Environment Canada Environnement Canada

ENVIRONMENT AND DEVELOPMENT:
A Canadian Perspective

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Published by authority of
the Minister of the Environment
©Minister of Supply and
Services Canada 1987

ISBN-0-662-15698-6
Cat. No. EN 21-69/1987E

Canada

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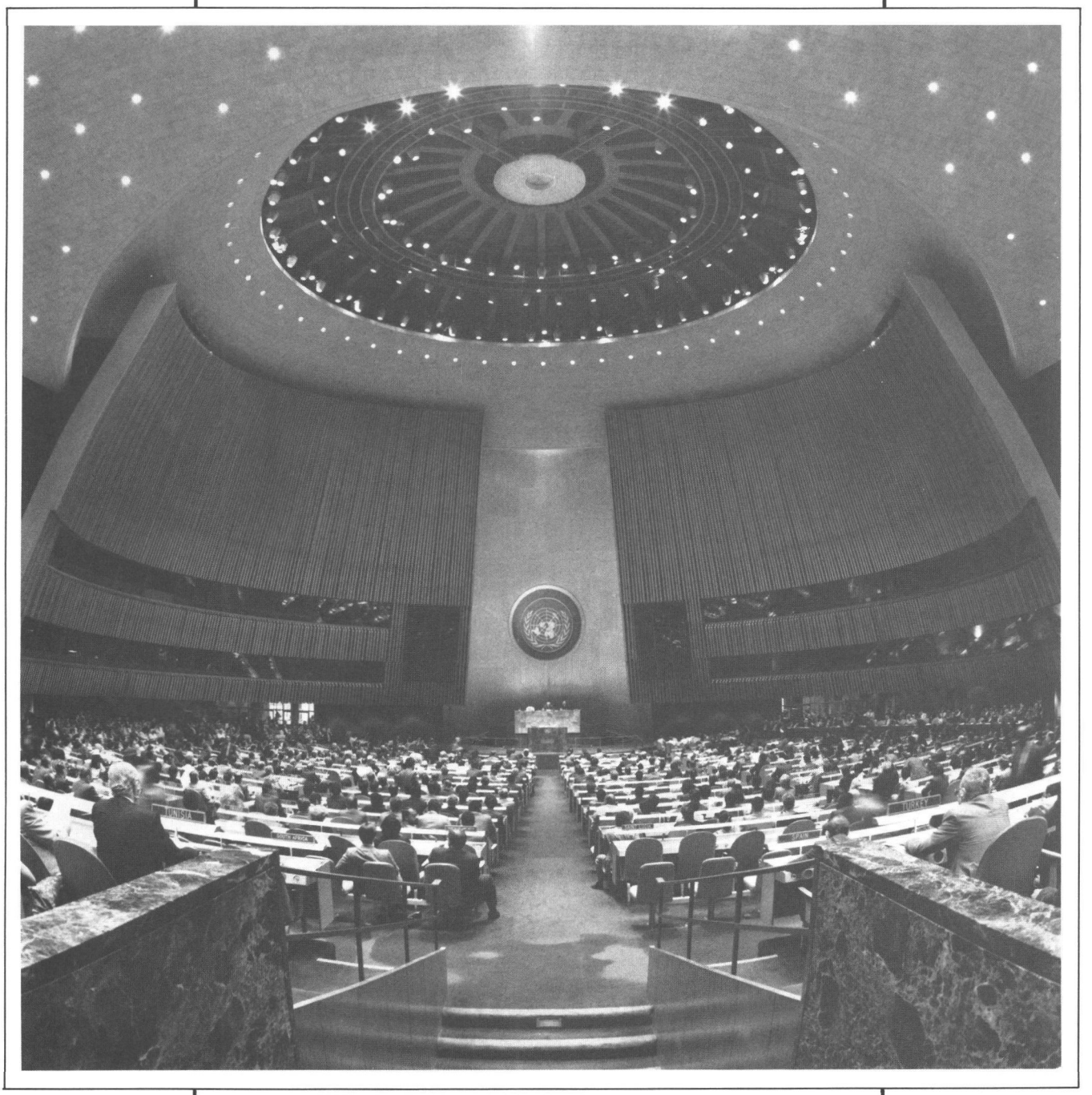
This document was prepared with the assistance of Agriculture Canada, the Canadian International Development Agency, Fisheries and Oceans Canada and Energy, Mines and Resources Canada.

ENVIRONMENT AND DEVELOPMENT



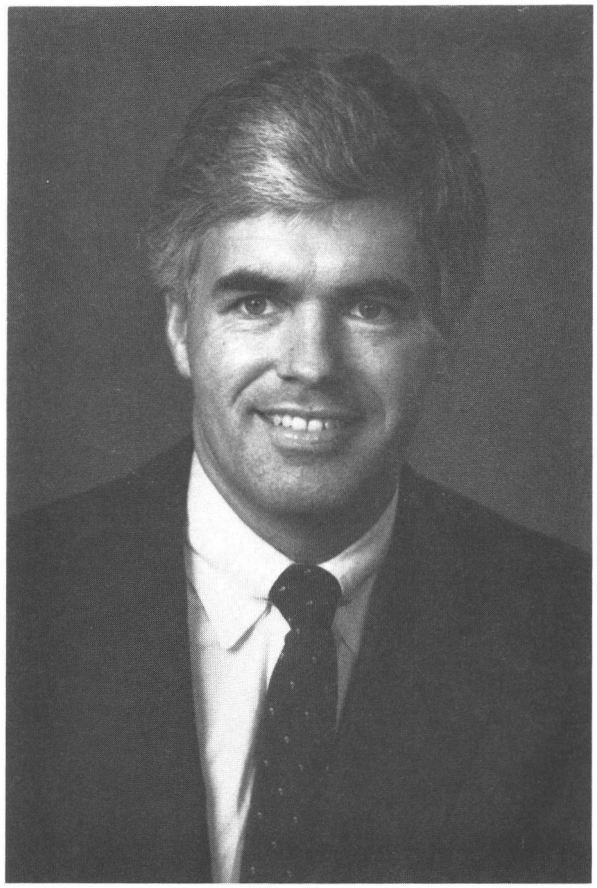
1. United Nations General Assembly, U.N. Photo, Milton Grant.

INTRODUCTION

As humanity nears the end of the twentieth century, it approaches not only a new century but also a new era. Indeed, the world already has a foothold in that era - one in which the human species faces the potential of its own destruction. And we have only ourselves to blame. Every country is helping to skin the planet alive - literally. As peoples around the globe indiscriminately burn fossil fuels, fell tropical rain forests, destroy wetlands, and accelerate the extinction of species, the earth's life support systems - clean air, pure water, healthy soil - are at risk.

Our capacity to develop technology has far outstripped our capacity to cope with the environmental havoc wreaked by such "progress." Certainly, the world's political and economic institutions have not developed in a way that would slow, let alone halt, the rapid march towards global destruction.

The degradation of our environment on a global scale has been compounded by widespread poverty. There are more poor and hungry people today than at any other previous time in the entire course of human history. If poverty is pollution, as some have suggested, then pollution is also poverty. Poverty perpetuates a vicious circle: out of sheer desperation, people destroy, for food, heat and shelter, the very resources they need to escape their desperation. But the consequences of such environmental destruction extend well beyond those immediately affected. As René Dubos has stated, "Everything is connected to everything else." Chernobyl proved his point in spades; environmental harm in one part of the world ultimately harms everyone in the global village.



Tom McMillan, P.C., M.P.,
Minister of the Environment

Our Common Future, the report of the World Commission on Environment and Development, speaks eloquently of the growing costs of our failure to integrate environmental and economic

decisions. It warns that, if we are to survive, world population must be stabilized, economic disparity reduced, environmental degradation reversed and renewable energy sources relied upon to a much greater extent than is now the case. We must start living off the earth's interest and stop encroaching on its capital. At the current pace, we risk running out of both.

The Brundtland Commission says that the world needs "environmentally sustainable development" - that is, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Canada strongly supports the Brundtland ethic. We called for the Commission, generously funded it, supported its work throughout and now commit ourselves to action.

This document outlines the strategies Canada is following to promote sustainable development both at home and abroad. Much remains to be done, but we have begun. The task ahead is to build on these beginnings, not only for ourselves but also for other citizens of the world and, indeed, for citizens yet unborn.

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2. Toronto, Regional Industrial Expansion photo, Rudi Von Tiedemann.

THE CANADIAN SETTING

Canada is favoured among the nations of the world. Its small but industrious and well-educated population lives on a vast land mass, amidst abundant renewable and non-renewable resources and a generous share of the planet's fauna and flora. This natural heritage has deeply influenced Canadians' perceptions of themselves and the world.

Canada's economic growth has been impressive. In its 120 years as a nation, it has grown from an under-developed and sparsely populated colony to become one of the most secure and prosperous countries in the world. Although ingenuity and innovation have been important in Canada's rise to maturity, it has been its environmental wealth - the bounty of natural resources - that has provided the real capital for growth.

Canadians are increasingly recognizing, however, that their economic growth has had an ecological price. The natural assets of soils, air, water, forests, wildlife and fish have been depleted to pay for the growth. Public opinion polls show that Canadians are more concerned than ever before about their environment. They realize that, too often in the past, short-term economic growth has been achieved at the cost of a depreciation of the country's environmental capital.

The economic consequences of short-sightedness are now all too real. The degradation of Canada's freshwater has become so serious that the Inquiry on Federal Water Policy has stated that sweeping changes in public and private water management are necessary to prevent a water crisis in the coming decade.

The Standing Senate Committee on Agriculture, Fisheries and Forestry has concluded in its report on soil conservation, Soil at Risk, that Canada is facing the most serious agricultural crisis in its history.

Acid rain resulting from industrial emissions in both Canada and the United States is already putting at risk about eight per cent of our Gross National Product. Its economic impact is felt primarily on the fishery, tourism, agriculture and forestry sectors.

While it is increasingly evident to Canadians that economic growth and environmental protection are interde-pendent, decision makers in governments and in the private sector have been slow to understand and to act on that understanding.

Canadians now accept that sound environmental policy is essential to a productive economy. The 1985 report of the Royal Commission on the Economic Union and Development Prospects for Canada (the Macdonald Commission) called for the integration of environ-mental factors in decisions on economic development in resource-based sectors. Now, the World Commission repeats this call at the global level. The chal-lenge facing Canadians, their govern-ments, industries and scientists, is to translate these calls into action.

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3. Beaufort Sea, N.W.T., National Film Board, Mike Beedell.

MECHANISMS FOR SUSTAINABLE DEVELOPMENT

> The common theme throughout this strategy for sustainable development is the need to integrate economic and ecological considerations in decision-making.
>
> World Commission on Environment and Development

The challenge for Canada is this: in order to keep living in the manner to which we have become accustomed, Canadians must make changes. We can no longer afford to wait for evidence of environmental degradation before mobilizing the resources necessary to correct the damage. That method is both costly and ineffective. It is fragmented and, therefore, expensive to the private sector; it is incremental and means that damage is sometimes irreversible and opportunities for future generations are lost forever. Most important, however, remedial approaches have left Canadians with a legacy of ecological mis-management and economic under-achievement.

Clearly, the remedial approach to environmental issues is not enough. It is merely crisis management in response to specific problems; it does not go back to basic causes - causes that may originate in industrial policies, conflicting resource development strategies or society's attitudes. In the short term, many actions meant to ameliorate environmental damage give the appearance of success. But in the long run, success proves ephemeral as the cause of the problem continues to perpetuate the crisis.

Anticipating and preventing environmental damage will require a sharply different approach, one that makes the prevention of environmental and, therefore, economic mismanagement the responsibility not just of environmental agencies but of all members of society. Scientists, governmental decision makers, environmentalists, industrial developers, economists, consumers are all shareholders in a global future and must recognize their responsibilities. Each must be committed to the sustainability of life on the planet and of the earth's ecosystems as the overriding goal of economic development.

The Government of Canada's strategy is to anticipate and prevent environmental degradation by encouraging institutional change, demonstrating leadership and improving the information basis on which decisions are made. This section discusses the key mechanisms that are required to implement this strategy.

Institutions

Environmentally sustainable economic development cannot be attained without significant changes in how nations plan and direct their economic initiatives. This requirement makes it a challenging goal, particularly for Canada, because responsibility for environmental and economic matters is fragmented between and within the federal and the twelve provincial and territorial governments. The fragmentation has led to different approaches in various economic sectors and political jurisdictions. It has also presented opportunities for a level of co-operation among governments that is uniquely Canadian.

A national forum of ministers of environment and natural resources in the provincial and federal governments, the Canadian Council of Resource and Environment Ministers (CCREM), is an important example of a Canadian

institutional response to the constitutional division of powers over the environment. Acting as equal partners, ministers use the Council to co-ordinate federal and provincial policies, to resolve inter-jurisdictional problems, to co-ordinate action on national issues and to exchange information. CCREM is vital to the successful sharing, on a national basis, of the responsibility for environmental health.

In October 1986, CCREM became the basis for the creation of a remarkable response to the Brundtland Commission - the National Task Force on Environment and Economy. Bringing together for the first time federal, provincial and territorial ministers of environment and renewable resources, senior executives of Canadian corporations, delegates from environmental advocacy organizations and a representative of academia, the Task Force was given the mandate of recommending how to foster and promote environmentally sound economic development in Canada.

The Task Force issued its report in September 1987, recommending to CCREM 36 actions to be taken by governments, industry, trade associations and environmental organizations. The recommendations are wide-ranging: they cover new processes for decision making and planning; tools and techniques to assist in better understanding the links between the environment and the economy; leadership in government and industry; "conservation strategies" in every Canadian jurisdiction; improved environmental education in the schools; environmental codes of practice in industry; and continued and strengthened roles in the international movement to integrate environmental protection and economic development.

One of the most important of the Task Force recommendations proposes a new co-operative initiative to integrate economic and environmental planning. "Round Tables on Environment and Development" would be established to provide a permanent forum for senior decision makers in Canada, in every province and territory and at the national level, to discuss and work towards a consensus on the fundamental issue of sustainable development.

Another key recommendation concerns the development of effective and co-ordinated conservation strategies across Canada. As frameworks for the judicious use of renewable resources, conservation strategies are blueprints for the sustainable economic development of renewable resources. Prince Edward Island, a province whose future economic health relies heavily on its natural resource assets, has already completed and is now implementing its provincial conservation strategy. The development of strategies in Yukon and the Northwest Territories is also well advanced. In recognition of the complexities of the development process, the Task Force has proposed that progress nation-wide be reviewed at a National Conference on Sustainable Development in 1989 or 1990.

In addition, the Task Force has recommended that:

- Cabinet and major government economic development documents be required to demonstrate that they promote environmentally sound economic development;

- individual companies adopt and implement environmental principles and policy guidelines, and special efforts be made by industry and trade associations to encourage small and medium-sized businesses

to adopt such principles and guidelines;

- a major program to promote public understanding of the importance of sustainable development be launched, culminating in the designation of 1989 or 1990 as the Year of the Environment in Canada.

The Report of the National Task Force on Environment and Economy represents an important breakthrough in the way Canadians perceive the links between their environment and their economy. Representing the unanimous views of its authors, the report demonstrates that a domestic consensus is emerging on the need to consider the environmental dimensions of development at the same time as the economic, social and political dimensions, on the same agendas and within the same institutions.

Committed Leadership

Canadians are looking to the leaders in government and industry for a commitment to ensuring a secure and healthy environment. They expect their governments to act responsibly as trustees of the resources that are passed from generation to generation. Committed leadership is an essential component in promoting sustainable economic development in Canada.

In July 1987, the federal and British Columbia governments demonstrated leadership in their decision on South Moresby. They agreed to set aside for posterity an area valued highly by both the Canadian forest industry and environmentalists alike.

By agreeing to establish a national park reserve and a national marine park reserve in the South Moresby area of the Queen Charlotte Islands off Canada's west coast, the governments showed a readiness to face their responsibilities for the stewardship of the nation's natural resource assets.

The proposed park reserve consists of 138 islands covering 1450 square kilometres. It contains some of the last virgin rain forests in Canada, with stands of old-growth trees as large as any in North America. With at least 39 plant and animal species unique in the world, South Moresby has been described as "the Canadian Galapagos." The Queen Charlotte Islands are also the home of the Haida nation. Their rich cultural heritage, recognized by UNESCO's designation of the village of Ninstints as a World Heritage Site, is as much a part of what makes South Moresby unique as the wilderness itself.

The high economic value of the timber contained in the rain forests on the islands created for the two governments and for the forest industry a difficult trade-off between short-term and long-term interests and between regional and national values. Under the agreement, forest interests will be compensated and a $50-million Queen Charlotte Islands Regional Development Fund will be created to diversify the economy of the archipelago.

Increased Knowledge

Successful anticipation of future problems requires an ability to forecast the possible consequences of a given action. In order to include environmental values in economic decision making, governments and the marketplace need a better base of information upon which to form their judgements.

Unfortunately, national and global accounting systems have permitted almost every sector in society to pass

on environmental costs to other groups, other countries and other generations. The World Commission report has rightly called these antiquated practices to account.

As a first step in promoting more informed decision making, Canada released in 1986 a report on the State of the Environment. The report provides Canadians with an overview of environmental conditions and trends across the country. It will be updated every five years and supplemented by other analyses of particular environment issues. By providing reliable data on the Canadian environment, these reports will eventually help to make decision makers in government and industry more accountable for the environmental consequences of their actions.

Several other countries are also developing a more complete and integrated approach to the collection of environmental data and publishing state of the environment reports. The Organization for Economic Co-operation and Development (OECD) has produced a compendium of environmental data, and the United Nations Environmental Programme (UNEP) has developed the Global Environmental Monitoring System (GEMS), another valuable international data base.

Environmental reporting, however, is only a first step towards more informed decision making. Ultimately, the National Accounts will be required to present a more comprehensive picture of the national well-being by incorporating natural resource or environmental accounting systems.

In response to the WCED's call to better anticipate and prevent environmental problems, Canada will host in Toronto, in June 1988, an international conference on The Changing Atmosphere: Implications for Global Security. This conference will examine the ability of the physical and social sciences to forecast global atmospheric changes and to provide scenarios of the social and economic impacts of projected changes. It will conclude with strategies and plans for improving nations' abilities to anticipate and deal with projected change.

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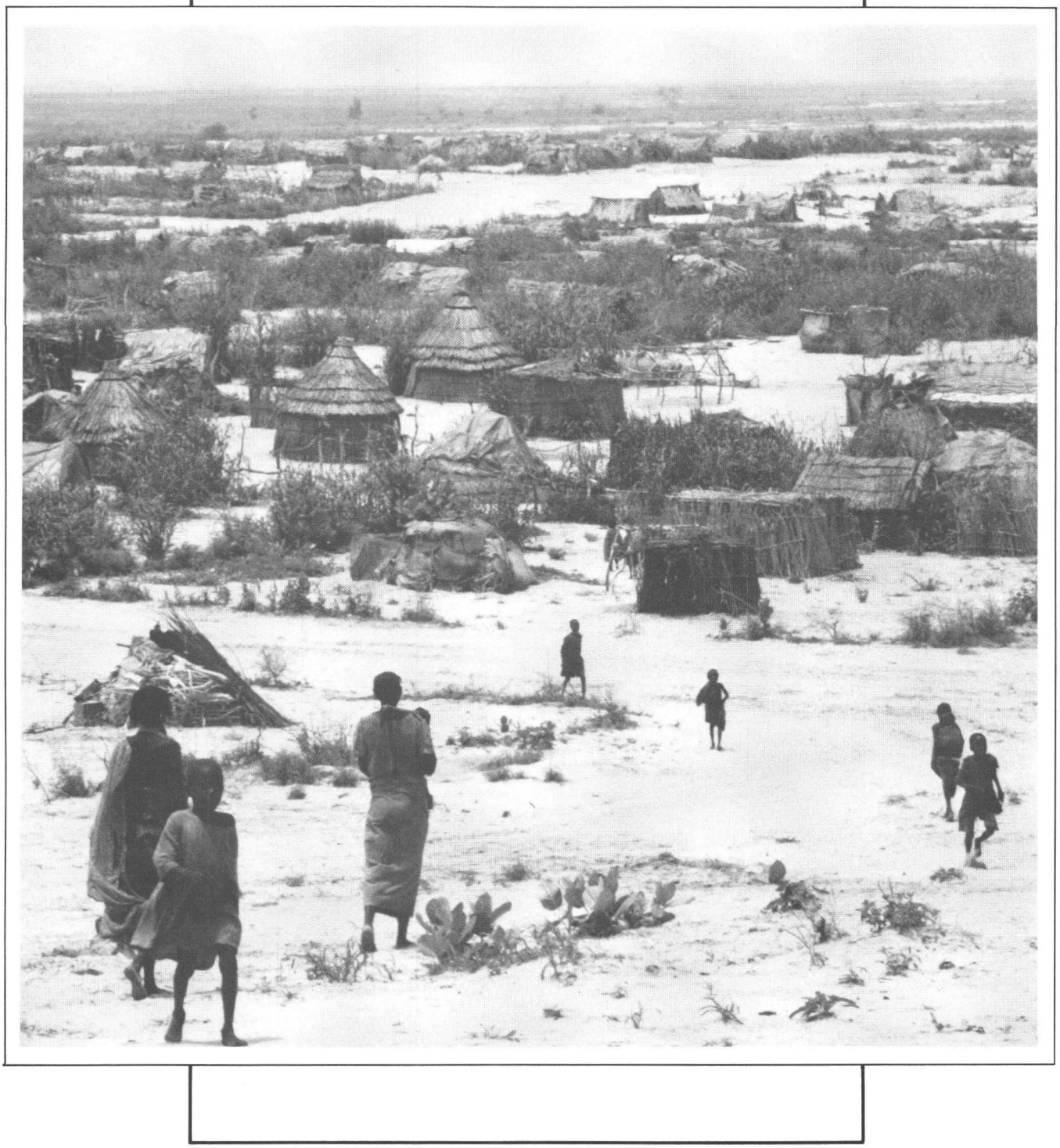

4. Sudan, C.I.D.A. photo, David Barbour.

MANAGING SHARED RESOURCES

> There is a growing need for effective international cooperation to manage ecological and economic interdependence.
>
> (World Commission on Environment and Development)

One prerequisite to global sustainable development is a stronger commitment to international co-operation. The world's environmental problems are greater than the sum of those in each country and cannot be resolved by the actions of any nation alone. Ecosystems extend across international boundaries, and major environmental problems, such as damage to the ozone layer and the greenhouse effect caused by carbon dioxide emissions from burning fossil fuels, are truly global in both cause and effect. Similarly, individual national economies have evolved and merged into regional economies and, indeed, into an interdependent global economy.

Actions and conditions in one jurisdiction often affect the social and economic well-being of another. For these reasons, Canada has played an important role in international co-operation on environmental issues. It is a strong supporter of the World Commission on Environment and Development and was instrumental in its creation, contributing $1 million of the Commission's working budget.

Canada supports the World Commission's recommendation that environmental protection and sustainable development be made an integral part of the mandates of all relevant international agencies. It also shares with the World Commission a conviction that global sustainable economic development can be achieved only by nations working co-operatively for a common future. This is true for shared resources such as the Great Lakes and especially so for resources held in common, such as the atmosphere and the oceans, which fall largely outside national jurisdictions.

The Atmosphere

The atmosphere, the global common most vulnerable to development, is one that we all share. Through the millenia of earth's history, its composition has been uniquely suited to life.

Now, human activities are causing major atmospheric changes. Expanding energy use and resource exploitation are radically altering its chemical composition and thereby the basic physical character of the global climate.

Such changes, unprecedented in human history, have major implications for all life on this planet. They provoke changes to agro-ecosystems, forests, water resources, energy, transportation, and global and national economies. The mitigation or prevention of these effects is vitally important to future global security. The development and implementation of feasible and effective policies for the protection of the atmosphere are matters of extreme urgency: our time to act is short.

On 14-16 September in Montreal, Canada hosted a diplomatic conference at which 24 countries and the European Economic Community signed a Protocol on Substances that Deplete the Ozone Layer. The Montreal Protocol will come into effect on 1 January, 1989, provided that at least 11 countries, accounting for two-thirds of the global consumption of halons and chlorofluoro-

carbons (CFCs), have ratified it. The protocol will then freeze the production and consumption of CFCs at 1986 levels and compel a 50-per-cent reduction in their atmospheric release by 1999. Three years after it comes into force, it will freeze the consumption of halons at 1986 levels, and will require a later review of the need for further reductions. The proposed Canadian Environmental Protection Act now before Parliament will provide the legal authority necessary to meet Canada's obligations under the protocol.

The Montreal Protocol is the first truly global environmental legislation to protect the atmosphere. It is also noteworthy for demonstrating the willingness of the international community to anticipate and prevent an environmental problem, rather than simply reacting after the fact and coping with the consequences.

Acid rain is an equally pressing issue concerning atmospheric pollution. It affects mostly the regions of the developed world: eastern and western Europe and the eastern parts of Canada and the United States. Scientists have established that the moderately sensitive Canadian environment cannot sustain more than 20 kilograms per hectare per year of wet sulphate deposition. In eastern Canada, the health of more than 300,000 lakes is jeopardized, and across the country, the decline of forests is strongly suspected to be a result of it. There also is some evidence that acid rain causes adverse human health effects in sensitive populations. In Europe, forests are severely damaged and built heritage is significantly affected. This is clearly an issue that also requires international co-operation, and some progress has been made towards that end.

Internationally, scientists agree on the causes and effects of sulphur dioxide (SO_2 - the main ingredient in acid rain) on aquatic systems, and some nations have undertaken remedial action. A protocol, developed under the Convention on Long-Range Transboundary Air Pollution, was signed by 21 countries in Helsinki in 1985. The signatories agreed to a 30-per-cent reduction of their national annual sulphur emissions or their transboundary fluxes by 1993. Canada took a leading role in preparing and promoting the adoption of the protocol.

The Government of Canada, has instituted a federal-provincial program to cut SO_2 emissions to 2.3 million tonnes by 1994, thereby reducing acid rain damage within its own borders and reducing the flow of SO_2 from Canada to the eastern United States by about 50 per cent of the 1980 level. Agreements have been signed with Manitoba, Ontario, Quebec, Prince Edward Island, Newfoundland and New Brunswick, and one with Nova Scotia is expected shortly. More than half of the acid deposition in eastern Canada, however, originates from emissions in the United States. Canada, therefore, will continue to seek a bilateral accord specifying emission-reduction targets that will cut the flow of SO_2 from the United States to eastern Canada by 50 per cent of 1980 levels.

Canada is also putting in place strong controls to reduce the emission of nitrogen oxide (NO_x), another contributor to acid rain. These controls will reduce NO_x emissions from mobile sources by up to 45 per cent by the year 2000, thus improving air quality and reducing acid rain and regional smog (ozone). Canada is a member of an international working group trying to develop a consensus for a multilateral agreement on NO_x control.

Because the atmosphere transcends all national boundaries, the actions of one or a few nations can affect the global community. For this reason, not only is there a need for an international commitment to co-operation in understanding and responding to concerns about changes in the atmosphere, but there must also be a standard of conduct by which nations can measure their responsibilities and rights. Just as the Law of the Sea was developed to help nations to manage the oceans co-operatively, so a "Law of the Air" is required to resolve the atmospheric issues confronting the world today.

The Oceans

Concerns already exist about the international seas, and new ones continue to arise. Prominent among emerging issues are the lack of a unified approach to the conservation of whales, the consequences of the use of drift nets in the Pacific Ocean and the disposal of radioactive and other highly toxic wastes at sea.

The oceans constitute a global heritage that must be preserved for future generations. The World Commission declared that "sustainable development, if not survival itself, depends on significant advances in the management of the oceans." The underlying unity of the oceans requires co-operative international action and Canada is, therefore, an active proponent of conventions that foster international stewardship of the oceans, such as the Law of the Sea and the London Dumping Convention.

International co-operation in the prevention, control and monitoring of oceanic pollution is already promoted by several organizations to which Canada belongs, such as the Intergovernmental Oceanographic Commission (IOC), the United Nations Environment Programme (UNEP), the International Maritime Organization (IMO), and the International Council for the Exploration of the Sea (ICES). Canada is active in the international scientific research effort needed to assess emerging problems, such as the interactions between the oceans and the atmosphere in the context of climatic change.

As a country with a large, exclusive economic zone and the longest coastline in the world, Canada has a special responsibility to ensure that its policies encourage the sustainable development of the oceans. Through a combination of various measures that include research programs, environmental impact assessments, the regulation of marine transportation and the development of an Arctic Marine Conservation Strategy that will soon be announced, the federal government advances the development of Canada's marine resources while striving to maintain the integrity of the marine environment.

The government's commitment to sustainability was reaffirmed in September 1987 when the Honourable Tom Siddon, Minister of Fisheries and Oceans, announced the Canadian Oceans Strategy, which is intended to maximize the economic, scientific and sovereignty benefits Canada derives from the Pacific, Atlantic, and Arctic oceans. The government will enhance Canada's ocean science and technology capabilities, establish an enabling legal framework, conserve and manage living resources, promote environmentally sound development of non-living resources, stimulate greater national awareness of the oceans, and foster vigorous, competitive oceanic industries.

Genetic Diversity

The preservation of genetic diversity is important on economic, scientific, aesthetic, ethical and cultural grounds. Internationally, Canada adheres to several conventions designed to protect particular species and has signed treaties with its neighbours to manage joint wildlife populations. In 1981, Canada acceded to the Ramsar Convention on Wetlands of International Importance and has listed 28 sites, which cover a land area greater than the listed sites of any other country. The Canadian government has also contributed to a two-year program co-ordinated by the International Waterfowl Research Bureau to list and evaluate major wetlands in Latin America.

As signatories to the 1973 Convention on International Trade in Endangered Species of Flora and Fauna (CITES), Canada and 94 other countries regulate international trade in thousands of animal and plant species. The sale of designated living specimens, and products obtained from them, is controlled through a permit system whose strictness varies in accordance with the threat to the species. About 150 Canadian species are subject to the system. Canada hosted the sixth biennial CITES meeting in Ottawa in July 1987 and is committed to the organization's future.

The conservation of genetic diversity entails much more than simply rescuing threatened species: it requires that an abundance of wildlife be secured in the right places, both to ensure that the social and economic benefits of wildlife are sustained and to maintain the health of our ecosystems. In 1986, Canada and the United States signed the $1.5-billion North American Waterfowl Management Plan to restore and enhance waterfowl populations. The plan, which is a milestone in multi-level government and private sector co-operation, aims principally to conserve habitat beneficial to both wildlife and agricultural interests. Once the plan is implemented fully, enhanced waterfowl populations will make a valuable economic contribution to all regions of North America.

In addition, Canada works with the United States in the management of migratory birds and of the Porcupine Caribou Herd, and with the United States, the USSR, Denmark and Norway in the conservation of polar bears. Canada agrees with the World Commission that disappearing species and threatened ecosystems must be recognized as major economic and resource issues and is, therefore, prepared to support international efforts to develop a convention on biological diversity.

The Great Lakes

The Great Lakes are not part of the global commons but, as inland freshwater seas straddling the Canada-U.S. border, they require shared management if they are to be developed in an economic and environmentally sustainable manner.

The institutions and mechanisms to handle resource management and pollution problems in the Great Lakes have been in place since 1909 when the Boundary Waters Treaty was signed. Although the treaty's existence has not prevented the occurrence of environmental problems, it provides some basic principles that guide water use along the Canada-U.S. boundary and serves as a successful model of international co-operation in the management of shared resources.

The organization created under the treaty to advise and make decisions on shared water resources is the International Joint Commission (IJC).

The IJC is composed of six commissioners, three from Canada and three from the United States, who operate collegially, making decisions by majority. This fact, together with the IJC's success in conducting independent technical investigations for the two governments, has made it an effective forum in which Canada and the U.S. can discuss technical issues to help resolve transboundary problems. It has defused potentially sensitive political issues and, in many cases, has defined more precisely the problems faced by both parties.

In 1972, Canada and the United States signed the Great Lakes Water Quality Agreement to deal with water pollution in the Great Lakes, particularly eutrophication in Lake Erie. In 1978, the agreement was renegotiated to address problems of toxic pollution more fully. The IJC monitors existing control measures and has commented on their overall usefulness. The interest of the public has proved a powerful tool for progress in both countries.

The rate of eutrophication in the Great Lakes has been greatly slowed down. The level of toxic chemical contamination, however, has not been as readily reduced. In February 1987, Canada, the United States, New York and Ontario took a step towards reducing such contamination by committing themselves to the Niagara River Toxics Management Plan, which is designed to cut in half, by 1996, discharges of persistent toxic chemicals from both sides of the river.

The IJC is now pursuing a dual-track control strategy. One track requires all Great Lakes jurisdictions to concentrate their efforts, for the present, on 11 critical chemicals designated by the Commission as high-priority pollutants requiring control. The second focuses on scientific research to identify the effects on human health of toxic chemicals detected in the Lakes.

The Great Lakes Water Quality Agreements of 1972 and 1978, the Boundary Waters Treaty of 1909 and the International Joint Commission have proved flexible mechanisms, able to react and change in response to evolving knowledge. The IJC, in particular, because of its technical expertise and record of neutrality, has proved effective in assisting the two countries to deal with complex transboundary environmental pollution questions, a remarkable achievement amongst the world's nations.

Aid and Sustainable Development

Canada supports the World Commission's recommendation that environmental protection and sustainable development be made an integral part of the mandates of all relevant international agencies. For its part, Canada is committed to increasing the environmental share of its development assistance.

Canada recognizes that responsible donor agencies need to move beyond endorsing the need for sustainable development to preparing a plan of affirmative action for the environment. The Canadian International Development Agency (CIDA) has strengthened its efforts to promote sound environmental projects. In June 1986, it introduced systematic measures for assessing the environmental effects of bilateral assistance projects and for including mitigating measures into project design. In addition, CIDA is committed to helping improve the ability of developing countries to manage their own environments. It does so by promoting environmental awareness in those countries, by supporting environmental groups and agencies and the development of environmental

institutions, by funding activities such as the gathering of baseline data, by establishing a mandatory procedure for assessing the environmental impacts of projects, and by supporting programs and projects that enhance the environment.

CIDA's strategy parallels the World Commission's "Alternative Agenda." It focuses on the sources of environmental problems rather than on the effects. It recognizes that developing countries are unlikely to be able to afford the "react-and-cure" policies of the industrialized world but, rather, must look to more effective and efficient preventive strategies. It is designed to be flexible, practical and adaptable to existing realities, while seeking to increase the environmental component of projects over time. CIDA now spends 20 to 25 per cent of its bilateral assistance funds (which amount to more than $900 million annually) on projects designed to improve the management of renewable and non-renewable resources, of conservation and of damage control and rehabilitation.

CIDA also works to strengthen the international environmental programs of multilateral agencies by advocating and supporting their use of environmental assessment policies and procedures.

Most aid agencies in other nations, including the international financial institutions, are moving in the direction suggested by Our Common Future. In particular, the recent steps taken by the World Bank to consider environmental implications when assessing projects' feasibility, is an encouraging step towards realizing sustainable development in the Third World.

ENVIRONMENT AND DEVELOPMENT

5. Peterborough County, Ontario, National Film Board, Ernie Sparks.

Resource-related industries still dominate the Canadian economy. Agriculture, forestry and fisheries are major contributors to commodity trade. Almost a quarter of the Canadian labour force works directly or indirectly in agriculture, fisheries, forestry, trapping, mining and energy. Evidently, the sustainability of our natural resources is vitally important to Canada's continued economic and social well-being.

Canada's resource-based economic activities confront difficult policy issues in the years ahead, ranging from the degradation of soils in agriculture to the need to improve efficiency in energy consumption. But the need to implement economic development strategies that are environmentally sustainable is clearly recognized in the status reports following on agriculture, forestry, fisheries and energy.

Agriculture

The Canadian agri-food sector makes a vitally important contribution to the national economy. Most of this contribution is dependent on a relatively small fraction of the country's total land area - about five per cent. Since 1941, total farmland in Canada has declined steadily. Today, virtually all of the land with agricultural potential is in production and very little margin exists on which to expand production to meet future demands.

The average quality of Canada's farmland for crop production has also declined. Agriculture Canada estimates that the combined effects of soil erosion, acidification, salinization and compaction may cost Canadian farmers as much as $1.4 billion in 1987. On the farm, this degradation results in reduced crop yields and rising production costs. The costs to others sectors of society are also great.

The use of chemicals on the farm and the deposition of topsoil in ditches, streams, and rivers result in sediment damage to inland lakes and waterways, ditch and harbour dredging costs, recreational fishing losses and water treatment costs. Surface and ground water contamination by pesticides and the loss of wetlands and other wildlife habitat are also growing concerns.

The degradation of the resource base is one of a number of important challenges facing Canadian agriculture. To meet these challenges, the federal and provincial governments have collaborated in developing a National Agriculture Strategy. This strategy, which acknowledges that "Soil and water resources must be protected and improved through conservation and development programs, thereby guaranteeing agricultural productivity for future generations," has four principal objectives:

1. To develop and promote agricultural soil and water-use systems that ensure conservation of the soil in the long term, take advantage of development opportunities and are in balance with domestic and world market opportunities.

2. To ensure that the long-term economic viability of rural areas is maintained through proper use of the soil and water resource base.

3. To reduce and control the effects of farm activities on other areas, so that agriculture does not negatively affect other resource users.

4. To make the public more aware of soil, water and environmental issues through educational and awareness programs.

The strategy also calls for improved extension and technical advisory services, more on-site demonstrations of conservation practices, additional research, and improved financial support for farmers to encourage their adoption of conservation technologies. Moreover, it envisages the negotiation of federal-provincial agreements to finance and co-ordinate soil and water programs across the country. The first round of negotiations is now complete and the first of the new soil and water accords is expected to be signed later this year.

Agriculture Canada is reviewing and adjusting soil and water programs in existing agreements, developing proposals for emergency drought responses, scrutinizing the pesticide and fertilizer registration process and developing, in collaboration with the provinces and the private sector, a National Awareness Strategy for soil conservation.

These efforts by the federal and provincial governments have received support from the private sector through the recent establishment of Soil Conservation Canada, an independent, non-governmental body that promotes the conservation of Canada's soil and water resources. This new council, whose membership includes individuals, organizations and government agencies, will foster and monitor the co-ordination of conservation efforts and provide a forum for the discussion of conservation issues.

Forestry

No natural resource is more important to Canada's economic, social and environmental well-being than our forests. Every province benefits from its forests, and, for most, the forest industry is a major factor in their economies.

Although sustained yield has long been a basic tenet of forestry practice, Canada's forestry sector today faces serious difficulties in matters of supply, use, allocations to increasingly diverse demands and the sale of forest products in the international marketplace, upon which much of the sector's development depends. New management approaches will clearly be required to resolve these issues.

A first step towards a new approach was taken in 1979, when CCREM prepared a national strategy to fund forest management. Federal-provincial cost-sharing agreements were developed to accelerate regeneration of logged or naturally destroyed forests and to improve forest productivity by more intensive management. By 1987, agreements representing over $1 billion in commitments were in force in every province to provide for reforestation, intensive forest management, silviculture, access, inventory and planning, industrial development, private woodlots, research, technology transfer, training, administration and public information.

The increased emphasis on sustainable development in the forestry sector is well illustrated by Quebec's new forest policy. Announced in 1985, the policy embodies the principles of the World Conservation Strategy. In particular, it calls for a return to a sustainable

use of forest resources and a commitment to maintaining the productive capacity of the resource base. It incorporates a forest land-use plan, a prescription for appropriate silviculture practices, and guidelines for the protection and use of forest resources.

In order to address the forestry sector's difficulties and opportunities more effectively, the federal and provincial ministers responsible for forestry created, in 1985, the Canadian Council of Forest Ministers. A series of forums sponsored by the council culminated, in July 1987, in a consensus on Canada's first National Forest Sector Strategy.

The new strategy, which is now being considered by all elements of the forest sector for endorsement, is rooted in the World Conservation Strategy and supports the development of provincial and territorial conservation strategies. It makes a commitment to sustainable development, addresses the crucial questions of values and ownership of forest resources, encourages public participation in decision making, seeks to improve the data base upon which decisions are made, and strengthens links with other resource sectors. The Canadian government is committed to implementing the strategy, which will become a key element in Canada's sustainable development of its renewable resources.

Fisheries

Canada was founded in good part because of the rich fishing off the coast of Newfoundland. Canada's lengthy coastline along three major oceans and our significant dependence on marine resources make us a maritime nation. We export more fish than any other country in the world. More than most, we have a vested interest in the sound management and conservation of marine resources. But in a world facing hunger, poverty and rapid population growth, Canada also has a responsibility to ensure that the oceans' potential is realized.

To manage these resources effectively, it is essential that we not only conserve them but also allocate them carefully among competing users. Scientific and management advisory committees counsel the Department of Fisheries and Oceans on detailed regional management plans and on matters related to individual species, including the condition of the stocks, allocation of the resource among fishermen, methods of harvesting, research needs and techniques, licensing policy and economic analyses of fishing enterprises. In addition, Canada continues to increase surveillance and enforcement measures to reduce overfishing, illegal fishing and the inaccurate reporting of undersized fish catches, and is examining the feasibility of expanding the allocation system to rationalize the fishing fleet further and to reduce pressures on fish stocks.

A national policy for managing fish habitat was instituted in 1986, under the federal Fisheries Act. Its long-term objective is an overall net increase in the productive capacity of fish habitat, to be achieved through conservation, restoration and the development of habitats for aquatic plants, fish, shellfish, crustaceans and marine animals in general. At present, fish habitat is most threatened in freshwaters, estuaries and coastal areas; considerable damage has already occurred and the risk of future damage is high. With regard to continental shelf and nearshore species, progress has been made in rehabilitating and maintaining the fish stocks since the application of the 200-mile Extended Jurisdiction Zone.

The world's oceans, however, are an interconnected system in which events in far-off international waters determine the survival or abundance of domestic stocks. Other factors, such as the migration into international waters of fish that spawn in national rivers, pollution, and the influence of the oceans on world climatic trends, emphasize the critical need for international co-operation to resolve problems affecting the marine environment and to preserve its productivity.

Improved international arrangements are needed for scientific co-operation, data sharing, stock management, and the development of cohesive habitat and environmental strategies. International forums must be sought to focus attention on the problems of maintaining ocean productivity. At present, Canada is a member of the Northwest Atlantic Fisheries Organization, which works to ensure the sound management of fish stocks east of, or straddling, the 200-mile limit. Canada also belongs to other international organizations that deal with similar stock management issues in the Pacific. While encouraging the broadening of the scope of existing organizations, Canada also is actively promoting an international organization to address needs relating to the North Pacific Ocean and the Bering Sea. We believe that, to protect marine resources, it is necessary for nations not only to exchange information and collaborate on projects, but also to strive to include a global perspective in their planning, especially in activities related to environmental degradation and resource use.

In light of the pressing need to develop new sources of food to cope with the growing world population, Canada recognizes that both aquaculture and the exploitation of underutilized species must be examined closely.

Aquaculture is an emerging field in Canada, identifying alternative and more intensive methods of cultivating finfish, shellfish, crustaceans and marine plants. Initiatives are in progress both to modify some existing segments of freshwater and marine fisheries and to create new business opportunities, in a manner that is complementary to the protection and conservation of natural fisheries resources.

Energy

The WCED points out that "choosing an energy strategy inevitably means choosing an environmental strategy." Energy and the environment are so fundamentally linked that the search for environmentally sound energy supplies will become a major focus of Canada's energy policy in the coming decade. How to integrate environmental considerations and values into decision making on energy is one of the key themes identified in "Energy Options - A Canadian Dialogue," a consultation process that the Honourable Marcel Masse, Minister of Energy, Mines and Resources, launched in April 1987 to assess Canada's energy prospects and options into the twenty-first century. As a first step towards ensuring that environmental factors are given full weight in the development of energy policy, Mr. Masse and the Honourable Tom McMillan, Minister of the Environment, have created a Ministerial Committee on Energy and the Environment.

The efficient use of energy benefits all segments of Canadian society and has significantly fewer adverse environmental effects than the further exploitation of conventional energy resources such as hydro, oil, gas, coal and nuclear-generated electricity. Practising energy efficiency is one way in which all Canadians can help minimize the environmental costs of

energy use. Canadian energy conservation incentive programs, coupled with consumer responses to price fluctuations and technological changes, have resulted in substantial energy efficiency and oil-substitution improvements since OPEC (Organization of Petroleum Exporting Countries) first raised its oil prices dramatically in 1973. Between 1973 and 1985, the ratio of total primary energy requirements to gross domestic product (GDP) decreased by 16 per cent. Positive environmental effects have accompanied many of these conservation and substitution initiatives. For example, Canadian consumers have prevented the emission of 385,000 tonnes of sulphur dioxide into the atmosphere by consuming 58 million fewer barrels of oil in 1985 than in 1973.

Energy-efficient technological innovations have also substantially reduced the emission of noxious gases into the environment. More efficient automobiles and combustion and heating systems, and conversions from oil and coal to natural gas, solar energy and electricity, have all helped to improve the quality of the environment. Nevertheless, much more could be achieved. It is estimated that major energy users could reduce their current energy demand by 20 to 50 per cent economically and, in many cases, with virtually off-the-shelf technology.

The federal government's work in developing alternative fuels assists in solving another of the environmental issues highlighted by the WCED: urban and industrial air pollution. The increasing use, over the next decade, of transportation fuels such as propane and natural gas will help to alleviate problems caused by vehicle emissions. The Department of Energy, Mines and Resources is currently studying the technical feasibility of using alcohol fuels, such as methanol, which could help, in the longer term, to reduce air pollution in North American cities.

Canada is also investigating the development of advanced coal-combustion technologies, such as fluidized-bed combustion and coal preparation techniques, that will allow the removal of sulphur before its emission into the atmosphere. These new technologies may one day complement those now being applied to achieve the environmental objectives of the Canadian acid rain abatement program.

As conventional energy sources are depleted, Canada will rely increasingly on renewable forms, such as wind, solar and tidal energy, and fuel derived from the biomass and from waste products. Most of these options are more environmentally acceptable than conventional sources, but they cannot provide the large-scale, continuous power supply that users frequently require. Although their potential is significant, new technology (particularly in energy storage) and improved economics will be required to overcome the obstacles to their broader implementation.

Canada's progress in achieving the cleaner, safer, and more efficient use of energy is encouraging. Much remains to be done, however, to avoid long-term, cumulative environmental damage. Energy efficiency must be further improved, environmental values must be more accurately reflected in the market pricing system, and environmental and economic costs must be minimized through more refined processes and technologies. Ultimately, the challenge ahead must include integrating energy and environmental considerations in non-energy sectors such as housing, transportation and consumer goods. The environmental problems associated with energy production and consumption, and their solutions, begin and end with the broad choices that we, as a society, make in all aspects of our lives.

ENVIRONMENT AND DEVELOPMENT

6. Kitsalano Beach, B.C., National Film Board, M. Zelinski.

THE CHALLENGES AHEAD

> The Commission's hope for the future is conditional on decisive political action now to begin managing environmental resources to ensure both sustainable human progress and human survival. We are not forecasting a future: we are serving a notice - an urgent notice based on the latest and best scientific evidence - that the time has come to take the decisions needed to secure the resources to sustain this and coming generations.
>
> (World Commission on Environment and Development)

The human species is living in times of great environmental and economic stress, with no clear path mapped out to provide direction. The road travelled in the past no longer promises a prosperous and stable future. Fundamental changes are needed in many of our current practices and in the ways in which we manage our affairs.

Partly as a result of the work of the World Commission on Environment and Development and the debate it has triggered in Canada through the work of the National Task Force on Environment and Economy, a national consensus is beginning to emerge on the attitudinal and institutional changes required to implement sustainable development.

The first steps have been taken but much remains to be done. As a wealthy and respected member of the world community, Canada must be generous with its financial, human and moral support for less advantaged nations. As a country with environmental problems of its own, Canada must be forthright and exemplary in addressing its domestic concerns. As a major trading nation with a relatively open economy, Canada must conduct its affairs within externally imposed constraints while finding ways to promote its domestic and global objectives. The task is not easy, nor is it short-term in nature. It is now up to all Canadians to work together and with other nations to achieve environmental security for our common future.