Managing the Environment

A Review of Best Practices

Executive Summary

Executive Resource Group
January 2001

EXECUTIVE
RESOURCE
GROUP *Strategic Public Policy and Management Consulting*

January 31, 2001

Andromache Karakatsanis
Secretary of the Cabinet and Clerk of the Executive Council
Room 6420, Whitney Block
99 Wellesley Street West
Toronto, Ontario
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Dear Ms. Karakatsanis:

It is a pleasure, on behalf of the Project Team, to submit our report on best practices in other jurisdictions. The report *Managing the Environment* is presented in two volumes. Volume I contains our findings on best practices, our assessment of the current Ontario context, and our recommendations. Volume II (on CD-ROM) contains the various research papers prepared or commissioned by the Project Team.

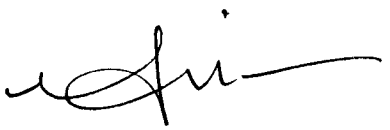
As requested, our focus has been on identifying best practices in other jurisdictions that could be implemented in Ontario as part of establishing this Province as a leading environmental jurisdiction and a model for others. In doing so, we have also provided you with our assessment of how Ontario is currently positioned against those best practices. Finally, we have provided a series of what we hope are practical and implementable recommendations that we believe will begin to address the goal of establishing Ontario as an environmental management model for others.

As you will read, one of our central conclusions is that all environmental jurisdictions are struggling with similar management challenges and that, although there are many examples of best practices, no single jurisdiction could be described as leading in all areas. What does distinguish leading jurisdictions, however, is the recognition that traditional, narrow approaches alone are insufficient to meet current challenges. Leading jurisdictions have made the public commitment to explore new, innovative, and more comprehensive ways to protect human health and continuously improve the quality of the environment. They have also demonstrated a preparedness to

partner in the building of solutions and a willingness to share the results of these efforts.

I would like to take this opportunity to thank those who participated in this review. Their time, experience and insights were invaluable in the preparation of the report. I would also like to thank the members of my project team – Bob Breeze, Sam Goodwin, David Girvin, John Haffner, and Morris Ilyniak – for their efforts and commitment throughout the past several months. Bob Breeze's contribution was particularly important, including his leadership, strategic insight, and stewardship of a significant piece of research on integrated compliance assurance.

Sincerely,



Valerie A. Gibbons

Executive Summary

The following is a summary of Volume I of our report.

1. Overview and Approach
2. The Case for Action: *Strategic Shifts*
3. The Ontario Ministry of the Environment
4. Environmental Compliance Assurance
5. Governance for Environmental Management
6. Environmental Knowledge Management
7. Emerging Issues
8. Environmental Monitoring and Reporting
9. Access to Scientific and Technical Expertise
10. Risk Analysis
11. Policy Development
12. The Path Forward for Ontario: Recommendations

1. Overview and Approach

The purpose of this report is to provide the Government of Ontario with an independent review of *best practices* with respect to how environment departments in other jurisdictions meet current challenges and execute their various management responsibilities.

Our project team, under the leadership of Valerie A. Gibbons, a senior partner in *Executive Resource Group* and former Ontario Deputy Minister, was assembled in response to a request from the Government of Ontario through the Secretary of Cabinet.

The origin of our review was the Government's stated commitment to establishing Ontario as a leading environmental jurisdiction and as a model in the future for other jurisdictions to emulate. In this context, our efforts were directed at an overall management effectiveness review of the Ministry of the Environment, which included:

- Developing an understanding of the current management challenges facing the Ministry, with particular emphasis on challenges that are common to most ministries or departments in other jurisdictions.
- Identifying best practices from environment departments in other jurisdictions that can inform and guide the Ministry and the Government in meeting those challenges.

To assist us in our work, we established a central line of inquiry for the project as follows:

> ***What are the defining characteristics of and/or elements that are present in a model ministry or department of the environment?***

The responses we received and the results of our research led us to focus on two different levels of further study:

- To identify what we have referred to as broad *strategic shifts* in thinking that are taking place across leading jurisdictions with respect to complex environmental challenges.
- Within this set of *strategic shifts*, to identify best practices and make recommendations to Government with respect to a number of key functional areas.

Our activities were organized into five categories as follows:

- Internal information gathering with respect to MOE.
- Meetings with 41 external organizations.
- Site visits to and discussions with other jurisdictions.
- Extensive research and literature review.
- Commissioned and project team research reports, including a major paper on environmental compliance assurance.

2. The Case for Action: *Strategic Shifts*

One of our primary assertions is that advice on best practices has to be thoroughly anchored in a larger strategic context of developments in environmental management. We found a striking consensus with respect to changes in mainstream environmental thinking that cut across jurisdictions. This new thinking incorporates major changes in how governments, the regulated community, NGOs, and the public are attempting to deal with challenges.

Consequently, we focused on identifying high-level *strategic shifts* in environmental management that are generally recognized. These high-level *strategic shifts* are the critical underpinning of our review and provide the broader management context that all jurisdictions need to address as part of developing model environment ministries or departments. The table on the following page provides a summary of these *shifts*.

No single jurisdiction has completely or successfully made all of the *shifts*. While most have acknowledged the need for change, each is struggling with how best to make the transition. As a result, individual jurisdictions are at different stages with varying degrees of success in what is in effect a continuum of change.

The first and most important *strategic shift* is overarching and sets the stage for the larger pattern of shifts:

Over-Arching Shift

Towards a strategic approach to Managing the Environment.

This shift involves moving beyond traditional, narrow approaches to environmental responsibilities. Leading jurisdictions acknowledge the inadequacy of the traditional model – often described as *command and control* – as the *primary* or *stand-alone* approach to dealing with the changing and increasingly complex environmental challenges of today and the future.

Leading jurisdictions are actively engaged in trying to move to the next level of dealing with the environment, sometimes referred to as a new vision of *environmental management*. This new vision builds on the strengths of traditional regulation, but also integrates it with a broader, more comprehensive approach. This approach emphasizes continuous improvement for all sources of pollution, multimedia and cumulative impacts, and broader public participation and access to information.

It typically includes less overall emphasis on the role of government as *doer*, traditional regulation and enforcement, and a greater emphasis on the role of government to provide overall *system management*, through a range of partnerships, processes, structures, and tools.

From a Traditional Regulator	*Towards a Strategic Approach to Managing the Environment.*
1. *One ministry having sole responsibility for environmental protection*	*A high-level, government-wide vision and goals with implementation shared across different departments*
2. *A primary emphasis on ensuring compliance with minimum standards for large stationary facilities*	*A new and broader emphasis on strategies to promote continuous improvement in environmental outcomes and accountability across all sources of pollution*
3. *Traditional program delivery according to municipal or ministry/department area or region boundaries*	*A place-based approach with boundaries that make environmental planning sense and facilitate a total cross-media, cumulative approach (such as watershed management)*
4. *A primary reliance on traditional investigation, enforcement, and abatement tools*	*A more comprehensive, flexible set of regulatory and non-regulatory compliance tools and incentives*
5. *A reliance on government to do it all*	*An approach based on shared responsibility with the regulated community, NGOs, the public, and the scientific/technical community*

Strategic Shift #1

Towards a high-level, government-wide vision and goals with implementation shared across different departments.

In many jurisdictions, the primary responsibility for the environment has been delegated for the most part to one department of government. Leading jurisdictions are recognizing that the challenge of effective environmental management is broader than one department. There is a growing awareness that the solutions can only be achieved by marshalling and aligning all of the resources of government to achieve a common purpose.

Developing the capacity to deal with the various *strategic shifts* requires a more comprehensive and sophisticated government strategy that:

- Establishes a clear environmental vision for the government as a whole rather than for one or two departments.
- Sets out priorities with measurable goals and objectives – not just for reduced emissions, but also for sustaining human health and the environment and ensuring balance with a strong economy.
- Includes high-level strategies that cut across government departments and other jurisdictions and that engage the regulated community, NGOs, and the public.
- Establishes a strong central capacity for coordinating efforts, ensuring consistency with the vision, and monitoring performance.

Strategic Shift #2

Towards a new and broader emphasis on strategies to promote continuous improvement in environmental performance and accountability across all sources of pollution.

Continuous improvement across all sources of pollution is a critical component of effective environmental management. Traditional environmental regulation has been focused on the relatively narrow approach of ensuring compliance with minimum standards, set and targeted primarily at large stationary point source polluters and managed separately for air, water, and land. This emphasis misses the significant areas of smaller point and non-point sources.

Building on the success of past approaches, leading jurisdictions are turning towards fostering a culture of *continuous improvement*. Continuous improvement means the expectation that environmental conditions and the performance of the regulated community must continue to improve.

It is essential that this direction be reinforced by a foundation of tough, aggressive enforcement using a full range of tools including administrative and court-based penalties.

Strategic Shift #3

Towards a place-based approach with boundaries that make environmental sense and facilitate a cross-media, cumulative approach (such as watershed management).

Most jurisdictions are organized to carry out their activities using approaches that do not necessarily make environmental sense. Typically, this means regulating in terms of distinct media, i.e. separately for air, water, and land, with program delivery based on the geography of municipalities or government offices.

Leading jurisdictions recognize that this approach does not allow them to deal with environmental issues in a manner that *integrates across media* and deals with the *total cumulative impact* on people and places.

The alternative is called *place-based* environmental management, which recognizes that the natural environment has its own ecological and biophysical boundaries. This approach emphasizes geographic convergences of water, land, and air.

Our research indicates a consensus that *watersheds* are an appropriate basic organizing principle for place-based environmental management. Watersheds are reasonably easy to define and remain relatively fixed over time. Also, problems with non-point source pollution are closely associated with run-off patterns.

Adopting a *place-based/watershed* approach requires new and different structures and processes as well as significant changes in how governments, the regulated community, NGOs, and the public work together as part of:

- Establishing ecological boundaries that are flexible in size and scope.
- Drawing heavily on local participation and in some cases, local agencies with delegated responsibilities.
- Working with local publics and the regulated community to establish goals for each *place,* in the form of agreed upon public uses/activities for the various resources within its boundaries.
- Establishing the maximum amounts (*total cumulative load*) of pollution from all sources (including point, non-point and naturally occurring) that can be allowed in that area over a specific period consistent with achieving the agreed-upon uses.
- Ensuring transparent public access to as comprehensive as possible a range of information and data.

Strategic Shift #4

Towards a comprehensive, more flexible set of regulatory and non-regulatory tools and incentives.

Traditional compliance emphasizes inspection, abatement, investigation, and enforcement. The focus is typically on enforcing compliance with minimum standards for larger, stationary point source polluters.

However, the current leading thinking is that our complex environmental problems require more collective solutions including broader participation, changes in behaviour, and cooperation among all stakeholders and across jurisdictions. These more evolved strategies go beyond government dictating what industry must do within a *command and control* model.

The emerging direction is known as an *integrated approach to environmental compliance assurance*. It is much more *performance*-based, rather than *rules*-based, with a greater emphasis on government's role to set outcomes and then work with the regulated community and the public to determine how best to meet them. This approach is based on the concept of a compliance assurance *tool kit* – both regulatory and non-regulatory instruments – that will allow societies to go beyond minimum compliance and address increasingly complex challenges. It also involves:

- A clear understanding that strong, effective, tough inspection, investigation, and enforcement are the essential backbone.
- Accepting that alternatives to traditional enforcement – e.g. economic instruments, compliance assistance, and cooperative agreements – enhance rather than weaken environmental protection.
- Partnerships with industry sectors, NGOs, and local communities.
- Innovation and flexibility as long as the performance goals are being met.
- Dealing more directly and effectively with non-point source emissions.
- Accepting that in some cases, implementation can be delegated to or shared.

Strategic Shift #5

Towards an approach based on shared responsibility with the regulated community, NGOs, the public, and the scientific/technical community.

Traditionally, industry and the public have defined environmental protection almost exclusively as the government's responsibility. As understanding of the complexity of environmental challenges continues to grow, there is a recognition that *governments alone* do not have the resources to do it all, nor is it the most effective approach.

In a model jurisdiction, the approach is one of shared responsibility and partnership through cooperation among stakeholders. Most often, this is achieved through a few key mechanisms:

Delegating responsibility (not necessarily accountability) for some activities to other partners or levels in the system, including:

- Networks of multistakeholder external advisory bodies.
- Local bodies to plan and set priorities within provincial frameworks.
- Locally managed assessments and/or approvals.
- Allowing the regulated community – within clear accountability and verification requirements – to

undertake its own routine monitoring and reporting, including self-certification and third party audits.

- Funding NGOs to take an active role in policy development and monitoring activities.

Transparent sharing of information with the public.

- Many jurisdictions are turning to the public as a critical lever in achieving better environmental outcomes. Transparent reporting programs are being used to put public pressure on poorly performing members of the regulated community.

- Transparent public reporting is felt to play a key role in driving the transition of companies, industries, and economies towards the ultimate goals of continuous improvement and sustainable development.

- Most of the leading jurisdictions we examined recognize who their stakeholders are and the need for, and the value of, their participation and input.

3. The Ontario Ministry of the Environment

Personal and Professional Commitment

As we met with Ministry of the Environment (MOE) officials, we were impressed by their commitment to high quality public service. We also witnessed a strong personal and professional commitment to the environment and an acute awareness of the critical role its effective management plays in each of our lives.

At the same time, we saw an organization under considerable management and operational pressure, as the Ministry makes every effort to balance the requirements of the day-to-day running of its business and programs for the public, with the extraordinary circumstances of recent months.

Current Positioning

In terms of the *strategic shifts*, we would not characterize the overall direction of MOE and environmental protection in Ontario as leading. Although building blocks are in place in a number of areas, the overall impression is one of a somewhat piecemeal approach. It is apparent to us that Ontario is behind the progress in many other jurisdictions and that the gap continues to widen. Without a concerted and strategic effort on the part of the Government and the Ministry, the stated goal of establishing Ontario as a model for others may not be realizable.

As a group, the Ministry's senior management team and individual executives demonstrated a strong awareness that traditional models of environmental protection, however effective in the past, have been pushed as far as possible.

In our discussions, we saw evidence of a genuine MOE effort, despite the challenge of day-to-day pressures, to monitor and stay abreast of developments in other jurisdictions.

More importantly, we witnessed an awareness of the broader developments – the *strategic shifts* – in environmental management that are underway in other industrialized nations. Among Ministry executives – as with our discussions with most external organizations —– there appeared to be strong support for moving in these directions.

Need for A Coherent Strategy

One of the single biggest issues facing MOE and the Government is the absence of a vision for the future of environmental management in Ontario that incorporates the various *strategic shifts*. The purpose of this vision is not only to bring coherence to MOE's internal efforts, but also to provide for greater coherence and therefore more effective coordination of effort towards a common purpose, across all affected Government ministries and agencies.

Despite internal awareness of these approaches, the Ministry to date has not made progress towards articulating this vision more fully and developing the political and public consensus, including policy, program, and organizational options, to make it a reality. It was apparent to us that a core of the Ministry is firmly entrenched – philosophically, culturally, and programmatically – in a traditional *command and control* approach. While there are examples of *leading edge-type* initiatives emerging from various creative centres in the organization, these do not fundamentally challenge the traditional approach.

The result is a set of confused or mixed messages to the public, the regulated community, and NGOs with respect to the Ministry's true position on issues such as partnership, innovation, moving beyond compliance with minimum standards, and other directions for the future.

With this in mind, we can point to a number of program initiatives, most already in place or underway, and one that was not implemented, that provide building blocks for future development. For example:

- MOE's *mix and match* of programs to monitor, assess and report on the quality of the natural environment and emissions.
- Ontario has experience in developing individual voluntary initiatives to support pollution prevention that could become part of an integrated compliance assurance approach.
- MOE already has a framework for cooperative agreements – albeit unimplemented – in the REVA program (Recognizing and Encouraging Voluntary Actions).
- Ontario has 100 already-identified watersheds through local conservation authorities.
- New regulations requiring reporting from industrial and commercial emitters are consistent with the *strategic shift* of sharing responsibility and over time, can be developed into a more comprehensive system to ensure public access to information about environmental performance.

- Recent legislative changes to allow for the use of administrative penalties, as opposed to long and laborious court proceedings.
- The *Environet* information technology initiative can serve as a first step towards a broader and more comprehensive environmental Knowledge Management.

Management Lessons from Other Jurisdictions

Based on our research and discussions, three factors have been particularly important to the ability of other jurisdictions to move ahead.

Strong political commitment and leadership:

- Making the decision to undertake the *journey*.
- Providing political energy and direction to sustain the effort and to ensure goals are achieved.
- Working with senior officials across ministries to develop a common vision and implementation strategy.
- Ensuring continuity in terms of people in leadership positions.

Recognition that effecting cultural change and adopting alternatives to long-standing and apparently successful business practices in any organization is usually very difficult:

- The predominance of the *command and control* mentality is something with which even the most visionary jurisdictions continue to struggle.
- To date leading jurisdictions have achieved varying degrees of success with respect to fundamentally changing how they do business.
- We were often cautioned not to underestimate the complexity of changing the traditional orientation and the time and resources required.

Availability of resources to support strategic direction setting and the process of making change.

- Establishing government as a centre of strategic knowledge and a leader in developing broader government and public understanding.
- Broadening and deepening engagement of the public, regulated community, and NGOs.
- Re-establishing and/or building anew partnerships with the scientific, research, and technical communities.
- Creating essential management tools and information technology infrastructure.
- Providing the resources required to effectively plan and successfully implement organizational and cultural change.

4. Environmental Compliance Assurance

Compliance assurance consists of public and private instruments that can be used to compel firms (and individuals) to conform with formal environmental regulations or with informal rules of conduct and social norms to protect the environment.

Many leading jurisdictions are moving towards an *integrated* approach to environmental compliance assurance: a complementary mix of education, validation (e.g. joint monitoring or research), positive and negative recognition, negotiation and compulsion.

Such a commitment would also have a profound impact on the organizational culture – the work norms and practices – of MOE.

We reach a number of conclusions in this area:

Worldwide, there is a pronounced trend towards an integrated approach to environmental compliance

With a backdrop of strong enforcement, integrated compliance assurance focuses on environmental performance and policy outcomes.

The integrated compliance assurance tool kit includes a variety of enforcement, abatement, cooperative agreement, compliance assistance and economic instruments. While emphasizing flexibility and effectiveness, the basic premise is that the policy *end* drives the selection and design of a compliance instrument or set of instruments. The four main policy ends are:

- Controlling point pollution sources.
- Reducing priority pollutant emissions.
- Controlling non-point pollution sources.
- Encouraging continuous improvement

Integrated environmental compliance assurance fosters a commitment to continuous improvement in environmental performance.

Integrated environmental compliance assurance is performance-based, recognizes leaders, provides incentives, and supports the regulated community to go beyond minimum standards. It brings together government, business and communities to resolve complex, collective action problems on a sectoral or local basis where regulatory penetration is weak or non-existent, including non-point source pollution.

Accountability for environmental performance by both governments and companies is inextricably linked to a comprehensive environmental monitoring and reporting system with integrated and publicly accessible databases.

To be effective, an integrated environmental compliance assurance strategy must maintain a strong abatement and enforcement presence.

The literature strongly supports the view that cooperative compliance initiatives are effective if they are backed up by the threat of credible enforcement action.

Leading jurisdictions are enhancing their enforcement and abatement functions through *risk-driven targeting* to set priorities for multimedia investigations

and cases, as well as remote computer-assisted inspections, compliance assistance in the early stages of facility approvals, and comprehensive training programs for their environmental officers.

MOE

In looking at leading jurisdiction and drawing comparisons with MOE, we observe that the Ministry has made little or no progress towards where leading jurisdictions are currently in terms of new and innovative approaches to integrated environmental compliance assurance. Attempts to bring forward initiatives that reflect this approach have been marginalized within the Ministry on the grounds that they would jeopardize ongoing and future abatement and enforcement efforts.

Although there have been numerous attempts to initiate cooperative agreements there has been little progress in recent years. In the area of compliance assistance, MOE often develops effective communication strategies for new program and regulatory initiatives. These strategies are delivered by program staff with involvement of the Ministry's Operations Division, but are not sustained much after the initial outreach to the principle stakeholders has been accomplished.

While MOE is involved in a pollution prevention focused initiative with large, medium, and small enterprises, there is no broad, ongoing program to provide compliance assistance.

Ontario has not been a leader in using economic instruments. While the Province has initiated several pilot projects, these have not been part of a broader more integrated approach to compliance assurance.

5.0 Governance for Environmental Management

Our review indicates that little formal research exists with respect to the effectiveness of various governance models for environmental management.

To a certain extent, the balance struck between centralization and delegation is rooted as much or more in constitutional or political considerations, as it is in environmental considerations. Where a government tradition or culture of delegation to local authorities or different levels of government exists, it is more likely that some degree of delegation exists in the environment area as well.

There is some evidence that other factors – most notably political leadership and commitment, the breadth of a government's vision, and the extensiveness of public, NGO, and regulated community involvement in policy development and consensus building – may be more important than governance in terms of overall impact.

Our research supports the view that the environment is a policy and program field that cuts across traditional mandates of government line departments as well as other

jurisdictions. A number of jurisdictions have established strategic visions for the environment, including cross-government goals and performance targets. Often, these approaches include a high-level centre of responsibility for coordination and monitoring of results.

Many jurisdictions place strategic direction setting, policy formulation, standards, and other high-level functions in some form of a *ministry of the environment*, headed by a member of the Cabinet. In many cases, responsibility for actual delivery, including operational policy, enforcement, assessment, permitting/licensing, monitoring, research, etc. rests with an arms-length agency of government and, in some cases, regional or municipal governments. The benefits of this approach include:

- Greater opportunity for the ministry to focus on cross-government strategic direction and coordination, broad policy formulation, and monitoring against government goals and targets.
- Greater flexibility and opportunity, through operating agencies, to engage the regulated community, NGOs, the scientific and academic communities, and the public in more open and transparent information sharing, dialogue, consultation, and partnerships.

MOE

MOE is a very centralized organization. Although the Province of Ontario has a long tradition of creating and using other organizations as instruments of public policy implementation, MOE currently does not delegate its core functions to other operating organizations, e.g. operational policy development, public consultation, standard setting, assessment, permitting inspection and abatement, investigation and enforcement.

In addition, MOE has not created the range of environmental advisory bodies – for example, for research, technical, innovation, and/or policy advice – that we saw in many other jurisdictions.

This degree of centralization has contributed to the tendency of day-to-day operational pressures and requirements to dominate the time, attention, and resources of all parts of the Ministry and drive the overall Ministry agenda. It is one of a number of factors that impact negatively on the Ministry's ability to focus on strategic capacity and deal with long-term, crosscutting issues and concerns. The Ministry is also not benefiting from opportunities for greater independence and flexibility in terms of regulatory/enforcement decision-making or stakeholder engagement.

6. Environmental Knowledge Management

Knowledge Management – the ability to acquire, create, add value to, broadly share, and use information – continues to gain ground as an overarching strategic tool for improving business performance. However, in terms of implementation in the public sector, it is

what we would characterize as an *emerging* best practice.

Having said this, our research indicates that a planned, enterprise-wide approach to Knowledge Management is critical to any jurisdiction's ability to implement the *strategic shifts* identified in this report. Therefore, a characteristic of a leading environmental management organization is one of heavy dependence on effective information and knowledge flows.

A Knowledge Management strategy levers the organization's knowledge and learning capacity in ways that assist with the achievement of their overall directions. It provides the vision and integrating framework for the various knowledge and information based activities in our report. It is clear from our research that in the absence of such a plan, the full benefits of the new directions we are proposing may not be fully realized.

There are few examples of public sector organizations that have implemented what we would call mature enterprise-wide Knowledge Management strategies. Our observation is that public sectors are generally aware of Knowledge Management frameworks and their potential/theoretical applications and benefits. However, few jurisdictions have had the time, resources, leadership, and/or strategic focus to adopt a comprehensive approach.

Notwithstanding, many leading environmental jurisdictions have noted that successful implementation of their strategic directions is heavily dependent on various explicit or implicit approaches to Knowledge Management. A number of these organizations are working towards an organizational culture, information technology environment, and external relationships that will enable effective and efficient Knowledge Management.

MOE

Over the past 15 to 20 years, most public sectors, including Ontario's, have tended to emphasize the importance of information and data, as opposed to the ability to create, manage, and use external and internal knowledge. This has been the result of a lack of leadership attention, ongoing constraints, an emphasis on protecting program delivery, and limited investments in technology. The outcomes have included:

- A general trend towards devaluing the legitimate role of the public service to build a strong internal and external knowledge creation and analysis/synthesis capacity and to demonstrate leadership in the creation and dissemination of knowledge and information.
- A steady erosion of historic links to the research and academic communities to the point that such links are almost non-existent today.

Our analysis indicates significant gaps within MOE in the knowledge and information required to support broader, crosscutting policy development and leading edge business strategy development and implementation. Furthermore, there are gaps in MOE's present ability to acquire

and manage that knowledge and the knowledge development process for the future.

Over the past two years, MOE made use of external consultants to examine the possibility of adopting a strategic approach to Knowledge Management. The design principles and potential strategies that resulted are quite comprehensive and very consistent with the elements of the framework proposed in this report. However, the initiative as originally conceived has not moved forward within the Ministry. In light of a number of challenges, the Ministry has focused time, effort, and available resources on the *Environet* information management strategy.

Environet in its current form is an information technology plan and not a Knowledge Management strategy. It is a series of program delivery-focused information and information technology initiatives that will, in the short term provide significant operational benefits for the Ministry. Understandably, *Environet* was developed to facilitate the Ministry's current traditional way of doing business, as opposed to enabling it to deal with the *strategic shifts* identified earlier in our report.

7.0 Emerging Issues

Our research indicates that a process to identify and address emerging issues is an important building block of an environmental Knowledge Management strategy. However, our review also suggests that the institutionalized use of formal tools for identifying and addressing emerging issues should be included among those that we would characterize as *emerging* best practices in leading jurisdictions.

Leading organizations utilize some form of *foresight* process for the systematic and regular assembly of views about possible new issues. They prioritize the issues based on explicit criteria, and focus decision-making based on this analysis, including new policies and programs, monitoring, and research that might be required.

There is a consensus that an emerging issues process provides for earlier and more effective preventative and remedial action and for better management and investment decisions for scarce policy, operational, scientific, and research resources, as well as enhanced marketing opportunities for new products, services, and technologies. In the absence of this kind of process, there is the potential for fragmented, single disciplinary approaches to dominate, resulting in lost policy and economic opportunities.

Although there is extensive literature that notes the value of an emerging issues process for strategic planning, environmental scanning and futures analysis, environmental organizations have not generally implemented systematic approaches. The typical approach is more informal, less structured and not always clearly tied to overall business goals and strategies.

MOE

As with many other environmental organizations, MOE does not currently

have a formal emerging issues process that is part of an established Knowledge Management strategy and that is integrated into the organization's strategic planning, policy development, operational planning, and outreach activities.

Having said this, Ministry officials certainly recognize the value of and need for this kind of process in terms of improved internal understanding and decision-making, as well as for broadening stakeholder and public participation/partnerships in environmental management.

In the past, the Ministry has undertaken a number of future thinking exercises, using a variety of methodologies and approaches that incorporate many of the elements of the framework presented earlier in this section. Generally, however, these have been *one-off* exercises, rather than an institutionalized component of the strategic business planning process. Expectations for how the results would be used to inform ongoing decision-making across the Ministry, let alone other ministries, were not set. As well, these one-off processes were usually internal government exercises with limited opportunities for outreach and open external participation in the process and were not viewed or used as opportunities to build broader external understanding and consensus.

More recently, within these limitations, the Ministry has made a number of important and valuable efforts to strengthen its capacity in this area and adopt a more formalized approach. A major external study from January 2000 included an appropriate conceptual framework and detailed recommendations for the design and ministry-wide implementation of a formal emerging issues process.

At this stage, the Ministry and the Government have not made a decision with respect to moving forward with the approach recommended by the external consultants. Factors affecting this decision include a lack of management/staff time and resources to undertake this kind of regular and substantive knowledge- building exercise, possible concerns about whether the products will actually be utilized to enhance decision-making, and the absence of a clear mandate/direction with respect to the value of broader consensus building exercises.

8. Environmental Monitoring and Reporting

The availability and accessibility of comprehensive environmental information is a cornerstone of effective environmental management and an integral part of an environmental Knowledge Management strategy. A well-developed environmental information system helps to identify emerging issues and to frame informed discourse on these issues. It is also essential to help identify options for action and to evaluate performance.

The following are our conclusions in this area:

There is a trend towards monitoring and reporting systems that integrate broad environmental data to support decision-making.

- The emphasis is moving from increasingly sensitive analytical equipment to information systems that integrate, correlate and manage data produced by monitoring equipment. Broader environmental reporting is being used to show the interconnections among environmental, economic and social issues and to help demonstrate and improve performance.

What is being monitored is changing to better define ecosystem health and the effectiveness of environmental management systems.

- Environmental indicators offer a more meaningful way of tracking progress and integrating information. Indicators address broad desired outcomes such as water that is safe to drink and fit for swimming. Biomonitors (e.g. censuses of fish and aquatic invertebrates) are being used by more jurisdictions as early warning indictors of watershed stress.

Monitoring and reporting systems are being designed and managed in partnership with the private sector, the public and other jurisdictions.

- New technologies are enabling a move away from top-down reporting where experts tell people what they think they should know. Information portals in leading jurisdictions allow people to conduct their own queries using centralized data.. Monitoring programs are being designed with public and private stakeholder consultation on a watershed basis. These approaches reflect the view that a better-informed public can participate more meaningfully. As well, information is being integrated and shared across jurisdictional boundaries. This is a critical development to sustain cooperative action on trans-boundary pollution issues.

MOE

MOE had a long history of being a leader in environmental monitoring and was at the forefront of many of the analytical advances over the last forty years. It has retained a number of experienced staff with considerable chemical and biological monitoring expertise.

The Ministry has a large number of databases and monitoring programs. However, integration of these databases is only just beginning. Without this integration, MOE will not be in a position to respond to the strategic shifts including effectively reporting on the environment or progress in achieving environmental outcomes**.**

Participants in our review noted that the Ministry has not been investing adequately in its monitoring program for the Great Lakes and associated watercourses. In addition, MOE has not kept pace with the leading US states in developing some of the new biomonitoring and environmental indicator approaches. As well, MOE has not invested sufficiently in information portals to provide the private sector and the public with information on environmental quality compared to leading jurisdictions.

Information is difficult to obtain and understand through MOE's website.

9. Access to Scientific & Technical Expertise

As identified throughout our review, knowledge and information are critical to effective environmental management. To varying degrees, a strategic approach to Knowledge Management is a characteristic of leading environment departments. The specific component of accessing scientific and technical expertise is especially important, given the universal requirement for strong science to support decision-making.

Our research indicates that most public sector organizations have been challenged in the past decade or more by budgetary constraints leading to the downsizing or elimination of both in-house and external research and development capacity.

Notwithstanding this more general trend, leading environmental jurisdictions continue to engage in or substantially support research and development activities employing a range of approaches to identifying the issues to be researched and the acquisition of scientific and technical expertise. These jurisdictions rely, to varying degrees, on relationships with professional research organizations and academia to enhance their own knowledge and that of stakeholders, including the regulated community, NGOs, and the public. There is also a strong element of external transparency in the research activities of leading jurisdictions.

For most jurisdictions, the primary emphasis continues to be on scientific and technical expertise to address specific problems. However, consistent with our *strategic shifts*, we observed a growing and important emphasis on broader areas of research, including longer-term environmental (e.g. physical, chemical, biological, geological), sociological, and economic issues that have implications for environmental management in the future.

MOE

Over the past decade or more, the Ontario Government, including MOE, has experienced fiscal pressures and changing priorities that have led to the significant downsizing and/or elimination of the research and development function and relationships with external research organizations in many ministries. The Ministry has maintained a core of scientific advisory and technical people that is primarily focused on the current program agenda.

Ministry officials are aware of the need to broaden and deepen the organization's base of scientific and technical expertise both internally and externally, and to strengthen the use of other disciplines such as sociology, economics and law. At present, however, the Ministry – as with many other ministries and governments – currently does not have a research and development strategy that:

- Is an integrated component of the organization's vision and strategic business plan.
- Focuses on the overall knowledge and information necessary to achieve the vision.
- Builds external partnerships and collaboration, and incorporates external expertise and advice.
- Allocates resources to agreed-upon research priorities.
- Is enabled by technology that facilitates organizing, accessing, sharing, communicating about, and using internal and external knowledge and expertise.

In the absence of such a strategy, the Ministry is very focused on the scientific requirements for standards development and approvals and to support day-to-day operations. The organization does not appear to have a well-developed internal or external capacity in place to conduct broader, longer-term research and analysis or demonstrated experience to manage broad processes of external involvement and partnership. While knowledge and expertise exists in various *pockets* around the Ministry, it is not easily made use of, i.e. identified and catalogued, benchmarked against strategic priorities, shared/accessed, or used on a consistent basis to support decision-making.

10. Risk Analysis

Science-based risk assessment – the primary tool used to develop standards – has long been a critical component of environmental management. However, leading jurisdictions are developing a new approach to dealing with more complex environmental risk issues. This approach is called Risk Analysis and includes three components:

- Risk assessment.
- Risk management.
- Risk communications.

Most people seem to agree that Risk Analysis is a valuable tool for environmental management but there is some debate with respect to how Risk Analysis should be used and how much influence it should have on government decisions. Given this debate, Risk Analysis is one of those areas that we would characterize as an *emerging* best practice.

Many environmental jurisdictions have traditionally focused their activities primarily on science-based risk assessment, with little attention paid to other disciplines such as sociology, economics, law, and aspects of health sciences, or the emerging areas of risk management and risk communication.

Traditional risk assessment is generally based on science and focused on the *one chemical/one media* model. It does not deal effectively with multichemical, multimedia, place-based approaches. Processes for external engagement are typically *back end* and focused primarily on challenges associated with implementing risk assessment decisions. They do not include extensive external involvement in the risk assessment and risk management analysis and deliberations themselves.

Leading jurisdictions have recognized that these traditional approaches cannot deal with more comprehensive environmental management, incorporating concepts such as continuous improvement, place-based, total cumulative impact, sharing responsibility, and transparency. In response, they are developing new approaches, including:

- Recognizing that risk assessment, risk management, and risk communication require different skills and expertise, but together make up one framework that should be applied consistently across an organization.
- Moving beyond the *one-chemical/one-media* approach to a more comprehensive and complex *ecological risk assessment* model that addresses the cumulative impacts of multiple chemicals and other stressors on human health and ecosystems.
- Public engagement that is transparent, as inclusive as possible, and begins early on in the process, including up front external participation in priority setting and in the analysis and deliberations related to the risk assessment and risk management phases.

Beyond environmental management, we did not find evidence that Risk Analysis is generally being applied more broadly and formally to the management of public sector organizations as a whole, i.e. overall strategic priority setting, stakeholder and public participation, and resource allocation.

MOE

MOE is firmly positioned in the mainstream of environmental organizations with respect to Risk Analysis. By this, we mean that the Ministry's primary emphasis has been on the science-based risk assessment component of Risk Analysis as opposed to risk management or risk communication.

In terms of a more comprehensive use of Risk Analysis, the Ministry has not developed an overall policy framework for Risk Analysis that integrates risk assessment, with fulsome approaches for risk management and risk communications.

The Ministry's current approach to risk assessment does not address the critical challenge of multi-chemical, multimedia, and place-based approaches to Risk Analysis, i.e. ecological risk assessment.

The Ministry's current approach to risk communication is not well developed. Our review suggests that stakeholder involvement is limited, as opposed to part of an institutionalized approach to public engagement. The primary focus appears to be on communicating with industry with respect to the issues associated with implementing a particular standard, as opposed to creating broader partnerships, trust, and understanding throughout the process.

11. Policy Development

The capacity to identify and address issues that cut across traditional program areas and address longer-term, strategic challenges is a key component of effective environmental management. The policy development function, supported by the knowledge gained through the emerging issues process, management and evaluation data, research, and contact with external expertise, is one of the most important tools for achieving this goal.

At a high level, most jurisdictions are struggling with the need to redefine and strengthen their policy capacity to be more strategic, i.e. long-term, crosscutting, more knowledge based. This development is in response to the growing recognition that policy development in most jurisdictions, including what is often described as *strategic* policy development, most often is narrower and more prescriptive program policy and program design.

However, few have isolated the policy development function as a form of *discipline* within public sector management. By this, we mean dealing with it in a manner that is comparable to the professional development thinking that has occurred in other recognized functions, i.e. finance and administration, human resources, communications, and information technology.

Of those organizations that have recognized the need for strengthening the policy area, few have developed what we refer to as a *comprehensive approach* to managing and developing this function. These organizations tend to focus their efforts on a small number of specific components, e.g. improving research capacity, renewing linkages with outside organizations, or improving recruitment strategies.

Within the Ontario Government, the Ministry of Community and Social Services is an example of an organization that initiated a comprehensive approach. This initiative is part of the ongoing project to restructure the Ontario Public Service. This Ministry's efforts encompassed both the substantive component of public policy development, as well as the professional development of the policy function as part of the ongoing management within government.

MOE

Our review indicates that the Ministry's approach to the policy function – which we would characterize as very focused on the considerable day-to-day program policy pressures it faces – is consistent with that of many environmental and other government organizations. By this, we mean that the Ministry has not addressed either the requirements for a strategic approach to policy development, or the development of the policy function as a professional discipline within public sector management.

As with many environmental and other organizations, the policy function within MOE is currently organized by program/media silos. Within these silos, the focus is primarily on program policy and program design. Given this approach, and the significant day-to-day

program policy pressures facing it, the Ministry currently has a limited capacity to identify, analyze, and manage strategic, cross cutting, multi-ministry, complex issues. In terms of central strategic capacity, the Ministry does not have an assigned centre of responsibility for dealing with these kinds of issues.

With respect to the knowledge and information required to support good public policy development, we observed:

- A general decline in the ability to manage external and internal knowledge and information because of limited resources and a lack of clarity related to the legitimate role of the public service in this area.
- Steady erosion of historic links to the external information sources.
- A lack of definition with respect to the specific knowledge and information required to support crosscutting strategic policy, program policy and program design, implementation planning, and ongoing monitoring and evaluation of policy outcomes.

Current Ministry information technology plans do not, at this stage, specifically address the information needs required to support policy formulation for either media-silos or in an integrated manner.

12. The Path Forward for Ontario: Recommendations

The Magnitude of Change

Establishing Ontario as a leading jurisdiction in environmental management represents a significant challenge that is not one of:

- Tinkering at the margins of existing programs.
- Creating a few new programs to overlay on what is already in place.
- Simply implementing a new information technology system.
- Restructuring various parts of the organization.

Rather, the strategic shifts we identified represent a fundamental conceptual and philosophical change in thinking and orientation. By *Ontario*, we mean MOE, but also other ministries, the regulated community, NGOs, and ultimately the public.

Allocating Sufficient Resources

Our view is that implementation and transition management cannot be accomplished within existing structures or within existing resources. Effective implementation and transition planning and oversight will require:

- Dedicated, experienced, senior leadership at the political level.
- A significant core of human and financial resources for a period of at least three to five years that will draw on additional dedicated resources from across government.

- Resources to support the development and implementation of an integrated approach to environmental compliance assurance.
- Resources to support new monitoring systems.
- New capacities to create, share, and use knowledge internally and externally.
- Significant investment in information and information technology.
- Creating new formal and informal mechanisms and approaches to broader outreach and participation of stakeholders and the public.

Adopting a Change Management Approach

We are recommending that the development and implementation of the changes be conducted within a formal commitment to a Change Management approach and process. This approach should acknowledge and address the changes required both inside and outside the government and be infused in the process from the very beginning: identifying the need for change, creating buy-in, developing specific strategies, and implementing specific strategies.

Recommendation #1

Implementation / Transition Structure and Processes

In our view, successful implementation will require strong leadership and new structures and processes that send a strong public signal that change will occur and that force the transition to take place. To that end, we recommend the creation of a dedicated implementation / transition capacity within the Ontario Government including a number of new structures and processes:

- An expanded, cross-ministry leadership role for the Minister of the Environment, supported by a Cabinet Committee Responsible for Implementation and Transition.
- A new Associate Deputy Minister for Implementation and Transition, an Implementation and Transition Secretariat, supported by an advisory Deputy Ministers' Committee.
- An External Advisory Council.

Under this proposal, the Minister would have responsibility for overall direction of implementation and transition activities as well as recommending to Cabinet the government-wide vision, goals, and strategy.

The Minister would chair and be supported by a new Cabinet Committee for Implementation and Transition that would oversee implementation and ensure coordinated efforts and participation within their home ministries.

The Minister would be supported, through the Deputy Minister, by an Associate Deputy Minister for Implementation and Transition and an Implementation and Transition Secretariat. This Associate Deputy Minister would be responsible for directing and coordinating the development and implementation of the government-wide vision, goals, and strategy. This would include: overall

plan development, establishing priorities, coordinating activities and input across the various ministries affected, implementation, managing the various transitions required, and monitoring progress against expected results.

The Associate Deputy Minister would draw on the following:

- *An Advisory Committee of Deputy Ministers* from the participating ministries, to provide oversight of the process and to ensure clear and consistent direction within those ministries.
- *A dedicated Secretariat for Implementation and Transition* responsible for supporting the coordination of efforts across the various ministries, including leading the development of strategies, implementation plans, and monitoring implementation activities and results.
- *Assistant Deputy Ministers and small, dedicated implementation and transition teams* in each participating ministry, with a formal *dotted line* reporting relationship to the Associate Deputy Minister.

The Implementation and Transition process would be informed by advice on strategy development, implementation, and related transition issues from an External Advisory Council comprised of outside experts, stakeholders, and representatives of the general public.

- Scientific, research, policy, and academic communities.
- The regulated community including private industry, utilities, and municipalities.
- Environmental and other NGOs.
- The public.

We recommend that the processes and products of the Advisory Council and its sub-committees/working groups be as open and transparent as possible, including the use of the Internet to share information with and engage a broader audience.

Recommendation #2

Create an Environmental Management Vision for Ontario

We recommend the creation of a high-level government-wide vision of environmental management in Ontario that cuts across all affected ministries. This vision would be broadly scoped to provide consistent guidance and direction for all ministries and be clear with respect to roles of those ministries.

The vision would include high level and detailed outcomes that are clearly and measurably expressed in terms of sustaining human health and ecosystems. The vision should also address each of the strategic shifts identified in our review, as well as clearly articulate the *end state* that the Government is committed to achieving, i.e. a measurable statement of what will be different for government, the regulated community, NGOs, and the public at the end of the change.

Recommendation #3

Governance for Environmental Management

Many jurisdictions place strategic direction setting, policy formulation, standard setting, and other high-level functions in some form of a *ministry of the environment*, headed by a member of Cabinet. In these cases, operations/delivery is often vested in agencies or, in some cases, local authorities or other levels of government.

The practice of creating arms-length operating agencies for a wide range of functions, including regulation, has long been part of the tradition of government in Ontario. In addition, the stated direction of the current restructuring of the Ontario Public Service is to expand this decentralization of delivery and focus more within the Government on policy and standard setting.

For these reasons, we believe that at some point in the future, the Ontario Government should give careful consideration to the creation of an arms-length operating agency for operational/program delivery of environmental management. Responsibility for policy, program design, and monitoring and accountability for performance would be retained at the ministry level.

However, we would not recommend the creation of an operational agency at this time. Given the significant changes required, and in particular the cultural change necessary, we would suggest that to do so would make the initial implementation and transition process more difficult.

Recommendation #4

Implementing an Integrated Approach to Environmental Compliance Assurance

We recommend the design, development, and implementation of an integrated approach to environmental compliance assurance. This approach would use all of the tools in the compliance tool kit selectively, effectively and comprehensively. This integrated approach would be performance based, encourage innovation, recognize leaders, provide incentives, offer technical assistance to improve performance, and focus oversight and enforcement on those not meeting performance requirements.

With respect to strong enforcement, we recommend:

- Giving MOE the authority to directly impose timely and significant administrative penalties.
- Supporting the pilots that are being managed by the Inspection, Investigation and Enforcement Secretariat at the Ministry of Labour for handheld computer systems.
- Establishing expectations and commitments for timing related to preparing and processing Crown Briefs as part of the enforcement process.

With respect to a more strategic approach to environmental approvals, we recommend:

- Revising current legislated approval processes in order to integrate self-certification, tiered, and whole-facility approaches.

With respect to developing a consensus on integrated compliance assurance among other ministries, the regulated community, NGOs, and the public, we recommend:

- Initiating a broad discussion, drawing on leadership from the External Advisory Council, to create a consensus for moving ahead that would include the development of principles, preconditions, policy frameworks, and legislative changes that might be required.
- That this process be seen and utilized as a major opportunity to communicate with and educate the broader public on new approaches.

We also recommend:

- Two *Cooperative Agreement* pilots that would incorporate a tiered approach to promoting higher levels of performance for increased flexibility and has degrees of public involvement tied to the various tiers.
- Two *Compliance Assistance* pilots that would build on the work of MOE's Partnerships Branch and reach out to small and medium sized establishments that have not developed the technical capability and management systems to achieve environmental goals.
- Two *Economic Instruments* pilots that would address applications such as user (polluter) pays, tax incentives and disincentives, capital cost allowances, trading schemes, etc. for large and small businesses, as well as the public.
- The development of a *Project XL*-type innovation program as an opportunity to look at additional effective ways towards improved compliance and continuous improvement beyond minimum standards.

Recommendation #5
Implementing a Comprehensive Environmental Knowledge Management Strategy

Given the central role that Knowledge Management plays in effective environmental management, we recommend that:

- The Government's environmental management vision for the Province contain an explicit cross-ministry commitment to Knowledge Management as a fundamental building block for attaining the vision.
- This vision be based on the framework proposed in *Research Paper #5* and that Ministry and cross-ministry strategies be developed that are consistent with the principles outlined.
- Ensure consistent, strong senior leadership and sponsorship of

initiatives, driven by the core business divisions of the Ministry.

- Investment be made in the technology required to support an environmental Knowledge Management strategy including the identification and acquisition of information required to support the strategic policy, business planning policy/standards formulation and operational requirements.
- The strategy builds on the new reporting requirements for water to expand the menu of information available to the public.
- Consideration be given to using both Business Ontario initiatives and Government Information Centres to facilitate the Compliance Assurance initiatives referenced in Recommendation #4.

Recommendation #6
Identifying and Addressing Emerging Issues

We recommend that:

- The Emerging Issues process, as defined in *Research Paper #6*, be adopted as the methodology to be utilized by MOE, including the identification of an executive lead for the function and the allocation of the resources necessary to establish and develop this function, including the information technology infrastructure required, in consultation with a multistakeholder advisory body.
- The Ministry commit to early integration of the Emerging Issues products into the Corporate Business Planning process and a formal evaluation of the effectiveness/utilization of the process and products.
- The Knowledge Management strategy and the communications of that strategy be linked to the Emerging Issues process, identifying the latter as a fundamental knowledge building block.
- An outreach strategy be developed that is specific to the *concern* phase of the proposed life cycle framework, with an emphasis on building bridges and re-establishing relationships with academic/research community, the regulated community, and NGOs.

Recommendation #7
Access to Scientific and Technical Expertise

We recommend:

- That a multi-ministry environmental research agenda, including a dedicated Environmental Research Fund, be established that reflects the Government's environmental management vision
- The creation of an external research advisory committee to assist in shaping the short and long-term research priorities and to oversee the quality of the research acquired.
- The Ministry provide ongoing staff training in science and technology and establish an outreach agenda for staff at all levels.

- The proposed Knowledge Management strategy be clearly linked to this initiative, identifying it as a fundamental knowledge building block.

Recommendation #8

Environmental Monitoring and Reporting

We recommend the development of a comprehensive environmental monitoring and reporting strategy for the Province, as a component of the overall Environmental Knowledge Management strategy. This approach should:

- Include broad multistakeholder participation at all stages in the development of the strategy.
- Identify the full range of monitoring information that should be in place to support high quality, place-based planning and decision-making.
- Specify and fill the current gaps/lapsed areas in existing monitoring information.
- Modify existing performance and supporting program measures to reflect the new government vision and establish related performance monitoring and management systems.
- Place a strong emphasis on and develop mechanisms to ensure transparency and public access to all types and sources of monitoring information and analysis, and identify the opportunities for partnerships to be developed with the regulated community, NGOs, other organizations such as Conservation Authorities, and the public.
- Ensure that information is integrated and shared across jurisdictional boundaries.

In terms of more detailed actions to be taken, we recommend that the proposed monitoring strategy include the following initial priorities:

- Commit to a comprehensive, renewed monitoring program with early investment in improving the water quality components, including Great Lakes and related monitoring, and investing in the development of indicators and bio-monitoring approaches.
- Commit to the early integration of existing environmental databases and as a first step bring data and information together on a watershed basis.
- Continued commitment to making information available to the public, i.e. monitoring information and information obtained from the regulated community available to the public as soon as it is received.
- Create an Access Ontario Website focused on monitoring and reporting information and analysis, but also public access to data and analytical tools.

Recommendation #9

Risk Analysis

We recommend the development of a policy framework for environmental Risk Analysis consistent with the definitions, principles, and characteristics identified in our research that would include:

- The creation of standardized analytical tools and expectations for use in the risk analysis process that would be mandated for consistent use within MOE and other affected ministries.
- Clear articulation of the expected role and mandate of Risk Analysis in environmental decision-making and ongoing environmental management.
- Taking early opportunities to pilot the use of these tools in actual risk analysis and operational decision-making situations.
- The potential to be applied to the ongoing management and operations of the Ministry, as opposed to just environmental issues.
- Building on the work of the II&E Working Group led by the Ontario Ministry of Labour.

With this framework in place, we also recommend that Ontario begin work to establish an approach that is focused on *ecological risk assessment*.

Recommendation #10

Policy Development

We recommend that the Ministry senior management commit to strengthening policy development capacity through:

- A renewed emphasis on crosscutting, longer-term, strategic policy, in addition to program policy and program design.
- Creating a separate strategic policy unit within the Ministry to focus on crosscutting policy issues that require a strategic response, as well as provide economic advice and analysis.
- Significantly strengthening the program evaluation component of the policy development process.
- Defining, developing, nurturing, and rewarding policy development as a recognized discipline that cuts across traditional program boundaries.
- Establishing structures, processes, tools, and information technology to support a high quality policy development function.

We also recommend the creation of a small secretariat charged with the task of leading a Change Management-oriented transformation of the policy function. Specific activities would include:

- Developing mechanisms for ensuring the involvement of staff in the process.
- Developing a vision of the policy function that includes a strong knowledge-based capacity for delivering strategic, timely,

informed, comprehensive policies that address complex, crosscutting environmental issues.

- Identifying specific knowledge and information required to support the full range of policy development activities, including current gaps.
- Identifying the range of skills and competencies required within the Ministry or externally, including current gaps.
- Taking steps to ensure that the policy development function is well represented in the development of the proposed environmental Knowledge Management strategy.