

1992

# ENVIRONMENTAL SCAN

## SUMMARY



**CCME**

Canadian Council  
of Ministers  
of the Environment

Le Conseil canadien  
des ministres  
de l'environnement



The 1992 Environmental Scan Summary was prepared in late 1991 for the Canadian Council of Ministers of the Environment Inc. (CCME) by a team led by David Runnalls of the Institute for Research on Public Policy (IRPP) in collaboration with Resource Futures International (RFI) and Synergistics Consulting. François Bregha led the group from RFI and the Synergistics Consulting input was directed by Doug Miller.

This publication contains the results of a survey conducted by the team, under contract to CCME. CCME is committed to reflect the highest standards of research and analysis in its publications. Since CCME itself does not conduct research or author reports, it is not responsible for the accuracy of the data contained in publications and does not warrant, or necessarily share or affirm, in any way, any opinions expressed therein.

The Canadian Council of Ministers of the Environment (CCME) is the major intergovernmental forum in Canada for discussion and joint action on environmental issues of national, international and global concern. The 13 member governments work as partners in developing nationally consistent environmental standards, practices and legislation.

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By David Runnalls

Prepared for

**Canadian Council of Ministers of the Environment (CCME)**

by

The Institute for Research on Public Policy

and

Resource Futures International

and

Synergistics Consulting





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# 1992 ENVIRONMENTAL SCAN

## SUMMARY

### INTRODUCTION

This is the second scan prepared for the Canadian Council of Ministers of the Environment (CCME). Its principal purpose is to aid the staff and committees of the Council in preparing their strategic overview and work plan for the coming years. It will also help to alert concerned Canadians to some of the emerging environmental trends likely to dominate the national agenda over the next three to five years.

The 1991 edition covered a wide range of issues, from acid rain to the need for improved decision-making, to the management of Canada's renewable natural resources, to the future role of nuclear power. This year's scan is able to build upon that base by examining rather fewer issues in more depth. Four of the issues - water, chemicals, the role of aboriginal peoples, and environmental education were chosen by CCME. The remainder were selected by the authors.

On the whole, the areas selected for analysis are not yet at the top of ministers' agendas. The reader will see little reference to the dilemmas already faced by all levels of government in dealing with the issues of packaging, the 3 Rs (or is it 4 Rs?), the incineration debate and landfills. There are few references to the continuing problems of acid rain or to toxic air pollution. Many of this year's issues are there to serve as an early warning to policy and strategic planning branches.

And many of these issues are very different from those traditionally faced by environment departments. Many of them arise at least partially outside Canada's borders. Many of them involve areas which have up until now been the exclusive preserve of finance and treasury ministries. And a number of them will pose challenges not only to the traditional divisions of powers among different levels of government in Canada, but also to the divisions of powers among cabinet ministers.

Canadian governments should not be surprised by this turn of events. As early as 1987, the Brundtland Commission warned us that the earth's ecology and its economy were so closely linked that the world would not meet the basic needs of a doubled world population with present patterns of energy and material use without catastrophic effects on the global environment. Brundtland went on to stress that new techniques of decision-making integrating the environment and economics were the most important keys to sustainable development.

The Canadian Council of Resource and Environment Ministers (re-established as CCME in 1989) responded to the challenge of the Brundtland Report with the creation of the National Task Force on the Environment and Economy. The Task Force Report, published in the fall of 1987, endorsed the major recommendations of Brundtland and stressed that, "Our recommendations parallel those of the World Commission in the whole area of structural integration to bring the sectors together and in urging that economic development ministers be made responsible for the environmental implications of their decisions."

## WHAT DO CANADIANS THINK ABOUT THE ENVIRONMENT?

It has become fashionable to believe that the deepening of the recession and the continuing concern about the Constitution mean that Canadians no longer place a high priority on environmental concerns. Yet, in survey after survey, *The Environmental Monitor*, published by one of the collaborators of this scan, has found Canadians consistently unwilling to trade off environmental progress for economic benefits, even with over a million unemployed. When asked to describe the most important priority for Canada, respondents have consistently placed environmental protection alongside job creation.

Data from all of the polls indicate that environmental concerns for the vast majority of Canadians are health concerns. Perhaps the most startling observation to emerge is the fact that 85% of all Canadians believe that pollution now threatens the very survival of the human race. A poll conducted a little over a year ago indicates that the most important aspects of health concerns related to air pollution, followed by water pollution and toxic chemicals.

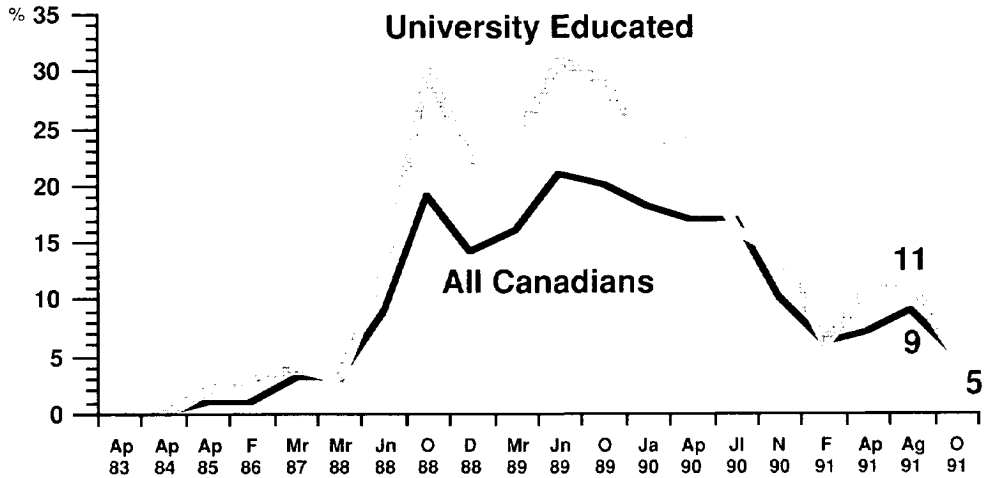
One of the most dramatic trends over the past few years has been Canadians' diminishing trust in all levels of governments to deal with environmental problems. While criticism of industry's performance has remained at a relatively steady (but very high) level over the last four years, the percentage of Canadians giving a "poor performance" rating to the federal and provincial governments has more than doubled. This poor rating is greater in the environmental field than for most other policy areas.

When asked whom they trusted to provide them with reliable information on the environment, a majority of Canadians responded that "scientists" and "experts" were most believed, followed closely by the 41% of Canadians who expressed "a great deal of confidence" in environmental groups.

Interestingly, the distrust of government and industry has gone hand in hand with an increasing sense on the part of individuals that their actions can make a real difference. In 1987, 57% of Canadians disagreed with the statement that there is little that the individual can do; by 1990 this number had reached 73%. These figures are significantly higher than those shown by polls conducted in Britain and the United States. This sense of personal power is one of the principal factors driving the success of the green marketplace in this country, with almost 75% of Canadians stating that they have changed their purchasing habits because of environmental concerns. Fully half of Canadians feel that major changes in their lifestyle will be needed to achieve a sustainable environment.

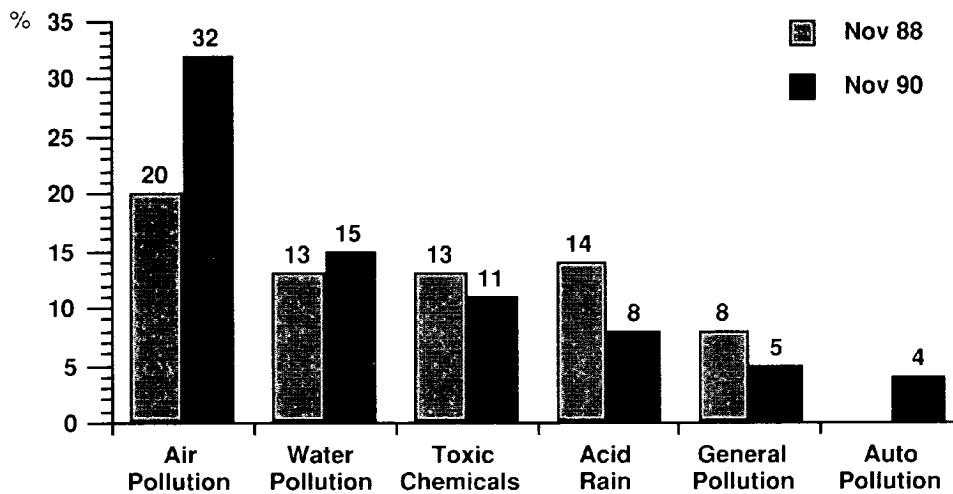
# Most Important Problem: The Environment

1983 - 1991

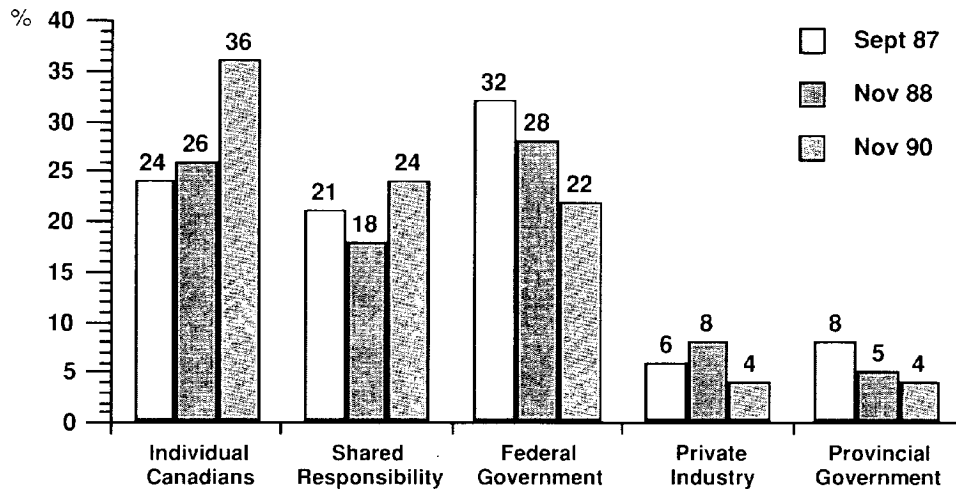


# Greatest Threat to Human Health

Open-ended Responses

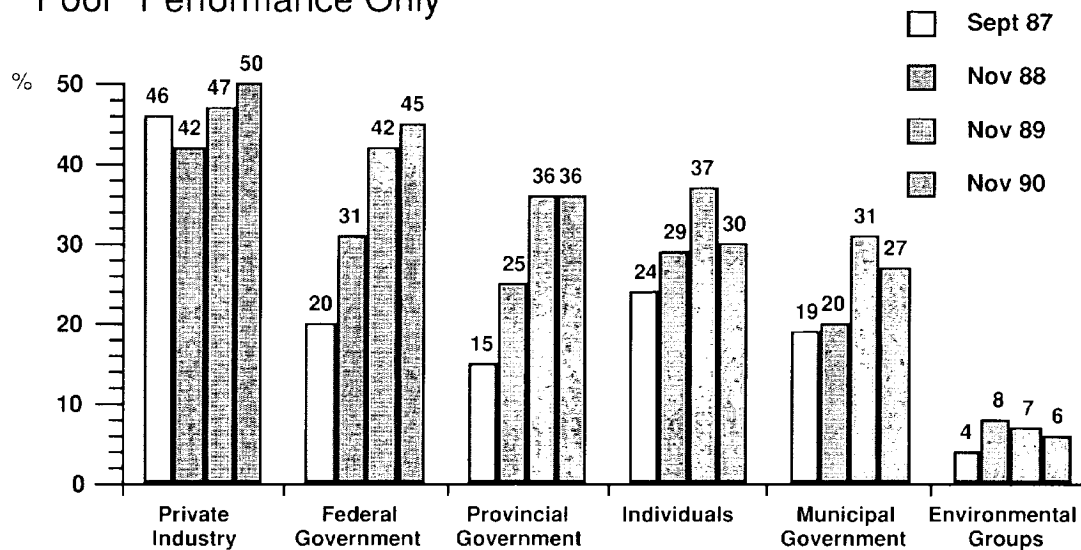


# Primary Responsibility for Environmental Protection



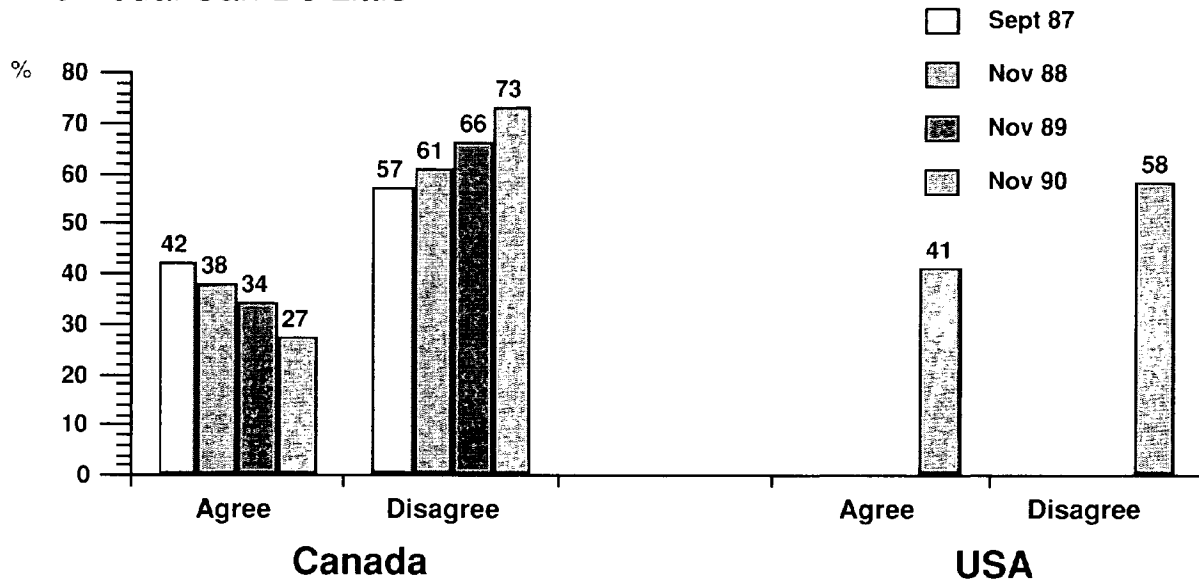
# Environmental Report Card

## "Poor" Performance Only



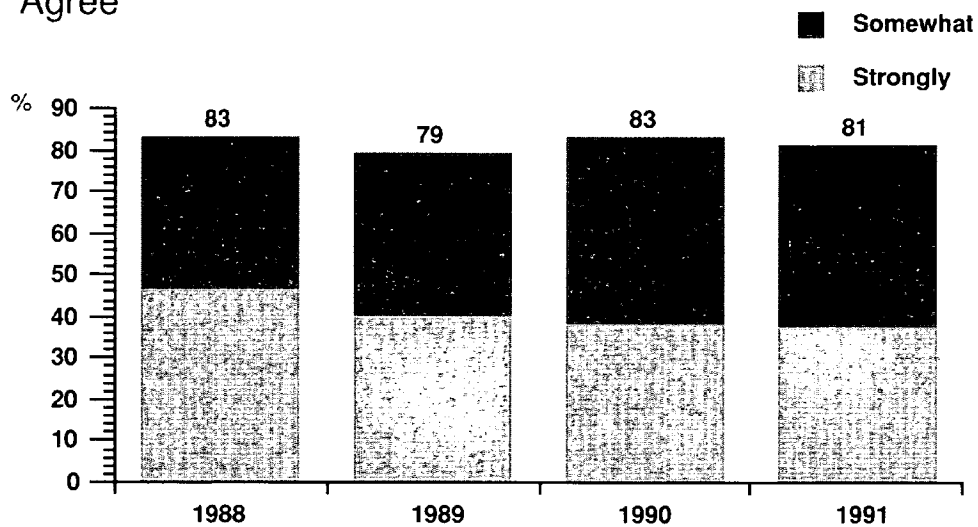
## Personal Efficacy on the Environment

Individual Can Do Little

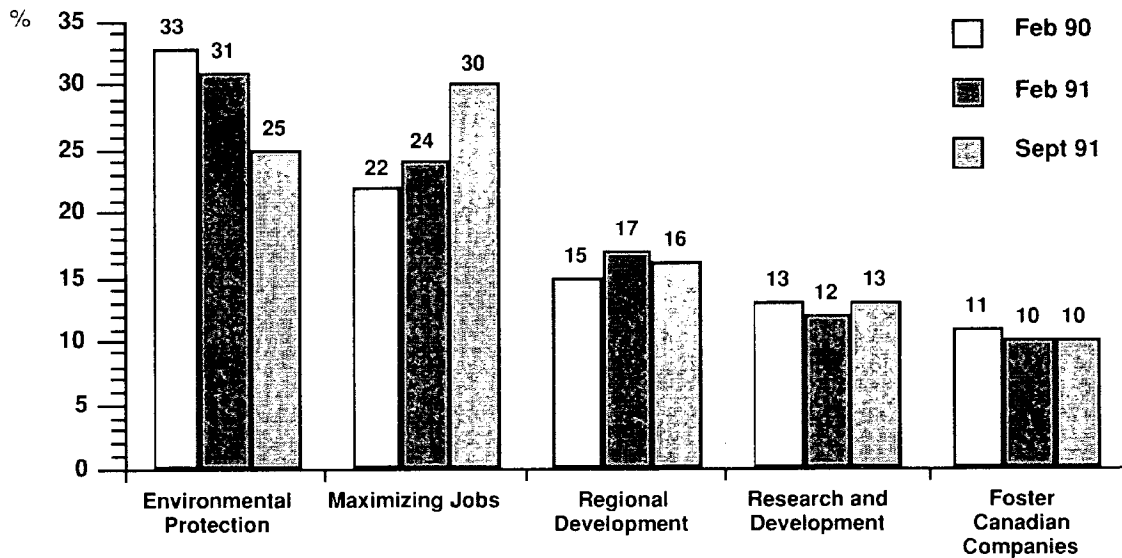


## Clean-up Will Fuel Economic Growth

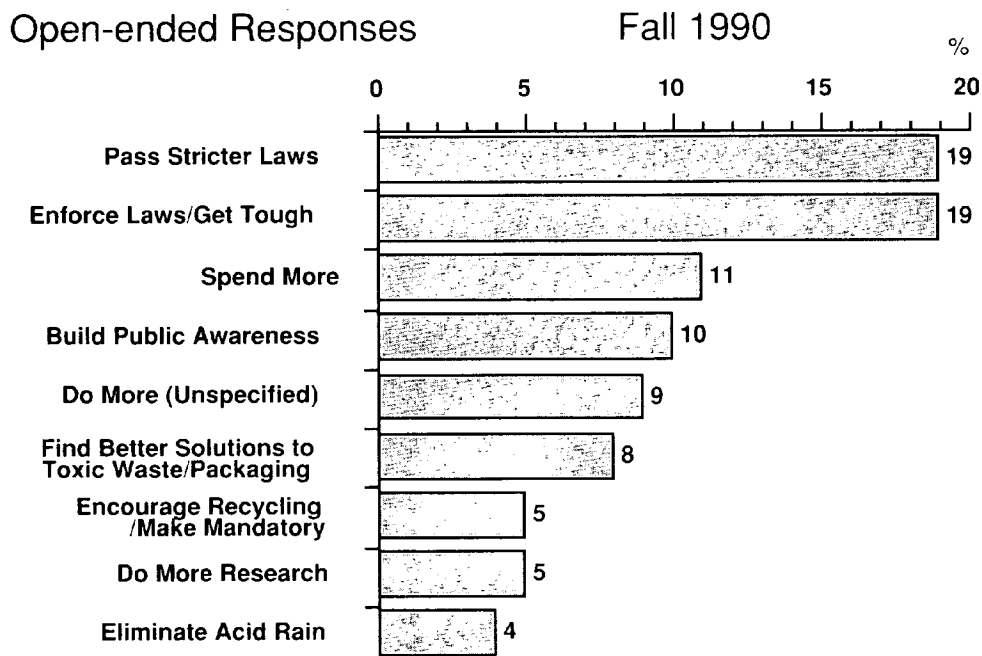
Agree



# Most Important Development Priority



# What Should the Federal Government be Doing?



So the pollsters tell us that the environmental issue is here to stay, blunted by the effects of the recession, but still a “survival” issue in the minds of most Canadians. Policy makers are therefore faced with an aroused electorate, one which is driven by a series of very basic concerns about its own health and survival and that of its children and by a lack of trust in the ability of established institutions to deal with the problems. This volatile mix is made even more unstable by the fact that the public seems to have a very different understanding of the environmental priorities facing us than do the environmental experts who are advising governments and the private sector. The U.S. Environmental Protection Agency (EPA) recently conducted its own poll and discovered a dramatic difference between the two sets of perceptions. Although similar data are not available for Canada, the overreaction which followed the PCB scare of St. Basile and the revelation that up to one-third of the population of Metropolitan Toronto regularly drinks bottled water out of fear of the tap water tend to support the U.S. observations.

#### EPA SCIENCE ADVISORY BOARD LIST

| EPA SCIENCE ADVISORY BOARD CONCERNS  | PUBLIC CONCERNS   |
|--|---|
| <p><b>Ecological Risks</b></p> <p><i>Global climate change</i><br/> <i>Stratospheric ozone depletion</i><br/>           Habitat alteration<br/>           Species extinction and biodiversity loss</p> <p><b>Health Risks</b></p> <p><i>Criteria air pollutants</i> (e.g., smog)<br/> <i>Toxic air pollutants</i> (e.g., benzene)<br/> <i>Radon</i><br/> <i>Indoor air pollution</i><br/> <i>Drinking water contamination</i><br/> <i>Occupational exposure to chemicals</i><br/> <i>Application of pesticides</i><br/> <i>Stratospheric ozone depletion</i></p> | <ol style="list-style-type: none"> <li>1. Active hazardous waste sites (67%)</li> <li>2. Abandoned hazardous waste sites (65%)</li> <li>3. Water pollution from industrial wastes (63%)</li> <li>4. <i>Occupational exposure to toxic chemicals</i> (63%)</li> <li>5. Oil spills (60%)</li> <li>6. <i>Destruction of the ozone layer</i> (60%)</li> <li>7. Nuclear power plant accidents (60%)</li> <li>8. Industrial accidents releasing pollutants (58%)</li> <li>9. Radiation from radioactive wastes (58%)</li> <li>10. <i>Air pollution from factories</i> (65%)</li> <li>11. Leaking underground storage tanks (55%)</li> <li>12. Coastal water contamination (54%)</li> <li>13. Solid waste and litter (53%)</li> <li>14. <i>Pesticide risks to farm workers</i> (52%)</li> <li>15. Water pollution from agricultural runoff (51%)</li> <li>16. Water pollution from sewage plants (50%)</li> <li>17. <i>Air pollution from vehicles</i> (50%)</li> <li>18. <i>Pesticide residue in foods</i> (49%)</li> <li>19. <i>Greenhouse effect</i> (48%)</li> <li>20. <i>Drinking water contamination</i> (46%)</li> <li>21. Destruction of wetlands (42%)</li> <li>22. Acid rain (40%)</li> <li>23. Water pollution from city runoff (35%)</li> <li>24. Non-hazardous waste sites (31%)</li> <li>25. Biotechnology (30%)</li> <li>26. <i>Indoor air pollution</i> (22%)</li> <li>27. Radiation from x-rays (21%)</li> <li>28. <i>Radon in homes</i> (17%)</li> <li>29. Radiation from microwave ovens (13%)</li> </ol> |

Note: Matching concerns are highlighted in italics

The pollsters also tell us that Canadians have little patience with the argument that the problem can only be solved by another jurisdiction and have little understanding of which level of government bears which environmental responsibility. This lack of patience combined with the exclusion of changes to the present distribution of powers in the last attempt at constitutional reform is leading to renewed interest in the principle of shared jurisdiction.

## THE DOMESTIC AGENDA - SHARED JURISDICTION

The principle of shared jurisdiction on environment extends far beyond the simple federal-provincial division of powers envisaged in Sections 91 and 92 of the Constitution Act:

Several of the most significant environmental issues are international or global in scope (e.g., global warming, stratospheric ozone layer deterioration, Great Lakes water quality). Effective action on such issues therefore depends on international agreement.

Aboriginal self-government in Canada will add a third dimension to the present federal-provincial division of powers. This is particularly significant for environmental issues, in view of the substantial areas likely to be involved, and the fundamental importance of land and other environmental elements to aboriginal values and systems of government.

As demonstrated very clearly by *The Environmental Monitor's* surveys of public opinion, environmental responsibility is not simply a matter for governments, whether federal, provincial, municipal or aboriginal. The private sector has a major role to play; so do environmental organizations, and individual Canadians increasingly accept that they have both power and responsibility in regard to environmental improvement.

Shared jurisdiction on the environment is therefore inevitable. Shared jurisdiction, however, has at least three significant problems. The first is that the principle of shared jurisdiction is not easy to accommodate in constitutional arrangements that emphasize the division of powers, i.e., that whenever possible allocate specific powers to one or other level of government. This reluctance to accept the principle of shared jurisdiction is probably reinforced by long-established provincial suspicion of any federal encroachment on provincial jurisdiction.

The second problem is in some ways the reverse of the first. If jurisdiction over an issue is shared, and if the responsibilities of different levels of government are defined only in broad and overlapping terms, the possibility exists that responsibility will be evaded by everyone. Because of resource constraints, and other priorities, an environmental problem may be "left to someone else".

The third problem is cost. As the recession continues and the debate over Canadian competitiveness unfolds, there will be more and more discussion of the cost of government. And there seems to be little information available on the actual costs of environmental protection in Canada. There seems to be absolutely none on the costs of overlapping jurisdictions.

Despite these difficulties, and the fact that shared jurisdiction runs counter to the traditional Canadian pattern, the present omens seem somewhat favorable. At the international level, path-breaking agreements have been made in recent years (e.g., on ozone protection and,

bilaterally, on the Great Lakes); others are being actively negotiated. The private sector increasingly recognizes that environmental performance is linked to prosperity in the market place, and conflict between industry and environmental organizations is being transformed into mutual understanding and productive cooperation.

Environmental cooperation on a multi-dimensional basis is evident in the work of national, provincial, territorial and municipal Round Tables on Environment and Economy, although the future of these bodies, and their links with one another and with other governmental and quasi-governmental bodies, has yet to be defined.

Shared jurisdiction requires cooperation, and this involves formal and informal partnerships. Since both governmental and non-governmental bodies are involved in the environment, shared jurisdiction therefore involves what has been described as "a lot of agreement with a lot of partners". There are, for instance, some 400 multilateral and bilateral federal-provincial agreements on the environment currently in force.

Although no changes are anticipated to the Canadian Constitution that would affect the division of powers on the environment as it has been traditionally defined, this does not mean that the situation is static; it is, in fact changing very rapidly. The reorganization of CCREM into CCME is a symbol of the growing recognition that shared jurisdiction on environmental issues is the only practical way to go. As recent experience in regard to environmental impact assessments demonstrates, it will not be easy to develop the new patterns of cooperation and partnership that shared jurisdiction involves, and Canadian constitutional history is a barrier rather than an encouragement to such progress. Nevertheless real progress is being made; by the end of the decade relationships among the principal partners involved (non-governmental as well as governmental) may well be transformed by comparison with the situation in, say, the mid-1980s.

## **INTERNATIONAL ISSUES AND THE DOMESTIC AGENDA**

### **ON THE ROAD TO RIO**

The authors believe that Canada is entering an era where much of its environmental policy will be determined by forces arising outside our borders. And perhaps the most obvious examples of this phenomenon are to be found in the preparations for the United Nations Conference on Environment and Development (UNCED), held in Brazil in June 1992. It is clear to most observers that the Earth Summit was a minor success at best and the issues it addressed will be with us for at least the remainder of the century.

Simply put, the issue facing those preparing for Rio and its aftermath was how to craft an economic and ecological system which will feed, clothe and provide at least a minimal standard of living for the 10 billion people expected on the earth by the middle of the next century without accelerating the already serious deterioration of many of the earth's essential ecological systems.

The preparations for the Conference and the Conference itself were dominated by political wrangling around the merging of two agendas. The agenda of the developed countries is based upon progress in three main areas - climate change, the safeguarding of biological diversity and measures to halt the spread of deforestation, particularly in the tropics. An additional topic of interest to Canada is the area of oceans and fisheries.

For perhaps the first time in an international negotiation, the developing countries felt that they had a trump card to play. For it is obvious that little long term progress can be made on the agenda of the developed countries without the cooperation of the Third World. And that cooperation will not be forthcoming without some progress on the agenda of the developing countries. This agenda centers around the issues of relief from the enormous debt burden they face, better terms of trade for their exports, additional sources of finance from the rich countries for their development programs, and access to modern environmentally friendly technology. The developing countries are also insisting on the concept of "ecological space" (including the right to increase their emissions of CO<sub>2</sub> as their energy needs grow) to accommodate their need for development. The developed countries, led by the United States, were unwilling to make major concessions on these issues.

Because this roadblock was not broken, the Earth Summit was only a partial success. There still remain many years of tough negotiations on such issues as climate change, the possible development of a forestry convention and the resolution of the argument over the ownership of the genetic resources of tropical forests.

The main document for the Conference, Agenda 21, is extremely wide-ranging, containing everything from deforestation to the urban environment to energy policy for climate change to proposals for dealing with land based sources of marine pollution. It is also extremely expensive, with a price tag eventually reaching \$600 billion a year. It poses real challenges for Canada, since many of its issues, if not most, fall under provincial jurisdiction. The formulation of national policies on these issues will require a tremendous degree of interjurisdictional collaboration.

Canada's domestic policies in a number of areas, led by energy and forestry, will be under intense scrutiny by the international community. It seems only a matter of time before some sort of binding agreement on climate change will be reached. This agreement is bound to call for substantial cuts in Canadian emissions and the building up of the country's "carbon sinks" through reforestation. Controlling emissions of greenhouse gases has obvious ramifications for a major energy producer like Canada. Although it produces only 2% of the world's emissions of CO<sub>2</sub>, it is the largest per capita producer of greenhouse gases in the industrialized world. Canada is one of the OECD's least efficient consumers of energy per capita and per unit of GNP. Canada is a large and cold country with a substantial proportion of energy-based primary industries. It is also a net energy exporter. The Canadian ability to influence future discussions on climate change will be related to the perception by other countries that Canada is willing to make major policy changes at home. The American delegation to the negotiations on the convention and in Rio was unwilling to make any concessions in the area of CO<sub>2</sub> targets. They also had a habit of circulating a chart analyzing the public commitments of other governments and the policies they have put in place to implement them. They rightly pointed out that Canada has committed itself to stabilize emissions by the year 2000 at the 1990 level, but that few policies are in place to achieve that goal. Needless to say, this chart has been widely circulated. Finally, any subsequent strengthening of the convention could have a substantial effect on domestic policies. Any subsequent negotiations on a forestry convention will also be used by many as an opportunity to highlight what they feel are deficiencies in Canadian forestry policy.

## ENVIRONMENT AND TRADE

As the Uruguay Round of trade negotiations draws to a close, the NAFTA is ready for ratification, and Europe proceeds rapidly toward the development of a single market,

attention is shifting in many quarters to the relationship between trade and the environment. As concern about the environment and health continue to influence public opinion, countries will be under increasing pressure to impose health and sanitary restrictions on imports from other countries. And there will be pressure on the international trade organizations to determine which are legitimate and which are simply old fashioned protectionism dressed in green clothing.

In the United States, environmental groups are urging the government to utilize trade sanctions against countries which do not follow rigorous environmental standards. This is the so-called "process" standards debate whereby one country does not set standards for a product that it imports - tuna from Mexico does not contain dolphin meat - rather a government attempts to change the way other countries manufacture and process goods. The best known example concerns a ban on the imports of tuna from countries whose fishing fleets continue to employ drift net fishing. Similarly, although no formal legislation or regulations are involved, Western European environmentalists have successfully boycotted seal pelts, furs and tropical timber imports into Western Europe. Recently, pressure has been growing for a boycott on imports of Canadian forest products. Many European groups argue that Canada (and particularly British Columbia) practices an unsustainable form of forestry.

Another form of trade barrier is posed by the adoption of tough environmental standards on such things as packaging. Two examples involving Germany serve to illustrate both this and a dilemma facing Canada. The first example relates to a recent German move to ban the use of paper treated with chlorine bleach, which would have implications for the Canadian pulp and paper industry. The second example involves all Canadian exports to Germany, and relates to tough new recycling and packaging laws. On December 2, 1991, *The Globe and Mail* noted that in Germany,

"...starting yesterday, companies must take back and recycle packaging used during transport, or arrange for someone else to do so. From April 1, 1992, that law will apply to "secondary" packaging such as gift wrapping or the cardboard box around a whisky bottle. From January 1, 1993, it will cover all packaging, from yogurt containers to butter wrappers.

The ferocity of the new obligations is extraordinary. By July 1, 1995, 80 per cent of packaging waste must be collected ... To companies in Germany, the arrangements are exasperating. To those outside, they are often a nightmare."

There is a clear German strategy at work here. Regulations which are imposed and standards set first in Germany will spread to the European Community as a whole, thus giving German industry a certain advantage over its competitors. Volkswagen, for instance, is currently designing the German standards for car recycling. It would be naive to assume that it is not designing them for its own advantage.

As the trend toward tougher standards and green labeling grows, Canadian exporters into those markets will need to react quickly, especially if the applicable Canadian standards to which they are accustomed are much lower.

Finally, some of these issues may come to a head in conjunction with the negotiations over the North American Free Trade Agreement. American environmental organizations have successfully pressured the Congress and the Administration to include environmental considerations in the agreement. Their concerns center on the apparent weakness in Mexican

environmental law and the unwillingness of the Mexican Government to enforce what legislation exists. They fear the development of "pollution havens" as U.S. and Canadian manufacturers move to Mexico to escape tougher regulations back home. And they fear that there will be mounting pressures to "harmonize down" some American environmental regulations under pressure from U.S. based corporations. The Canadian environmental community has also been active in its criticism of the NAFTA negotiations and the federal government has developed an environmental review of the agreement. It is likely that this issue will heat up as the agreement nears ratification.

Environment and trade is an issue which clearly demonstrates many of the characteristics mentioned above. It is an issue where Canada is more likely to be a "victim" of external pressures than a bystander. It cannot be dealt with by one level of government alone. It cannot be handled solely by those departments both at the federal and the provincial level which have traditionally had a monopoly of trade issues - it does represent one of those areas where the environment and economics must be integrated in decision-making.

## ENVIRONMENT AND COMPETITIVENESS

A similar challenge is posed by the current national discussion of competitiveness. Many feel that new environmental restrictions will undermine Canada's already tenuous competitive position in the world. And many of the central economic departments of government are already actively employing that argument to prevent the stiffening of current regulations and standards. Many in industry and the labor movement are following the same course of argument.

Yet there is a good deal of evidence to indicate that those countries with the strictest environmental and energy efficiency standards are often also the most competitive. In fact, many in Europe and Japan feel that the environment may well be the principle driving force behind economic innovation over the next decade or so. Reference has already been made to the German packaging and recycling regulations. And the German Government has also proposed the most ambitious targets for the reduction of CO<sub>2</sub> emissions - 25% by the year 2005. They are already putting in place new fuel efficiency standards, taxes and incentives to induce German industry to conform. There is little doubt that they will also press to have these standards eventually adopted by the European Commission. This will not only create a large market for German innovation, it will also keep out all of those imports which cannot comply.

Japan has an even more ambitious, and characteristically, longer term, plan. The Ministry of International Trade and Industry and Japanese industry are developing a 100 year plan for cleaning up the global environment through the application of highly efficient Japanese technology built to conform to Japanese standards.

These examples support the position of Michael Porter, the well-known expert on competition, that tough environmental standards can trigger innovation and upgrading - provided that the regulations focus on goals and leave some flexibility to those regulated to decide on appropriate means. The nations with the most rigorous requirements often lead in exports of affected products.

The environmental protection and management industries are among the fastest growing and most profitable in Canada. Together, they support approximately 200,000 jobs and are expected to generate from twelve to fifteen billion dollars of economic activity in 1992. These

industries have been growing at an annual rate of 12% in recent years. Higher standards in Canada will increase the market for Canadian suppliers, and make them more competitive.

Potential sales to international markets are huge. In 1987, the ten largest market economies spent more than US \$170 billion on pollution control expenditures. California has the toughest environmental rules in the world, and is the capital of the fast-growing environmental services industry, which is now worth US \$130 billion in the United States alone. There are many opportunities. It is estimated that in the United States, the federal government may spend more than US \$200 billion over the next decade to clean up its military and energy facilities. Taiwan plans to spend about US \$40 billion on environmental clean-up over the next five years and is looking to Californian companies for help.

This is just the beginning. In the long run, more benefits will flow from preventing pollution in the first place through investments in industrial processes which are less polluting. Many of those improved industrial processes will be exportable.

In Canada, higher environmental standards could encourage the efficient use of natural resources, lower overhead, and make Canadian products and services more cost-competitive. They could encourage the production of more fuel-efficient products, which will be attractive in world markets. This transition to the more efficient use of natural resources represents both an opportunity and a challenge for Canada. If Canadians do not stress the efficient use of natural resources, then this inefficiency may be reflected throughout the industrial system, in manufacturing processes and industrial products, making Canadian products less competitive. Most countries do not have anything like the Canadian base of natural resources; as a result they may have more demanding environmental standards and expect more from their suppliers. Their suppliers may then produce more refined and energy-efficient products that gain global market share.

As the recession continues, the pressures to compromise environmental regulations and standards in the interests of competitiveness will continue to grow. And there is a danger that environment ministers will become a "problem" around the Cabinet table as these issues are discussed. Environment departments will need to respond with positive examples of the type mentioned above.

## **THE ROLE OF ECONOMIC INSTRUMENTS**

The recession and growing public deficits are putting pressure on all departments to cut back on personnel and the costs of regulation. These pressures have combined with the frequent failures of "command and control" approaches in the United States and Western Europe to control pollution efficiently to stimulate interest in the application of "economic instruments".

Economic instruments provide incentives for environmentally beneficial behavior or place financial burdens on polluters, whether consumers, companies, or government, thereby encouraging the reduction of pollution. Some examples of economic instruments include: "green" taxes; charges; tradeable permits; and deposit-refund systems.

Economic instruments provide a more flexible approach to regulation and leave more discretion to individuals to respond in ways judged by them to be for their greatest benefit. They encourage those subject to the regulations to do better than the minimum standards. They are often more "information efficient" in that they can be applied effectively with less

information than would be required by other traditional methods. In many instances, they appear to have the potential to achieve environmental standards at less cost to government and to those regulated.

A number of writers suggest that economic instruments are the most effective way of encouraging innovation, since they stimulate the development of innovative solutions. It is likely that countries will apply economic instruments more quickly, now that they realize that economic instruments can save money, increase competitiveness, and stimulate the fast-growing environmental management and protection industries. Economic instruments are becoming an essential part of the national strategies of most Western European countries. Failure to make progress in this area in Canada could further weaken Canada's competitive position. In *The Green Plan*, the federal government announced its intention to release a discussion paper on the use of economic instruments. This paper was released in June 1992.

## THE RANGE OF ECONOMIC INSTRUMENTS

Charges may be considered by some to be a price paid for pollution. Polluters have to pay for their implicit claim on environmental services, which thereby enter at least in some part into private cost-benefit calculations. Effluent charges are charges to be paid based upon the quantity or quality of the pollutants discharged into the environment. User charges are payments for the costs of public treatment facilities, usually for the treatment of water effluents. Product charges are charges based upon the potential pollution of a product. Administrative charges are payments for the services of government for registration or for the implementation and enforcement of regulations. Tax differentiation leads to more favorable prices for environmentally friendly products, and is similar to product charges except that the tax differentiation option is usually not designed to raise net revenue.

## MARKET CREATION

Markets can be created where people and companies buy rights for actual or potential emissions or where they can sell their "emission rights" or their process residuals. Markets must be created with care to ensure that they embody those qualities (competition, information, market pricing and the free movement of capital and labor) which contribute to effective operation.

*Tradeable Permits* - Dischargers have the same type of emission limits as under normal pollution control programs, however, if a discharger releases less pollution than the limit allows, the firm can sell or trade the difference between its actual and its allowable discharges to another firm which then has the right to release more than its initial limit allows.

*Market Intervention* - This refers to price intervention which might take the form of subsidies in the event market prices fall below certain levels, for example in the case of the market for potentially valuable residuals.

*Liability Insurance* - The incentive here is the possibility of lower premiums for insurance policies when industrial processes are more secure or result in less damage and waste or fewer accidents.

## **BUILDING THE INFORMATION BASE THROUGH FULL-COST ACCOUNTING**

One of the first steps in the creation of the system of full-cost accounting will be to take stock of the natural resources, which form the foundation of human well-being, and develop mechanisms to measure their value. In the current system of national accounts, the activity of making a product from a natural resource is calculated as an increase in gross national product, but the loss of a natural resource itself is not considered. It is crucial to have an understanding of the inventory of natural resources, in order to make sound decisions for their sustainable use. Some of these inventories are being prepared now, and they will make a key contribution to informed decision-making.

### **ISSUES FOR DETAILED REVIEW**

The authors were asked by CCME to examine four issues in more detail for this version of the scan.

#### **1 TOXIC CHEMICALS**

Persistent toxic chemicals move relatively easily between air, land and water; they can also enter living things, including humans. By the early 1980s, it was realized that instead of reducing human and environmental exposure to toxics, much of the existing control effort was simply shifting pollutants from one part of the environment to another.

The costs of solutions to problems characterized by ecosystem or "cross-media" transfers of persistent toxics will normally be much greater than conventionally cleaning up pollution. Moreover, "throwing money at the problem", as was successfully done in reducing the nutrient load to Lake Erie through improved sewage treatment systems, is often unlikely to lead to ecosystemic solutions and true progress.

Because of this complexity, toxic chemicals played a major role in changing decisively the whole public perception of environmental issues during the 1980s. Recognition of the need to base policies and actions on ecosystem characteristics has been one major consequence. So also is the growing recognition that the most effective, affordable, and ultimately the most practical way to solve the problems caused by toxic chemicals in the environment is to avoid the manufacture and use of such chemicals. This shift in emphasis from so-called "end of the pipe" approaches to "head of the pipe" strategies has coincided with renewed concern for the conservation of both renewable and non-renewable resources. The ecosystem approach combined with a switch to anticipation and prevention of problems rather than reacting to and curing the symptoms lie at the heart of a sustainable development approach to toxic chemicals.

The Great Lakes Water Quality Agreement, signed by Canada and the United States in 1978, clearly focused on the problem of toxic chemicals, just as the earlier (1972) version of the agreement focused on conventional pollution in Lake Erie and Lake Ontario. The 1978 agreement adopted a rigorous ecosystem approach to its objective to restore and maintain the integrity of the waters of the Great Lakes basin ecosystem. Since that time, considerable effort and resources have been devoted to identifying the principal toxic chemicals in that ecosystem, and tracing the location and movement of these elements. Important stages in that task were the identification of 11 "critical pollutants" in 1985, and the 1991 publication of the Canadian government's major survey, Toxic Chemicals in the Great Lakes and Associated Effects.

It should be emphasized that in terms of the effects of toxic chemicals on the environment, the Great Lakes basin is not so much a distinctive unit as it is a laboratory for the rest of Canada and the United States. For example, residue levels of some of the most common contaminants (e.g., PCBs, HCB, dioxins) in residents of the Great Lakes basin are similar to those of people living elsewhere in North America.

One of the principal problems in the control of toxic chemicals is the vast number of such substances. Humans may well be exposed to 65,000 or more chemicals as food additives, drugs, pesticides, cosmetics and the like and 400 to 600 new chemicals are brought into use each year. This situation has persuaded individuals and groups to adopt what is often known as “reverse onus” - a chemical should be regarded as potentially toxic until proved otherwise. Although this may not be feasible for the vast number of chemicals already in use, it may be a reasonable approach for new ones. In 1990, for example, the International Joint Commission (IJC) declared that: an essential part of the strategy to stop the introduction of persistent toxic chemicals into the Great Lakes Basin Ecosystem must be to prevent new, harmful chemicals from entering the market place. The Commission endorses the principle of reverse onus in this regard; that is, when approval is sought for the manufacture, use or discharge of any substance which will or may enter the environment, the applicant must prove, as a general rule, that the substance is not harmful to the environment or human health.

A strong argument to support this precautionary principle is the growing body of evidence of previously unsuspected hazards from various chemicals and other substances. Studies of the effects of toxic chemicals on humans or other organisms have in the past focused almost exclusively on such readily-measurable features as cancer or major birth defects. Now, as the IJC has observed, we are confronted with the knowledge that more subtle disease and dysfunctionality occur from living organisms’ exposure to toxics.

A very pragmatic approach to the “numbers problem” was taken by the Great Lakes Water Quality Board during the 1980s and adopted by the IJC. A total of over 360 substances have been positively identified in the Great Lakes. However, the Water Quality Board was able to select from this list 11 “critical pollutants” to be the main focus of attention. The eleven are:

|                       |                                  |
|-----------------------|----------------------------------|
| 2,3,7,8-TCDD (dioxin) | 2,3,7,8-TCDF (furan)             |
| Benzo[a]pyrene        | DDT and its breakdown products   |
| Dieldrin              | Hexachlorobenzene (HCB)          |
| Alkylated Lead        | Mirex                            |
| Mercury               | Polychlorinated biphenyls (PCBs) |
| Toxaphene             |                                  |

All of these critical pollutants are capable of producing adverse, often irreversible effects in a wide range of terrestrial and aquatic species. Because of their ability to bioconcentrate and to bioaccumulate up the food chain, the recognized threat to human health and the aquatic system is significantly enhanced. The concern is further exacerbated because, despite regulatory controls and reductions in ecosystem concentrations for many, all 11 persist at unacceptable levels. These 11 pollutants are representative of a variety of sources, pathways, and uses, and several are members of larger chemical families. Therefore, any action taken for one could be expected to concurrently control or apply to other substances with similar properties. Thus, such action should have a significant impact on the broader toxic substances issue.

This identification of a small number of critical pollutants appears to have been successful, and a significant contribution to policy making for the Great Lakes environment. The list has not been seriously challenged on scientific grounds, and the focus on a list of this size increases the probability that effective action will be taken to control the critical pollutants. Simply put, politicians and administrators can cope with a list of that size, whereas they may be overwhelmed by lists of chemicals numbered in the hundreds or thousands.

### *Future Focus*

It is clear that much of the existing structure of environmental effort strongly reflects a past emphasis on conventional pollutants and single-medium approaches. This is evident, for example, in monitoring systems, the training of scientists, research approaches, and regulation and control systems. All these are changing, and the 1980s were a period in which basic knowledge (e.g., our qualitative and quantitative understanding of biogeochemical cycles) changed as much as our perception of environmental systems and needs.

For the future, it seems clear that ecosystem approaches, comparable to the pioneering GLWQA of 1978, will become the norm. Persistence and cross-media exchanges will also force a greater emphasis on "head of pipe" solutions: i.e., prevention of toxics from entering the environment. This is likely to be reinforced by the evidence of subtle effects of toxic chemicals on wildlife species and on human health.

Because of the dominance of organochlorines in most lists of toxic chemicals, environmental organizations are beginning to advocate the total elimination of chlorine-based chemicals, a change which (unless an unexpected technological breakthrough were to occur) would have profound effects on economy and society. Short of that comprehensive ban, the Great Lakes Water Quality Board concluded in 1991 that many of these persistent toxic substances are so troublesome as to require clear and absolute bans. British Columbia has just taken such a step with its new pulp and paper regulations. Severe restrictions to date have produced significant reductions of some of these substances in the Great Lakes ecosystem. But experience has shown that these reductions are not as comprehensive as are now thought necessary. Studies suggest that these substances actually have or threaten to have continuing important, if very subtle effects, on human health and wildlife, even in very low concentrations. The Board recommends that actions should target six of the critical pollutants: PCBs, DDT, dieldrin, toxaphene, mirex and hexachlorobenzene.

Polls show that Canadians are very concerned about the effects of toxic chemicals on human health. In its 1990 report to governments, the International Joint Commission concluded that when available data of fish, birds, reptiles and small mammals are considered along with human research, there is a threat to the health of children emanating from exposure to persistent toxic substances, even at very low ambient levels. This threat is posed by continuing exposure to chemicals produced intentionally and unintentionally, including PCBs, dioxin, furan, hexachlorobenzene, DDT and its metabolites, dieldrin, lead and mercury.

Residents of the Great Lakes basin are probably not exposed to higher levels of the critical pollutants than people residing elsewhere. However, individuals consuming large amounts of contaminated fish and wildlife, especially native peoples and sportsmen, have greater exposure to several persistent contaminants.

An ongoing study of the offspring of women who consumed significant amounts of Lake Michigan fish has indicated that contaminant exposures of this type may cause several effects. Fish consumption was associated with significant decreases in birth weight, gestational age, head circumference and cognitive and motor deficits in infants.

More generally, the limited evidence available, indicates a need for much more investigation of the human health effects of toxic chemicals. It is clear where the focus of these studies should be: on subpopulations that may be particularly at risk, mainly by virtue of their food consumption patterns, and on the offspring of parents in these subpopulations.

## 2 WATER

### *The Supply of Water*

In coming years, a primary goal of water management must be to ensure a safe water supply for future generations. There must be adequate infrastructure to treat water and provide all Canadians with a safe source of drinking water. Steps should be taken to protect and conserve water resources. Interprovincial and international agreements should be designed to ensure that the long term ecological security, in terms of quantity and quality, of water resources are neither threatened nor abused. Actions must be taken to ensure that the quality of the resource is not irreversibly damaged by economic activities. A primary goal must be to ensure there is adequate water for instream uses.

### *Drinking Water*

The financing of water and wastewater infrastructure is a growing concern in Canada. The demands of urbanization on municipal water and wastewater treatment facilities are growing yet the existing municipal infrastructure is poorly suited for this new growth. In the past, there has not been proper accounting for depreciation of municipal water infrastructure and water pricing mechanisms have not recovered the cost of providing drinking water. Investment in infrastructure has not kept pace with growth and the need for renewal, partially as a result of revenue consolidation. Monies from cost recovery mechanisms have been placed into other infrastructure such as roads. As a result, with growing demands on municipal water and wastewater treatment facilities, municipalities are not well prepared to meet the growing needs of Canada's urban population.

### *Wetland Conservation*

Aside from their role as natural protective zones against erosion and storm damage along the shorelines of both rivers and lakes and in flood control, wetlands represent a major source for much of Canada's freshwater supply. They play a pivotal role in the water purification cycle by providing a favorable environment for the breakdown of organic material such as plant or animal waste. They often act as recharge zones for both surface and ground water sources. In effect, they act as a biological filter to purify water. Yet, more than 14% of Canada's wetlands have been severely altered and in some regions upwards of 70% of wetlands have been lost.

### *Global Climatic Change*

The impact of global warming on regional water resources in Canada is uncertain. Climatic change may affect precipitation over large parts of Canada. It is anticipated that Canada could

experience an increase in mean annual temperature greater than that experienced over the past 10,000 years. With a increase in temperature of this magnitude, the incidence of drought in regions of Canada that are dependent on seasonal (and inconsistent) supplies of groundwater and surface water is likely to increase. More research is required to assess the impact of short and medium term changes in regional precipitation patterns. As an example, the prairie provinces contain only 2% of Canada's useable freshwater resources. Within this region, the agricultural industry is already highly susceptible to the seasonal balance between precipitation and evaporation. Drought induced by climatic warming could have major additional economic consequences on domestic and industrial water use throughout the region.

### *Transboundary Issues*

Groundwater is largely a provincial responsibility. Provincial governments also have extensive authority over water and have responsibility for withdrawals and discharges to surface water systems; water quality and quantity; funding and construction of water treatment and distribution works; protection and conservation. Water has little respect for geographic boundaries and competing demand for water in various jurisdictions can lead to conflict. Regional bodies such as the Prairie Provinces Water Board and the Mackenzie River Basin Committee (MRBC) seek to allocate shared resources and to develop more compatible means of water resource management in adjacent provinces. Under the MRBC, representatives from the federal government and the governments of the Northwest Territories, British Columbia, Alberta and Saskatchewan are in the process of developing interprovincial agreements that will provide for water quality and quantity in the Mackenzie River basin. These agreements will have major implications for future development in Western Canada.

Provinces must also cooperate with municipalities. For example, in British Columbia, forestry practices can have detrimental impacts on municipal water quality yet municipalities have little control over forestry practices. In Alberta, a cost-shared approach is used for the management of water projects including sub-basin water transfers, water supply and drought assistance programs. In Ontario, the Municipal-Industrial Strategy for Abatement is provincially funded but requires cooperation with municipalities.

### *Water Quality*

There is growing public concern about the quality of both municipal and private supplies of drinking water. In Toronto, more than half of the people surveyed on this topic in 1990 were concerned about the levels of chemical pollutants in tap water resulting from accidental spills and other sources and the impact of these substances on human health. Increasingly, people are turning to alternate sources of drinking water including bottled water and home water treatment devices. In fact, in metropolitan Toronto, more than 22% of residents are currently using alternatives to tap water on a regular basis although there is no certainty that water quality in these supplies is any better than that provided in the municipal supply. Yet, the perception on the part of the public that the quality of drinking water has been impaired is an important one and has put into question the ability of municipalities to supply water of suitable quality for drinking.

### *Opportunities for Cooperative Action*

Steps should be taken to ameliorate the impact of human activities on water quality and on water supply. With regards to water management, it will be important to develop a national vision of "where we are going" and "how we are going to get there". The use and development

of generic guidelines/systems for environmental management may serve as a framework for water management at all levels, including industry and government. Such “environmental management systems” are under development by organizations such as the Canadian Standards Association.

On an international basis, municipal water prices in Canada are far cheaper than other countries including the United States, United Kingdom, France, Belgium and Australia. In order to ensure that Canadian water prices do reflect the true value of the resource, the development of realistic water pricing policies is necessary. These policies could help to conserve water resources, to promote full cost recovery and to ensure that water and wastewater treatment infrastructure is in place to meet growing demands on water supply and water quality. This would require increased communication with municipalities, which must implement water pricing policies. In the near future, provinces may have to consider limiting grants to municipalities regarding infrastructure financing in order to promote the adoption of water pricing strategies. Decreased water use will be an important component of demand management and will be a natural extension of an appropriate water pricing policy.

Federal, provincial and municipal cooperation will be necessary in order to develop standards for drinking water quality that should evolve as our understanding of the impacts of potentially toxic substances is enhanced. In the near future, water quality standards for specific substances such as lead could potentially exceed the ability of current municipal water treatment infrastructure to cleanse our water. Further, many persistent toxic substances cannot be removed from water by existing water treatment facilities. Cooperation will be necessary in order to ensure that municipalities have the infrastructure in place to produce water that meets standards for quality.

Suggestions have been made for the development of a national emissions inventory for the release of all substances, both toxic and non-toxic. Due to the large number of chemicals produced in Canada, a first step has been to identify those which pose the greatest threat to the environment and to human health. The sources of these chemicals could then be identified and virtually eliminated. Approaches for elimination must respond to the particular demands of the substance involved and the technology used to produce or consume the substance. The identification and characterization of priority substances currently under examination as a result of the Canadian Environmental Protection Act will be an important development in targeting substances for control and virtual elimination.

Virtual elimination and zero discharge policies have established a new goal for the treatment of persistent toxic substances. These policies will continue to be under consideration by business, industry, government and environmental groups. Innovations are required in production technologies and in technologies to detect, dispose or recover persistent toxic waste. Investment in research and development of these technologies will assist not only remedial action within Canada, but may also lead to the development of markets abroad.

The development of appropriate groundwater policies will be necessary to ensure a balance between extraction of groundwater and renewal of groundwater sources. The protection and conservation of recharge areas should also be a large component of such policies. The importance of wetlands as a source of groundwater recharge as well as a means of natural purification of water borne contaminants and in stream-flow stabilization cannot be over-emphasized.

The need for comprehensive environmental assessments has increased as the number of small developments increase and the size of large scale developments increases. As an example, hydroelectric dams and pulp mill development commonly have deleterious impacts on ambient water quality. The quality of assessment studies will need to be enhanced and approaches to assessments should be standardized in order to enhance the reliability of the information they produce.

A number of groups have proposed the development of a national water use and transfer policy. Until recently, interbasin and provincial/territorial transboundary water movements have been supervised by interprovincial boards or commissions such as the Prairie Provinces Water Board. A national water use and transfer policy could act as a common framework for interbasin and transboundary water movements.

### 3 ABORIGINAL ISSUES

Aboriginal peoples are seeking greater control over their lives. This control includes some environmental management powers. In many regions of the country, the pursuit of these goals will challenge the way in which governments have traditionally defined their responsibilities. The negotiation of self government arrangements is likely to proceed slowly and will engender considerable friction. Over the next few years, aboriginal peoples will continue to press for constitutional change, the delegation of powers from governments and will look to the courts to promote their rights. Native peoples' deep interest in environmental issues, stemming both from the need to protect themselves from harmful developments and the desire to capture the economic opportunities which natural resources offer, will increasingly force environment ministers to address their concerns.

Aboriginal peoples feel that their ability to protect their culture and traditional ways of life depends largely on a healthy local environment and adequate access to land and resources. In most parts of the country, native reserves already are too small to achieve these objectives. And the native population is growing faster than any other population group in the country. Furthermore, traditional hunting, fishing and trapping activities are increasingly threatened by resource development activities on neighboring lands. They can also be affected by the long range transport of some pollutants. All of these factors imply that the carrying capacity of many reserves has been reached or exceeded. This could mean that most aboriginal peoples, at least in southern Canada, will not achieve the standard of living they expect, regardless of self-government arrangements. The frustration of aspirations that will result will ensure that aboriginal issues remain high on the environmental and natural resource agenda for the next decades.

Although it is impossible to generalize about the aspirations of native peoples, a recent report from the Native Peoples' Circle to the Ontario Round Table on the Environment and the Economy provides some insights into their thinking. Among other things, Ontario's aboriginal peoples are seeking:

- greater participation in forest management and exploitation;
- management control over provincial fish stocks;
- representation on environmental assessment panels for developments which affect them;
- full royalties from resources exploited on their traditional lands;

- incorporation of traditional knowledge in resource management strategies and in curricula related to resource management;
- involvement in recreation and tourism planning;
- extension of the Sparrow decision to other traditional activities, including hunting, trapping, the harvesting of wild rice, other natural foods, trees and medicinal products; and
- all provincial legislation, policies and practices respect the inherent right of aboriginal peoples to use, manage, and protect the land and resources within their traditional territories.

A number of these general aspirations are already being translated into specific rights through court decisions, the constitutional process and negotiations with government. Over the last twenty years, native peoples have progressed from having no recognized aboriginal rights to having rights that have been confirmed by numerous court decisions. And if the present constitutional talks are at all successful, native rights will feature prominently in the Constitution of the country.

Land claims and self government agreements are altering the way in which governments collaborate with native peoples. Joint Boards have been established in the territories to manage wildlife and other resources previously seen as the sole prerogative of one or the other government. Self government agreements (viz. the Sechelt and Sawridge bands) contemplate the application of provincial laws to federal (Indian) lands. And aboriginal peoples are dealing directly with provincial governments on an ever-expanding range of environmental issues. Ontario, British Columbia and the Yukon have all recognized the aboriginal right to self government and it seems likely that Saskatchewan will soon follow. As a result, the nature of the relationship between the federal and provincial governments and aboriginal peoples is undergoing a profound set of changes.

#### 4 PUBLIC ENVIRONMENTAL EDUCATION

The term “public education”, in its broadest definition, covers a range of activities and can be delivered through an equally broad range of channels. Delivery channels include the formal education system, the private sector, media, NGOs, government agencies, continuing education programs, and community projects. The types of environmental education activities that are delivered through these channels include awareness raising, information transfer, knowledge development, training programs, social marketing (fostering attitude and behavior change) and, mobilization programs.

##### *Trends in Public Environmental Education*

While environmental education directed to the general public has evolved in numerous directions over the last few years, some overall trends can be identified:

- A shift in focus from awareness-raising on environmental topics and their importance, over to providing how-to information on what the individual, community, corporation, etc. can do to make a difference;
- A growing focus on integrating environmental concerns into business decision-making,

principally due to the promotion of “sustainable development” frameworks for action, through channels such as policy papers, conferences, round tables, magazines, etc.;

- Increased exposure and emphasis (largely through the media) on environmental issues “beyond our backyards”. This includes focus on global environmental problems, and how problems in other countries impact on the global environment and human health;
- The formation of inter-sectoral partnerships to conduct public environmental education initiatives in order to increase credibility, reach, and to achieve shared objectives; and
- The mobilization of youth through the emergence of youth organizations and networks, school-based initiatives, and consultation exercises.

### *Challenges in Public Environmental Education*

Despite the positive nature of these trends, there remain several formidable challenges of which the following are indicative:

- The dichotomy between the degree of information overload felt by the public, (as well as confusion as to who to believe), and the significant demand for readily accessible and simplified information that is practical, solution-oriented and relevant to the individual.
- The need to develop among the public, a greater sense of individual empowerment and responsibility to push for sweeping environment change (i.e., moving “beyond the Blue Box” to significant lifestyle change).
- The concept of “sustainable development” is not understood by the Canadian public, though there is a fairly high level of belief that environmental progress and a healthy economy go hand-in-hand.
- While attempts are being made to reach the broader public audience through mainstream media, many environmental education activities are reaching the “already converted”.
- There is a perception among some environmental education practitioners (including ENGOs and community groups) that national initiatives focusing on national problems are ineffective and that the focus must be local, with linkages to national problems.

### *Trends and Developments in School Environmental Education*

Environmental education is occurring at all grade levels across Canada through the integration of environmental concepts into traditional curriculum areas, the evolution of stand-alone environmental studies courses, and through the availability of a wide range of appealing learning resources and support activities for teachers who deliver environmental education.

At the elementary level in most provinces, environmental education is taught in an integrated fashion. Much of the subject matter is focused on the school, home and community environments. At the senior high school level, environmental education tends to be taught as part of a science, social studies or geography program. Some provinces offer environmental studies as a stand alone subject.

At the older levels, environmental education tends to focus on specific issues, although where it is taught as a component of social sciences there is more opportunity for an integrated,

holistic approach. At the older levels, the scope tends to broaden beyond school, home, and community, to include regional, national and international issues. Learning approaches include research, consideration of competing interests, and possible solutions.

In most provinces, environmental education has been incorporated at every level of education. Newfoundland for example offers environmental education in Kindergarten and continues through the elementary, intermediate and secondary levels. In the social sciences programs it forms an integral part of such courses as World Problems, World Geography, Canadian Issues, and Canadian Economy. Environmental education is also integrated into subject areas such as Health and Home Economics.

These formal courses are supported by a large and growing array of education resources. It is estimated that over 1200 such resources are presently available to educators including board games, videos and computer based programs. The development of resource materials and programs designed to assist teachers and students is rapidly becoming one of the fastest growing areas in education. Virtually every province has materials already developed to meet their needs or are in the process of creating them.

### *Trends and Developments in Post-secondary Environmental Education*

Canadian universities and community colleges report an increasing involvement in the field of environmental education. Dalhousie University, for example offers a number of new programs in its School for Resource and Environmental Studies, including the promotion of a provincial conservation strategy and the study of socio-economic impacts of climate change in the Atlantic region. The University of Guelph is establishing an Institute for Environmental Policy and Stewardship. The University of Western Ontario has developed the first course on sustainable development to be offered through a university business school. Schools of Public Administration have been slower to adapt to the new realities, though public sector training institutions such as the Canadian Centre for Management Development are now gearing up to provide a focus on sustainable development management.

Environment-related programs at the community college level vary in length and delivery. One Year certificate programs such as the Water and Wastewater technician program, at Westerra Institute of Technology, in Alberta train students for employment in the fields of water distribution, water treatment, wastewater collection and wastewater treatment. Such groups as the Association of Canadian Community Colleges (ACCC) have instituted programs that encourage the "greening" of all community colleges operations and procurement.

## **CONCLUSIONS**

The environmental challenge which Canada faces presents a major and undeniable opportunity for positive action. This applies to transforming the way Canadians and their institutions think and act with respect to both positive environmental change and rebuilding national momentum. It also applies to the way in which agendas for planning and action are structured. Experience demonstrates that if we keep on structuring activities under traditional environmental, sectoral or institutional agendas, then we shall continue to act in traditional ways. The Brundtland Commission experience in this regard is instructive - it began its work by integrating elements of the traditional environment and the traditional development agendas into a sustainable development agenda.

The concept of sustainable development is not new. In its ground breaking 1987 report, the Commission pointed out that the earth's economy and its ecology were so closely interlocked that economic policies which ignored that reality were bound for failure. One of the keys to its new or "sustainable development" agenda which has made it so popular is that it appears to be a "win-win" program. It points toward a world which is more prosperous as well as ecologically more sustainable by merging elements of the traditional environmental agenda with elements of the traditional economic agenda. The result is growth of a radically different kind. Growth which is far less energy and raw material intensive. Growth which helps to preserve the world's ecological capital rather than to run it down. And growth which is far more equitably distributed both within and among the nations of the world. Although some are deeply suspicious of such an approach, it has found a good deal of favor with the Canadian public.

Canada has recognized and begun to respond to these policy and institutional imperatives on a number of fronts. The National and Provincial Round Tables on the Environment and Economy have been established to advise governments on policy shifts to promote forms and processes and development that do not undermine the integrity of the environment on which they depend. The federal government has adopted *The Green Plan* as the first phase of a national strategy for sustainable development and several provinces have developed provincial strategies. Several industries and business organizations have instituted more environmentally friendly measures and have made the environment a major element of their corporate ethic.

Despite this positive activity, there appears to be a potent combination of rising expectations, and diminishing confidence, by Canadians that governments will provide the necessary leadership to develop the policies and institutional structures necessary to move Canada toward more sustainable forms of development. From an examination of the *1991 Environmental Scan* and that of 1992, this unease appears to derive primarily from a concern for the following.

- Although the idea of sustainable development has become part of the Canadian political and economic scene, the traditional segregation of sectoral decision-making within governments appears to remain intact. The commitment to shift bureaucratic and political thinking towards a system that recognizes their interdependence remains largely rhetorical.

The lack of integration forces governments to continue to address the symptoms of environmental degradation through increasingly expensive 'react and cure' measures. The philosophy of 'anticipate and prevent' promoted by Brundtland is only now becoming a part of Canadian environmental management policies.

- The lack of clarity about which level of government is responsible for what is viewed by many Canadians as a convenient excuse for avoiding questions of accountability and responsibility.
- The lack of data and information on environmental issues including the lack of public access to related government and intergovernmental activities undermines the principle of 'honest disclosure' by both governments and industry and impedes the building of effective partnerships among stakeholders.

- The unwillingness of many Canadians and a number of governments to recognize and accept that domestic environmental agendas are increasingly being driven by decisions of international fora (GATT, OECD, EEC, UNCED, etc.), foreign governments, and actions/boycotts of foreign and international pressure groups.

This represents a particular challenge for environmental ministries since the challenges and opportunities posed by these perceptions constitute, in large part, the key parameters of the environmental challenge. All will require a transformation in the way that Canadians and their institutions think and act. Industries in the forefront of this change will have many advantages since they will be adapting more quickly to the environmental reality and thereby gain opportunities for products and services. Similarly within and between governments - those ministries which provide creative and dynamic leadership will gain as bureaucracies restructure to meet the realities of the environmental challenge.

CCME is well placed to provide this leadership among governments. Unlike most other federal/provincial bodies, it is a group of equals with a number of years' experience of working together. It is from this perspective that the following thoughts on a strategic work plan framework appropriate to the CCME mandate has been developed. Each of these themes draws on the strengths of CCME as an intergovernmental organization. Each of them will be difficult for each individual jurisdiction to carry out on its own:

- 1 Building a Sustainable Development Vision and integrating Environment with Development
- 2 Overcoming Jurisdictional Fragmentation
- 3 Building Partnerships
- 4 Adjusting to the International Reality

In large part, these themes derive from the perceptions outlined above. While there is an inevitable and essential overlap between them, they do give a structure and sense of purpose that is aggressive and proactive. A further characteristic is that all can, and should, focus on a range of planning activities, e.g., research and analysis, policy development, institutional development and education.

To give emphasis to the notion of strategy, it is strongly recommended that the timeframe for the work be the medium and longer term. The point was made by many who contributed to the preparation and review of the recent *Environmental Scan* that most of the focus by governments to date has been on current issues with only marginal attention being given to those issues that will be driving the environment and development agenda of tomorrow. All felt that CCME was an ideal forum to give impetus to the issues of 'the future' from both national and provincial perspectives.