagement

In Phase 1, Voluntary Planning²¹ conducted 27 public meetings throughout Nova Scotia and received 600 submissions. More than 2,000 citizens participated in the process. The result was a report entitled *Our Common Ground*, which identified five key values for managing Nova Scotia's natural resources:

- **Sustainability.** Nova Scotians want a natural resources strategy that can provide for them today without negatively affecting the culture, society, environment, and economy of generations to come. They want more jobs in rural areas, jobs based on sound ecological principles.
- **Diversity.** Nova Scotians believe diversity is an essential element of a resilient economy, a vibrant ecology, thriving communities, and a healthy way of life.
- **Collaboration.** Nova Scotians want the Department of Natural Resources to play a leadership role in bringing together the different views about natural resource management. They also want to continue to be part of the decision making process.
- **Transparency.** Nova Scotians value an open, clear, and easily understood decision making process. They want to know the rationale behind decisions.
- **Informed decision making.** Nova Scotians want the Department of Natural Resources to use the best available information pertaining to science, economics, citizen values, and community and traditional knowledge when making resource-management decisions. They also want to be kept informed so that they can better contribute to the decision making process.

Phase 2: Stakeholder engagement /Technical expertise

A steering panel of three prominent Nova Scotians was appointed to oversee the work of four independent panels of expertise concerned with biodiversity, forests, minerals, and provincial parks. The panels of expertise engaged stakeholders and reported their findings, along with more than 300 technical recommendations, to the steering panel. The steering panel synthesized the technical recommendations and identified six strategic priorities and 26 high-level recommendations. This comprehensive work was released to the public in the Phase 2 report, *A Natural Balance*.

21 Until December 2010, Voluntary Planning acted as an arm's-length agency of the government of Nova Scotia, responsible for coordinating public engagement on important issues and major projects. The voluntary planning function is now the responsibility of Nova Scotia's Treasury Board.

Following is a summary of the six “strategic priorities” identified by the steering panel in Phase 2:

- **Leadership readiness.** Thoroughly examine the role and structure of the Department of Natural Resources. Develop government-wide readiness to implement the strategy. Embrace collaboration. Give citizens opportunities for genuine input. Focus on land stewardship, biodiversity conservation, and the protection and preservation of our natural and cultural heritage.
- **Citizen and stakeholder engagement.** Recognize and value citizen and stakeholder engagement to improve decision making, priority-setting, accountability, and transparency. Put structures and policies in place to ensure full and meaningful contributions.
- **Legislative renewal and compliance.** Review and renew or create legislation, regulation, and policies to reflect priorities (e.g., biodiversity legislation).
- **Research capacity and knowledge sharing.** Build research capacity, share knowledge, and collect and manage data in order to further our understanding of our resources and to support informed decision making.
- **Education.** Emphasize education at all levels, and in Department of Natural Resources outreach programs, to broaden understanding of our connection to nature and of how natural resources benefit our way of life.
- **Collaboration, coordination, and cooperation.** Involve everyone—from individuals to industry, and government at all levels—in working together to ensure a healthy, natural system.

Phase 3: Department of Natural Resources

The Department of Natural Resources integrated the values from Phase 1 and the strategic priorities and steering panel recommendations from Phase 2 into a ten-year strategy for sustainable resource development. The implementation will be ongoing to 2020.

Appendix B. Glossary of Terms

The following definitions describe how these terms are used in the natural resources strategy. As we move forward with implementation, the meaning of some terms may change.

Annual allowable cut (AAC): The volume of trees that may be harvested annually.²²

Best practices: Processes or procedures that are broadly recognized or accepted as being correct or most effective under current circumstances.

Biodiversity or biological diversity: The variety and interconnectedness of all life, including all plants, animals, and other organisms, the genes they contain, and the systems and processes that link them. (Adapted from the report of the Biodiversity Panel of Expertise, p. 5.)²³

Biomass: Wood fibre deriving from small-stemmed or exceedingly knotted trees and other low-value wood that is not useable for other products, such as timber. Typically harvested as a by-product of regular forestry practices, biomass can be a renewable fuel source suitable for the generation of electricity.

Carbon management: Storing or using carbon in ways that reduce or prevent its release into the air.²⁴

Clearcutting: The removal of all trees in an area at one time, except those required to be left uncut under the Wildlife Habitat and Watercourses Protection regulations.

Code of Forest Practice: Principles, guidelines, and technical recommendations for the sustainable management of Nova Scotia's forests.²⁵

Collaboration: A process through which people, groups, and organizations work together to achieve common goals.

Community forests: Any forest land managed by a local government or community group (or First Nation) for the benefit of the entire community.²⁶

Conservation: A managed or controlled attempt to restore, enhance, protect, and sustain species and ecosystems for present and future generations.²⁷

22 Canadian Council of Forest Ministers. (2010).

23 A Natural Balance. (2010).

24 Cunningham and Cunningham. (2003).

25 Nova Scotia Department of Natural Resources. (2008-1).

26 British Columbia Department of Forests, Mines and Lands. (2010).

27 Dunster and Dunster. (1996).

Conservation areas network: A system of areas on land and water dedicated and managed through legal and other means to achieve the long-term conservation of biodiversity and associated ecosystem services and cultural values. Conservation areas include parks, nature reserves, and wilderness regions, as well as wildlife management locations, heritage rivers, and other formally and informally designated places.²⁸

Crown land: All or any part of land under the administration of the Minister of Natural Resources.²⁹

Ecosystem: A complex system of living organisms (plants, animals, fungi, and microorganisms), their environment (soil, water, air, and nutrients), and the interacting processes among them.³⁰

Ecosystem approach: The integrated management of land, water, and living resources that promotes conservation and sustainable resource use. It recognizes that humans are an integral part of ecosystems.³¹

Ecosystem classification: The inventory, description, and organization of ecosystems based on their key characteristics and services. Ecosystem classification can be based on any combination of plants, animals, soils, geology, climate, and other types of ecological information.

Ecosystem services: The benefits that people obtain from ecosystems.³²

High-value jobs: Knowledge-intensive jobs that involve high-level skills; that require the worker to use those skills in adaptable and flexible ways; and that pay above-average wages and salaries.³³

Invasive alien species: A species introduced outside its normal distribution, whose establishment and spread can affect ecosystems, habitats, or other species.³⁴

Natural heritage: Enduring benefits of nature, including land, air, water, and wildlife, as well as geology, landforms, and biodiversity, and their associated ecosystem functions.

Netukulimk: A Mi'kmaq teaching, describing the sustainable use of natural resources for the self-support and wellbeing of the individual and the community.³⁵

28 International Union for Conservation of Nature. (2010).

29 Nova Scotia. (1989).

30 Dunster and Dunster. (1996).

31 United Nations Convention on Biological Diversity. (2010, October 21).

32 GreenFacts. (2010).

33 Nova Scotia. (2010, November).

34 GreenFacts. (2010).

35 Unama'ki Institute of Natural Resources. (2010).

Panels of expertise: In Phase 2 of the natural resources strategy, four citizen-volunteer bodies—working in the areas of biodiversity, forests, minerals, and parks—that sought information from technical stakeholders and submitted draft reports to the steering panel.

Provincial park: A park or park reserve administered by the Department of Natural Resources, whether designated by the Provincial Parks Act or not. Provincial parks system refers collectively to all the provincial parks and park reserves in Nova Scotia.³⁶

Protected area / protected areas system: Land and water dedicated to the protection and maintenance of biological diversity and natural and cultural resources, and managed through legal means. Protected areas include wilderness areas, nature reserves, and both national and provincial parks, as well as lands under conservation easement with a land trust, and national wildlife areas.

Reclamation: The process of returning a disturbed area to its natural state, or to a state suitable for equivalent or superior use or benefit. Most frequently used in conjunction with areas whose properties have been drastically changed.

Silviculture: The practice of managing the establishment, composition, health, quality, and growth of trees in forests.³⁷

Steering panel: The citizen-volunteer body that directed Phase 2 of the natural resources strategy and the work of the four Phase 2 panels of expertise. It provided strategic directions through its report, *A Natural Balance: Working Toward Nova Scotia's Natural Resources Strategy*.

Stewardship: The responsible use and conservation of natural resources in a way that takes full and balanced account of the interests of society, future generations, and other species. “Shared stewardship” is the term that the Department of Natural Resources uses to describe the work ethic necessary to achieve the vision of a province rich in natural resources, a province in which government and interested groups and individuals work together, to the benefit of all Nova Scotians.

Sustainability: The management and use of natural resources in ways that meet the needs of the present without compromising the ability of future generations to meet their own needs.³⁸

Whole-tree harvesting: Extraction of the complete tree, including the top and branches, with the stump left in place.³⁹

36 Nova Scotia. (1989, 2007).

37 Dunster and Dunster. (1996).

38 World Commission on Environment and Development. (1987).

39 Dunster and Dunster. (1996).

Appendix C. References

A Natural Balance: Working Toward Nova Scotia's Natural Resources Strategy (also called the "Phase 2 Report"). (2010, April). Halifax. Available at www.gov.ns.ca/natr/strategy2010/phase2report.asp

Bourque, C., Hassan, Q., and Swift, D. E. (2010, January). *Modelled Potential Species Distribution for Current and Projected Climates for the Acadian Forest Region of Nova Scotia*. Available at www.gov.ns.ca/natr/forestry/reports/Final-Report-for-NS-Climate-Change-Project.pdf

Bras d'Or Lakes Collaborative Environmental Planning Initiative website. (n.d.). *Two-Eyed Seeing* (definition). Available at www.brasdorcepi.ca/two-eyed-seeing

British Columbia Department of Forests, Mines and Lands. (2010). *Community Forests*. Available at: www.for.gov.bc.ca/hth/community/

Canadian Council of Forest Ministers. (2010). National Forestry Database. Available at nfdp.ccfm.org/glossary_e.php

Cunningham, M. and Cunningham, W. P. (2003). *Environmental Science: A Global Concern*, 7/e. Available at highered.mcgraw-hill.com/sites/0070294267/student_view0/glossary_a-d.html

Dunster, J., and Dunster, K. (1996). *Dictionary of Natural Resource Management*. UBC Press.

Ecosystem Status and Trends Report Secretariat. (2011). Evidence for Key Findings Summary: Atlantic Maritime Ecozone. *Canadian Biodiversity: Ecosystem Status and Trends 2010*. Technical Ecozone Report Series. Ottawa, Canada: Canadian Councils of Resource Ministers.

Environment Canada. (2006). *A Biodiversity Outcomes Framework for Canada*. Ottawa, Canada: Canadian Councils of Resource Ministers. Available at www.biodivcanada.ca/default.asp?lang=En&n=F14D37B9-1

Environment Canada, Biodiversity Convention Office. (1995). *Canadian Biodiversity Strategy: Canada's Response to the Convention on Biological Diversity*. Available at www.biodivcanada.ca/default.asp?lang=En&n=560ED58E-1

Federal, Provincial and Territorial Governments of Canada. (2010). *Canadian Biodiversity: Ecosystem Status and Trends 2010*. Ottawa, Canada: Canadian Councils of Resource Ministers. Available at www.biodivcanada.ca

Forest Products Association of Canada. (n.d.). *Industry Outlook*. Available at www.fpac.ca/index.php/en/industry-outlook/

GreenFacts. (2010). Definitions for *ecosystem services*, and invasive *alien species*. Available at www.greenfacts.org/glossary/

International Union for Conservation of Nature (IUCN). (2010, October 5). *Global Protected Area Programme*. Available at www.iucn.org/about/work/programmes/pa/

Michaud, L. H. (1981). *A Manual of Reclamation Practice*. International Academic Services

McAlpine, D. F., and Smith, I. M. (Eds.). (2010). *Assessment of Species Diversity in the Atlantic Maritime Ecozone*. NRC Research Press.

Mining Association of Canada. (2010). *Towards Sustainable Mining 101: A Primer*. Available at: www.mining.ca/www/media_lib/TSM_101/MAC_TSM_101_Primer_February_2010_FINAL.pdf

MT & L Public Relations. (2007). *Nova Scotia Provincial Parks: Five Year Marketing Plan*. Prepared for government of Nova Scotia, Department of Natural Resources.

Natural Resources Citizen Engagement Committee. (2009). *Our Common Ground: The Future of Nova Scotia's Resources*. Halifax: Voluntary Planning: A Citizen Policy Forum. Available at www.gov.ns.ca/govt/vp/NaturalResourcesReport.pdf

Nova Scotia. (1989). *Crown Lands Act*. R.S., c. 114, s. 1. Available at nslegislature.ca/legc/statutes/crownlan.htm

Nova Scotia. (1989, 2007). *Provincial Parks Act*. R.S., c. 367, s. 1. Available at nslegislature.ca/legc/statutes/provpark.htm

Nova Scotia. (1990). *Mineral Resources Act*. c. 18, s. 1. Available at nslegislature.ca/legc/statutes/mineral1.htm

Nova Scotia. (2007). *Environmental Goals and Sustainable Prosperity Act*. c. 7, s. 1. Available at nslegislature.ca/legc/statues/envrgoal.htm

Nova Scotia. (2010, October 12). *Renewable Electricity Regulations*. S.N.S. 2004, c. 25. O.I.C. 2010-381. Available at www.gov.ns.ca/energy/electricity/regulations.asp

Nova Scotia Department of Agriculture. (2010). *Homegrown Success: A 10-year Plan for Agriculture*. Available at www.gov.ns.ca/agri/elibrary/homegrownsuccess.pdf

Nova Scotia Department of Economic and Rural Development. (2010). *jobsHere: the plan to grow our economy*. Available at www.gov.ns.ca/jobshere/

Nova Scotia Department of Energy. (2009). *Toward a Greener Future: Nova Scotia's 2009 Energy Strategy*. Available at www.gov.ns.ca/energy/resources/spps/energy-strategy/Energy-Strategy-2009.pdf

Nova Scotia Department of Natural Resources. *Nova Scotia's Code of Forest Practice: A Framework for the Implementation of Sustainable Forest Management, Interim Guidelines for Crown Land*. Working Paper FOR 2008-1. Available at www.gov.ns.ca/natr/forestry/reports/Code-of-Forest-Practice.pdf

Nova Scotia Department of Natural Resources. (2008, April). *State of the Forest Report, 1995-2005*. Halifax. Available at www.gov.ns.ca/natr/forestry/reports/State-Of-Forest-Report--April-2008.pdf

Nova Scotia Department of Natural Resources. (2010, December). *Policy Framework for the Future of Nova Scotia's Forestry*. Available at www.gov.ns.ca/natr/strategy2010/framework-update.asp

Nova Scotia Department of Tourism, Culture and Heritage. (2008). *A Treasured Past, A Precious Future: A Heritage Strategy for Nova Scotia, 2008-2013*. Available at www.gov.ns.ca/TCH/pubs/Heritage_strategy_english.pdf

Nova Scotia Environment. (2009, January). *Toward a Greener Future: Nova Scotia's Climate Change Action Plan*. Available at www.climatechange.gov.ns.ca/doc/ccap.pdf

Nova Scotia Environment. (2010). *Water for Life: Nova Scotia's Water Resource Management Strategy*. Available at www.gov.ns.ca/nse

Nova Scotia Treasury and Policy Board. (2008, May). *Regulatory Management Policy Guide*. Available at www.gov.ns.ca/betterregulation/pdf/Reg-Mgmt-Policy-Guide-PDF.pdf

Prospectors and Developers Association of Canada. (2010). *e3 Plus: A Framework for Responsible Exploration*. Available at www.pdac.ca/e3plus/index.aspx

Unama'ki Institute of Natural Resources. (2010). *Netukulimk* (definition). Available at www.uinr.ca/section/netukulimk/

United Nations Convention on Biological Diversity. (2010, October 21). *Ecosystem Approach*. Available at www.cbd.int/ecosystem

US Department of Energy. Atmospheric Radiation Measurement (ARM) Program page. Available at <http://education.arm.gov/studyhall/globalwarming/experts/expertcarbon>

Woodbridge Associates. (2011, May). *Economic Impact Analysis of Timber Management & Supply on Nova Scotia's Forest Industry*. Prepared for the government of Nova Scotia, Department of Natural Resources. Available at <http://www.gov.ns.ca/natr/strategy2010/pdf/Woodbridge-May-2011.pdf>

World Commission on Environment and Development ("the Brundtland Commission"). (1987). *Our Common Future*. Oxford University Press. Available at www.un-documents.net/wced-ocf.htm

Worrell, R., and Appleby, M. C. (2000, January). Stewardship of Natural Resources: Definition, Ethical and Practical Aspects. *Journal of Agricultural and Environmental Ethics*, Volume 12 (3), pp. 263-277.

