

CANADA

CONCLUSIONS AND RECOMMENDATIONS (see next page)

OUTLINE OF THE REPORT

1. **THE CONTEXT**

Part I

MANAGEMENT OF NATURAL RESOURCES AND POLLUTION CONTROL

2. **ECOSYSTEM MANAGEMENT**

3. **WATER MANAGEMENT**

4. **WASTE MANAGEMENT**

5. **AIR MANAGEMENT**

Part II

INTEGRATION OF POLICIES

6. **ENVIRONMENTAL AND ECONOMIC POLICIES**

7. **SECTORAL INTEGRATION: ENERGY**

8. **SECTORAL INTEGRATION: FORESTS**

Part III

CO-OPERATION WITH THE INTERNATIONAL COMMUNITY

9. **INTERNATIONAL CO-OPERATION**

ANNEXES

CONCLUSIONS AND RECOMMENDATIONS*

Canada's early economic development was built on a wealth and diversity of natural resources. Today, its natural resource based and open economy must face sustainability issues, such as the depletion of some stocks of its renewable resources and loss of biodiversity. Because of the country's vast size and low population density, pollution did not become a national concern until the latter part of this century. Over the last two decades, pollution of the Great Lakes, acid deposition, urban smog, toxic contamination of soil and groundwater, waste management, land use and consumption patterns have emerged as issues of political significance.

Environmental issues in the late 1980s and early 1990s were high on the agenda of Canadian governments at all levels, the provincial ones having particularly important responsibilities over pollution issues and natural resources. There was significant public concern about pollution issues and the sustainable use of natural resources. There was also increasing recognition by the private sector of the relevance to its own future prosperity of combining economic development with sustainable use of resources. As a result progress has been made, and the concept of sustainable development now figures prominently in Canadian governments' policies and is well accepted by all major stakeholders.

On its way towards sustainable development, Canada faces three challenges: difficulties in translating the concept into practical changes in economic decisions and practices and in economic signals; consumption and production patterns, which are often intensive in their use of natural resources; and increased concerns regarding the economy, employment and public deficits, which tend to reduce the prominence of environmental matters.

This OECD report sets out the baseline for assessing future environmental progress and examines the environmental performance of Canada in four major areas:

- i) reducing the pollution burden;
- ii) managing natural resources;
- iii) integrating environmental and economic decision making;
- iv) international co-operation.

In each of these areas, the extent to which government policy objectives are being met has been assessed. This assessment includes both domestic objectives and international commitments. It is based on environmental effectiveness and economic efficiency criteria. A number of recommendations are put forward that could contribute to further environmental progress in Canada.

1. Reducing the Pollution Burden

The Canadian approach to pollution abatement and waste management involves a balance of consensus building, stakeholder participation, voluntary agreements, regulatory mechanisms and a focus on specific ecosystems. It may seem complex, costly and full of potential for free riding behaviour. Nevertheless, it is well adapted to the Canadian situation because: i) an adversarial approach would probably be more costly; ii) the constitutional situation encourages co-ordinated effort among governments; and iii) the scale of the country means that broad national strategies inevitably have to be tailored to specific regional conditions. It is also recognised in Canada that the credibility of the "voluntary/negotiated" approach requires transparent negotiations among polluters and stakeholders, periodic monitoring and public dissemination of results.

Considerable efforts are being made in Canada to fundamentally review the environmental regime and arrive at a better definition of roles and responsibilities within the current jurisdictional arrangements. The mosaic of legislative and regulatory instruments is progressively being streamlined through, for instance, the harmonisation work of the Canadian Council of Ministers of the Environment (CCME) and agreements between the Federal Government and some provincial governments. Progress on enforcement and compliance was made in the late 1980s and early 1990s and permit procedures are being simplified.

Economic pressures also play a role in encouraging environmentally sound production and consumption patterns. Examples are when banks and insurance companies assess whether their clients are acting in an

* Conclusions and Recommendations approved by the Group on Environmental Performance at its May 1995 meeting.

environmentally sound manner, when mutual funds avoid acquiring shares that are not environmentally "clean" and when buyers of Canadian commodities insist on these commodities being produced in line with good environmental practices and regulations.

Water

Water quantity and quality are adequate for most purposes. Extreme drought and floods are limited and serious pollution is confined to a few water systems. Considerable progress has been made in reducing some of the most serious pollution problems, especially in the areas of toxic chemicals and phosphorus loadings. Key manufacturing industries, such as pulp and paper, refining and aluminum, have significantly reduced their water pollution loadings in recent years.

However, new toxic chemicals continue to challenge the ingenuity of pollution control authorities; and assigning responsibility for non-point sources to individual polluters remains difficult. Pollution problems are often "going underground" even as more Canadians come to rely on groundwater sources. Drought and flood control programmes, though successful, can create a false sense of security, and those who benefit from them bear few of their costs. Environmental decisions should better recognise economic realities and the potential for progress towards more cost-effective management of water resources.

It is recommended that consideration be given to the following proposals:

- reduce the impact of agricultural activity on water quality, with special attention to nitrogen and phosphorus compounds, pesticides and suspended solids. This may require redirecting some funds traditionally devoted to water quantity issues and flood control. A combination of regulatory and non-regulatory, co-operative measures, based on direct contact with farmers, is likely to be the most fruitful;
- improve recognition and understanding of the relationship between water and economic variables, with:
 - i) better data on expenditures, prices and financing;
 - ii) more systematic analysis of the microeconomic conditions facing key water users; and
 - iii) better understanding of the impact of agricultural, transportation and energy policies on water management;
- undertake a systematic review of subsidies for water supply and treatment infrastructure, and of water pricing policies, aiming at cost-effectiveness and long-term financing in the maintenance and upgrading of facilities. Subsidies for flood and drought control projects should also be critically reviewed in terms of their long-term impact on risk; and moves to full-cost pricing of water should be phased in to allow users, including farmers, to adapt to the new regime;
- enlarge the role of economic instruments in managing water resources. Water metering and conservation-related price structures would both help conserve resources and finance new infrastructure. Other examples include accelerated capital cost allowances, joint ventures with industry for water technology development, cost-recovery arrangements for water research and taxes earmarked for the restoration of degraded sites.

Waste

Municipal waste generation in Canada is very high because of the country's rich natural resources, consumption patterns and large landfill capacity. For both solid and hazardous waste, the Federal Government adopted a 50 per cent reduction target by 2000 from 1988 levels, stressing waste prevention and recycling. As a result, the amount of solid waste sent to final disposal decreased by 6 per cent between 1988 and 1992 and the amount of packaging waste disposed of was reduced by 21 per cent in the same period. Recycling has developed rapidly, but the rates of recycling are not high for municipal waste in most provinces and for industrial and hazardous waste. Waste prevention initiatives have not yet been very effective and available data suggest an increase in solid waste generation and packaging consumption up to 1992.

Solid waste disposal relies on landfilling; the use of incineration has been limited by public opposition. New and large landfill sites meet current criteria, but most smaller sites are still rudimentary.

International and interprovincial hazardous waste movements are controlled by nationwide systems. Hazardous waste trade is almost exclusively with the United States and controlled through a 1986 bilateral agreement. Canada ratified the Basel Convention in 1992 and has not exported hazardous waste to non-OECD countries since then.

It is recommended that consideration be given to the following proposals:

- further assess the waste reduction potential in each sector and waste stream; strengthen waste prevention and further promote recycling while giving proper attention to its cost-effectiveness; develop a mix of policy instruments, including a liability framework and economic instruments, so as to attain targets more cost-effectively;
- improve the technical characteristics of smaller landfill sites and consider increased use of incineration and composting;
- strengthen hazardous waste management in most provinces and increase hazardous waste disposal capacity in Canada;
- continue efforts to establish reliable waste statistics at national, provincial and sectoral levels, so as to be able to monitor policy implementation effectively;
- consider a long-term strategy to change production and consumption patterns to increase the efficiency of natural resource use and reduce waste generation.

Air

A broad national framework has been established for air quality management across Canada, including national programmes such as the National Action Program on Climate Change, the Acid Rain Control Program and the NO_x/VOCs Management Plan. The Air Quality Accord negotiated with the United States deals with a range of air issues, starting with acid deposition. The provinces, however, remain the key implements of air management policy, and their commitment is essential for success of national programmes. The National Air Issues Coordinating Mechanism, a joint initiative of the CCME and the Council of Energy Ministers, has proved to be an effective institutional arrangement to support the national framework and provincial involvement. The entrenchment of the consultative process in environmental management has led to a partnership approach to the details of many air management programmes, and the establishment of voluntary agreements with industry. As a result of wider-ranging national air pollution efforts since the mid-1980s, Canada has reached its emission reduction targets, both national and international. Ambient air quality has improved, notably as concerns levels of SO_x, lead and CO.

Nevertheless, Canada remains one of the top emitters among OECD countries, per capita and per unit of GDP, for SO_x, NO_x and CO₂, and there are still areas where air quality is inadequate for human health and ecosystems. SO₂ emissions from both Canadian and US sources continue to contribute to the problem of acid deposition in eastern Canada. Consistent breaches of national and provincial ambient air quality standards for ozone (photochemical smog) have made it necessary to adopt a national strategy (the NO_x/VOCs Management Plan and vehicle emission limits); but growth in vehicle use will likely offset the reductions expected from this programme. CO₂ emissions are expected to increase over the 1990s.

It is recommended that consideration be given to the following proposals:

- continue to assess the need for further reductions in SO_x emissions to ensure the long-term protection of eastern Canadian ecosystems and, if needed, consider new action; in this connection, translate national commitments concerning reduction of SO_x emissions in eastern Canada into provincial commitments and implementation;
- examine options to reduce the contribution of on-road and off-road vehicles to NO_x and VOC emissions;
- consider the scope for expanding the use of economic instruments in air management, such as taxes and charges in the road transport sector and tradable emission permits for SO₂;
- continue to pursue improved cost-effectiveness in air management through the use of voluntary agreements and steps towards integrated pollution prevention and control;
- develop as part of the harmonisation programme a cross-jurisdictional set of performance criteria to assess the achievement of the objectives of air management programmes.

2. Managing Natural Resources

Canada's terrestrial and marine ecosystems and natural resources are of very great environmental and economic value for the country. Ecosystems are subject to strong pressures in the south and to lower pressures in the more sparsely inhabited areas; Atlantic marine resources are subject to stronger harvesting and environmental pressures than those of the Arctic and the Pacific. Changes in forestry practices aim at a more sustainable development of forest resources.

Ecosystem management

Canada has succeeded in protecting very large surface areas of representative ecosystems, ranking high among OECD countries in that respect. Its wilderness areas are vast. Major steps have been taken at both the federal and provincial levels to protect representative ecosystems. An extensive system of parks and other protected areas has been created, covering 8.9 per cent of the territory; the target is to protect 12 per cent of the territory by 2000, and every year the extent of protected area grows. The populations of many species that were in danger are improving; the percentage of threatened or endangered species is small compared with other OECD countries.

The effects of agriculture, forestry, mining, industrialisation and urbanisation on ecosystems are now better understood and many steps have been taken to correct past inappropriate practices. All stakeholders and in particular environmental NGOs are participating actively in joint efforts to protect natural resources. International agreements concerning biodiversity have been ratified and implemented. Management of marine resources in the Pacific and Arctic oceans has been largely successful.

In many cases, however, the level of protection, as provided by law, is not very extensive: many activities that disturb ecosystems in some protected areas are still permitted. Increasing the level of protection of ecosystems will require considerable effort: achieving protection of 12 per cent of the land area by 2000 is a very challenging goal considering the current area under protection; increasing the size of existing protected areas will require strong political support and additional financial means. Special attention should be devoted to protecting ecosystems in areas close to the population centres in southern Canada; further efforts in this respect will be needed on the part of provinces and municipalities, which should develop plans to prevent construction in remaining natural areas. Conservation of the ground fish resource in the Atlantic has been unsuccessful due to a combination of inappropriate fishing practices and environmental change; fishery management methods will have to be upgraded to prevent further reductions in fish stocks and to help replenish the stocks.

It is recommended that further consideration be given to the following proposals:

- continue efforts to increase the extent of protected natural areas in line with the goals set for 2000 (protection of 12 per cent of the total territory and at least 5 per cent of each eco-zone); increase the level of protection in certain protected areas by, for instance, reducing flooding, logging and mining in sensitive areas; increase the total area both designated for protection and actually protected;
- develop a network of representative marine parks or marine conservation areas;
- adopt special programmes, including the use of financial incentives, to develop natural areas in or near urban and rural settings;
- give special consideration to wildlife protection in areas where there are severe pressures from human activities;
- integrate the goals of nature protection with agricultural, forestry and mining activities, and accelerate the adoption of sustainable-use practices for biological resources in all sectors of the economy, including agriculture, fishery and forestry; ensure that development and harvesting of forests in the west and of fisheries in the east is performed in a more sustainable manner.

Forest resources

Forests play an essential role in Canada, both in environmental and economic terms. Canadian forests occupy 416 million hectares (10 per cent of the Earth's wooded surface area, and nearly half of Canada's surface area); they are a fundamental part of most ecosystems, form the main roots of Canadian culture and support many activities. As a resource, they yield raw materials for forestry industries, which play a major role in the Canadian economy (providing 770 000 jobs, either directly or indirectly, 50 per cent of world sawn timber exports and 56 per cent of newsprint exports).

Until the middle of this century, forests were often harvested with little regard for the environment and the conservation of the resource. There followed a phase of management of the wood resources with a view to sustainable production of timber. Since the late 1980s, Canada has taken steps to ensure the sustainable development of its forest resources, taking account of a range of productive, environmental and social values. The commitment to sustainable development appears to be high. Canada's success in moving toward sustainable development of forest resources will require continuing the translation of Canada's national forestry strategy into practices on the ground. The degree of consultation with all parties involved is particularly high.

Quantitatively, renewal of Canada's forest resources is ensured thanks to policies that have been implemented for several years. Qualitatively, current forestry practices do not appear to be causing major damage in most Canadian forests. However, maintaining healthy forest ecosystems for a range of activities and values, and the need to protect the biodiversity of unique forests and natural areas across the country, such as the rain forests of the west coast, is a major public concern and has led to conflicts between harvesting and conservation. Private enterprises such as sawmills and pulp, paper and cardboard producers have made major progress in reducing levels of biochemical oxygen demand, suspended matter and toxic substances due to discharges to water. Further, industry is working at advancing closed loop technology.

Major efforts have recently begun to translate sustainable development objectives into forestry practices in British Columbia, Quebec and other provinces. As management of the great majority of commercial forests (80 per cent of which belong to the provinces) is licensed by the provinces to private companies, adequate economic and regulatory mechanisms are needed to ensure that licence holders internalise sustainable development goals. Significant progress is being made, in particular with respect to regulatory instruments. The current favourable economic conditions, with relatively high prices for sawn timber, favour such changes in forestry practices.

It is recommended that consideration be given to the following proposals:

- expand scientific knowledge of biodiversity of forest ecosystems and its measurement; evaluate the impact of harvesting methods, silviculture and other forestry operations on biodiversity; continue the creation of networks of protected forest ecosystems with the aim of reaching 12 per cent of the total wooded area;
- develop and apply alternative forestry methods that better integrate productive, environmental and social values as alternatives to either total protection or harvesting for a variety of forest ecosystems across Canada, including the west coast rain forests;
- translate sustainable development objectives into the actual management of provincial forests through: i) improved technical and economic clauses in some licence agreements between the provincial governments and private companies; ii) the development of instruments, particularly economic instruments, to encourage non-government parties to take account of sustainable development objectives; iii) training in new techniques for company personnel; and iv) the development of statistical, legal and human resources in the provincial administrations for orientation and monitoring of forestry management according to new forestry codes;
- continue promoting at international level the sustainable development of all forest resources, with the objectives of: i) improving responses to global climate change and biodiversity issues; ii) combating trade distortions that may arise from exploitation of forest resources in certain countries without regard to the environment and the longer term; and iii) continuing efforts for certification of forest products produced in a manner consistent with sustainable development.

3. Integrating Environmental and Economic Decision Making

Integration of environmental concerns in economic development

Canada has made considerable progress in developing a comprehensive and indicative environmental strategy based on the principle of sustainable development. At national level, the Green Plan represented a government-wide commitment to translate the concept of sustainable development into a range of qualitative and quantitative national objectives and policy measures. Broad consultation has been instrumental in providing the consensus needed for sustainable development commitments. Provinces and territories have also taken initiatives to promote sustainable development.

Notable achievements have been made in integrating environmental considerations into economic and sectoral policies. Examples include the legislated environmental assessment process, the environmental analysis of policy proposals and legislation, and the work of the national and provincial round tables on the environment and the economy; sustainable development plans completed for sectors such as agriculture, fisheries, forestry and industry; and, more recently, the introduction of legislation in the House of Commons that will establish a Commissioner of the Environment and Sustainable Development and will require federal departments to prepare sustainable development strategies and Cabinet Ministers to introduce them in Parliament.

Nevertheless, Canada, like other OECD countries, faces difficulties in translating the concept of sustainable development into practical changes in economic decisions and practices and in the efficiency of consumption and production patterns, which remain intensive in their use of natural resources. Further advances will be dependent upon:

i) strengthening institutional integration efforts along the lines already followed by Canada and ii) ensuring that economic signals are right.

It is recommended that consideration be given to the following proposals:

Strengthening institutional integration

- continue systematically to implement mechanisms of interministerial consultation and decision making concerning environmental and economic policies and sustainable development;
- pursue and strengthen the development and implementation of comprehensive environmental planning through the preparation of a new federal environmental policy plan and the definition and application of clear mechanisms to harmonise national and provincial environmental objectives and to promote the thorough implementation of international environmental commitments at both federal and provincial levels, notably by specifying responsibilities of each order of government;
- ensure that environmental assessment procedures are applied effectively to relevant projects and programmes with potential environmental significance, and that procedures at all levels of government are harmonised to avoid duplication;
- ensure that municipal land use planning takes account of sustainable development objectives and more effectively contributes to pollution abatement, nature conservation and risk prevention through the adoption, for example, of land use plans based on ecological boundaries;
- continue to develop a complete and reliable system of information on the state of the environment and develop data on related economic issues (public and private expenditures, employment, sustainable development, production and consumption patterns).

Getting economic signals right

- strengthen economic analysis of environmental policies to complement the strong existing scientific analysis; review systematically the compatibility of present policies and practices with the polluter pays principle and the user pays principle;
- move forward with the wider use of economic instruments to prevent pollution and conserve natural resources, in association with regulatory instruments and other instruments, such as voluntary agreements, to support a more cost-effective implementation of policies; in particular, apply economic instruments more widely to water services (charges for water supply and waste water treatment, realistic pricing of irrigation water);
- assess the effects of reducing financial assistance for the provision of environmental services and the exploitation of natural resources (e.g. direct and indirect subsidies, preferential loans, tax incentives); consider increasing environmental charges to improve economic and environmental effectiveness and reduce budget deficits;
- consider the potential for and effects of eco-taxes, for example energy taxes, as part of a general or partial tax reform.

Integration of environmental concerns in energy policy

Canada is an energy-rich country and a major exporter of all the main energy commodities (oil, gas, coal, uranium, electricity). Shifts in its fuel mix as well as a reduction in energy intensity over the last 20 years have helped reduce the carbon intensity of the economy and lower emissions of conventional air pollutants from the energy sector.

Over the last ten years, an institutional and regulatory framework to control pollution from energy activities such as oil and gas production has been created by federal and provincial authorities. Energy industries, especially the oil industry, have made considerable efforts to reduce their pollution loadings. Efforts to develop environmental assessment procedures, with appropriate federal-provincial harmonisation, are particularly relevant to the energy sector. Institutional mechanisms have been created to ensure that full consultation is carried out for policies and decisions concerning energy and environmental issues; these mechanisms have been instrumental in reducing the scope for future conflict and moving towards a broad consensus on environmentally sustainable energy patterns.

Nevertheless, the energy intensity of Canada remains very high. Current socio-economic projections indicate that CO₂ emissions could be about 13 per cent higher in 2000 than in 1990. Canada began to renew its energy efficiency efforts in 1991, despite low oil prices, largely because of their environmental benefits. These initiatives are essentially "no-regrets" measures: they make good economic sense in their own right and address a range of economic and

environmental policy objectives as well as those related to climate change. However, the implementation of some new measures seems to have been slow, notably with respect to efficiency standards for appliances and vehicles.

It is recommended that consideration be given to the following proposals:

- encourage greater energy conservation by additional policy measures, using a combination of voluntary, regulatory, economic and other instruments, particularly economic instruments such as taxes and charges, to achieve environmental goals at least cost;
- price electricity to reflect marginal cost of supply so as to provide more accurate economic signals to energy users than those given by current pricing methods and to help compensate for reductions in demand-side management programmes;
- ensure that any financial assistance to energy activities does not undermine efforts to improve energy efficiency;
- ensure that national energy and environmental objectives are translated into shared commitments between federal and provincial authorities; take steps to clearly allocate responsibilities and concrete actions.

4. International Co-operation

Over the last 25 years, Canada has played a leading role in the area of international environmental co-operation. It promoted the preparation of many international agreements and the progressive development of international environmental law. It has supported environmental activities in many international organisations as well as at regional level.

Canada has been a leader in setting up an international regime on the protection of the ozone layer and in complying rapidly with related international commitments. It also took steps towards promoting and adopting demanding objectives for addressing climate change issues, such as the Toronto target. It is a strong supporter of national and international activities to achieve sustainable development. Its level of development aid is fairly high in relative terms and the environment is a key component of the aid programme.

Co-operation on regional issues, such as air and water pollution and waterfowl conservation, is bilateral or trilateral. Significant improvement has taken place concerning reduction of SO_x emissions. The pollution load of the Great Lakes has been reduced. Movements of hazardous waste have been regulated and contingency plans have been developed for emergencies along the Canada-US border.

Negotiation, ratification and implementation of international agreements can pose challenges for Canada because of its special federal-provincial relationships. Implementation is often a shared federal-provincial matter or a provincial responsibility. Concerning environmental protection in border areas, implementing the 1991 Espoo Convention and the 1992 Helsinki Convention should lead to significant improvements. In the area of climate change, stabilisation of greenhouse gases such as CO₂ by 2000 may prove very difficult within Canada because negotiations and allocation of efforts to meet the target have not been fully co-ordinated in the country. Further attention will have to be given to reducing acid precipitation to decrease lake acidification. Renewed efforts towards the development of international environmental law in a co-operative spirit could help resolve remaining problems that affect Canada and its natural resource based economy (involving fishery, forestry, protection of nature and habitats, etc.).

It is recommended that consideration be given to the following proposals:

- ratify and implement recent international agreements on environmental protection that have been adopted by most Member countries and, in some cases, have been signed by Canada (Annex III);
- continue to work out federal, provincial and territorial arrangements to improve the negotiation, ratification and implementation of international agreements, and ensure that all governments bear their share of the Canadian commitments, including those related to the achievement of nationwide emission targets;
- support, where needed, close co-operation at local level on environmental issues arising in border regions; ensure that US residents have access to Canadian courts and administrative proceedings on pollution issues equivalent to that accorded to Canadians by the United States; work out arrangements at provincial level to meet all the provisions of the UN-ECE conventions on environmental impact assessment (Espoo) and industrial accidents (Helsinki);
- make wider and more efficient use, where needed, of the consultative role of the International Joint Commission on solutions to transboundary pollution issues and on monitoring progress towards commonly agreed targets;

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- develop further the domestic legal regime for compliance with internationally agreed rules concerning protection of the marine environment, abatement of coastal pollution, intervention in case of an accident at sea, compensation of damage to fisheries and other coastal interests;
 - continue efforts to work out international agreements on the conservation of fish stocks;
 - continue to promote the development of international environmental law by supporting further activities towards drafting an Earth Charter and determining environmental liability in selected areas.

