



CHAPTER 1: THE ECOSYSTEM APPROACH

THE GREATER TORONTO REGION IS, BOTH LITERALLY AND FIGURATIVELY, AT A WATERSHED. NOT LONG AGO, SOCIETY BELIEVED THAT THE ENVIRONMENT WAS ENDLESSLY ABLE TO ABSORB THE DETRITUS OF A MODERN, INDUSTRIAL-BASED ECONOMY. MORE RECENTLY, THE ASSUMPTION WAS THAT THE ENVIRONMENT AND THE ECONOMY WERE INEVITABLY OPPOSED: OPTING FOR ONE MEANT DAMAGING THE OTHER.

TODAY, HOWEVER, IT IS CLEAR THAT THE TWO, RATHER THAN BEING MUTUALLY EXCLUSIVE, ARE MUTUALLY DEPENDENT: A GOOD QUALITY OF LIFE AND ECONOMIC DEVELOPMENT CANNOT BE SUSTAINED IN AN ECOLOGICALLY DETERIORATING ENVIRONMENT.

THE WAY WE CHOOSE TO TREAT THE GREATER TORONTO WATERFRONT IS CRUCIAL. IF GOVERNMENTS AND INDIVIDUALS RECOGNIZE — AND ACT ON — THE NEED TO RESOLVE PAST ENVIRONMENTAL PROBLEMS AND FORGE STRATEGIES TO PROTECT THE WATERFRONT NOW AND IN THE FUTURE, WE WILL, INDEED, HAVE SUCCESSFULLY CROSSED A WATERSHED.

— WATERSHED 1990

A REGION UNDER STRESS

So ended *Watershed*, the second interim report of the Royal Commission on the Future of the Toronto Waterfront. These conclusions — that the Greater Toronto waterfront is inextricably linked to its watersheds, and that environmental, social, and economic conditions in this region are highly stressed, and are mutually dependent — provide the foundation for this final report.

The waterfront, the place where land and water meet, has always been a key determinant in the location of urban settlements

on the shores of Lake Ontario, starting with small forts and villages like Fort York, Fort Rouillé, and Port Hope. Gradually these grew into larger towns and cities, and are now part of the Greater Toronto region.

For thousands of years, aboriginal people created villages along the waterfront to take advantage of the wildlife of the lake and estuarine wetlands. When Europeans arrived in the 18th and 19th centuries, they were attracted by a safe harbour (now Toronto Harbour), the ready supplies of fresh water in Lake Ontario, and the abundant fish and waterfowl in the waters and wetlands. The major river valleys, like the

Humber and the Don, provided a transportation route into the hinterlands. The forests yielded game and timber, and, once cleared, fertile soils for farming.

Today, the Greater Toronto region is still dependent on the waterfront, although for different reasons.

While water transportation no longer dominates, the lake still provides fresh water for millions of residents, and receives our wastewaters. Many recreational amenities, such as boating, shoreline parks, fishing, swimming, and nature appreciation, depend directly on the waterfront location.

Among other reasons for the waterfront's importance are its neighbourhoods, home to many people. Moreover, the lake

provides abundant cold water to meet the cooling requirements of power stations. And, like waterfronts around the world, the Greater Toronto waterfront is a special *place* that draws people, fascinates them, satisfies their deep human need for contact with

water and wildlife, and provides a constantly changing panorama of views, weather, and moods.

Just as the people of the Greater Toronto region are linked to their waterfront, so the health

and life of the waterfront depend on the region. Ecologically, the waterfront is tied to its watersheds by the many rivers and creeks that flow into it, and the movements of wildlife and flows of stormwater along the valleys. Although there are many distinctive

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neighbourhoods on the waterfront, to a great extent their future depends on regional and local municipal policies on such matters as affordable housing, community services, transit, parks, and the like. Similarly, the decline and renewal of different economic activities on the waterfront are influenced by regional trends in manufacturing, services, and commerce.

Therefore waterfront-related strategies, plans, and programs to improve the quality of the environment, encourage community development or foster appropriate economic activities cannot be implemented in isolation: they must be undertaken in a regional context that recognizes the interdependence of the region and its waterfront, as well as the special qualities and characteristics of the waterfront itself.

It is appropriate therefore to begin this final report on the future of the Toronto waterfront by sketching some of the key environmental, social, and economic issues that must be faced in the Greater Toronto region, and by examining how they relate to the waterfront.

The geographic area considered in this overview is defined on the basis of natural boundaries, rather than political jurisdictions. This biological region, or "bioregion", comprises the major basin formed by the Niagara Escarpment on the west, the Oak Ridges Moraine to the north and east, and the Lake Ontario shoreline to the south. It is described by its natural characteristics: landforms, the lake, and the watersheds.

It should be noted that the Commission's 1990 *Watershed* report included a map

of the Greater Toronto bioregion, based on provincial information about the Greater

Toronto Area (GTA), which is defined as the regions of Halton, Peel, York, Metropolitan Toronto, and Durham. However, that does not cover

the full extent of the bioregion, which extends into Simcoe and Dufferin counties in the northwest, and into Northumberland County as far as the Trent River in the east.

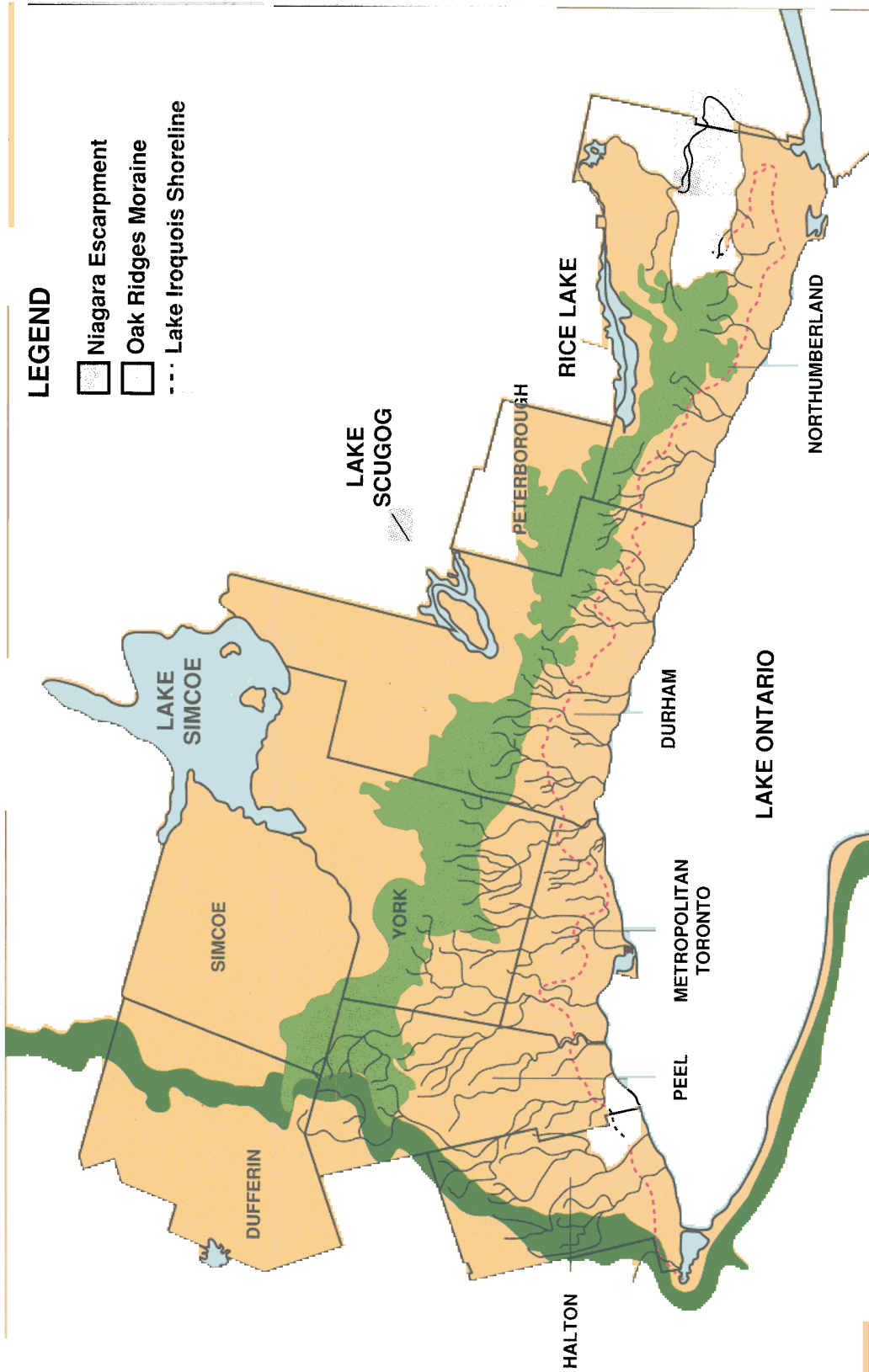
Information about the economic, environmental, and social conditions in the bioregion is currently collected on the basis of politically defined units, such as local municipalities, regions, the Greater Toronto Area or Statistics Canada's Toronto Census Metropolitan Area (CMA). Therefore, a great deal of what follows is based on information about the GTA or the CMA, both of which include the region's major urban centres.

Just as the people of the Greater Toronto region are linked to their waterfront, so the health and life of the waterfront depend on the region.

For many people, the shoreline exerts an almost mysterious pull: it still offers a sense of country in our towns and cities. A walk with the dog along the water's edge, skipping stones over the lake's surface, finding a unique piece of driftwood, riding a bicycle on a trail through tall grass, or fishing off some rocks or a pier: these are just some of the ways people use the waterfront.

Royal Commission on the Future of the Toronto Waterfront. Shoreline Regeneration Work Group. 1991. *Shoreline regeneration for the Greater Toronto bioregion*. Toronto: Royal Commission on the Future of the Toronto Waterfront.

Map 1.1 Greater Toronto bioregion



The Greater Toronto bioregion has important natural assets: beaches, wetlands, and bluffs along the waterfront; deep, wooded river valleys; the moraine's rolling, pastoral hills; majestic rock cliffs along the Niagara Escarpment; cool trout streams; fertile soils for agriculture; and more. Despite these blessings, there are many signs of environmental, social, and economic stress in the region. A better understanding of these stresses helps in devising strategies to deal with existing problems, and to meet future needs.

The following is a brief description of some of the challenges facing the Greater Toronto bioregion today, based on a more detailed discussion in the *Watershed* report.

POPULATION AND SETTLEMENT

The single greatest challenge facing the Greater Toronto region is probably the number of people who live here, and the expected high rate of population growth. The GTA has more than 40 per cent of Ontario's population (almost four million people) living on one per cent of the province's land base. Approximately 10 per cent of those live along the waterfront.

The GTA population has grown rapidly — from a pre-war population of about one million — and is expected to continue doing so, reaching about six million by 2021. That kind of growth places a tremendous strain on all sectors of society, trying to cope with the need to provide such basic necessities as housing, jobs, and health care, and to take care of services including transportation, waste disposal, and sewage treatment. It also threatens the quality of life that attracted many people in the first place: green spaces, recreational

opportunities, clean air and water, a relatively safe city, good economic prospects, diverse amenities, and the like.

Even more important than the actual number of people living in the bioregion, however, is the pattern of settlement, and the way in which development occurs. The City of Toronto, and the centres of many other cities and towns in the bioregion, started as compact settlements kept compact by limitations of transportation by foot and horse. With the advent of streetcars, a more spacious form of settlement spread along early transit lines.

Most of the built-up parts of the bioregion, however, were developed for a society with a high degree of car ownership. As a result, there is low-density sprawl, inefficient in its use of land, energy, and other resources.

Not only have settlement patterns encouraged inefficiencies, they have tended to ignore existing natural features and processes (e.g., significant natural habitats, hydrological systems, landforms), as well as cultural and heritage values. The results are degraded environments and a blandness that comes from blurring the distinct attributes of different places.

GREENSPACE

Many of the green spaces in the Greater Toronto bioregion — particularly those of the Oak Ridges Moraine, Lake Ontario waterfront, and river valleys — have been harmed and fragmented, and are further threatened by patterns of development that ignore natural features and processes.

More than half the original wetlands in the bioregion have been drained for farms, bulldozed for housing or infilled to provide land for industry or transportation.

Most of the remaining wetlands have been debased by upstream pollution or surrounding land uses, and are subject to intense pressure from increased urbanization. Waterfront marshes at the mouths of rivers and creeks are at particular risk, because they are susceptible to changes in the flows, quality, and temperature of water from the watersheds, as well as to waterfront development, such as conversions to harbours and marinas.

Because of widespread forest clearing in Ontario in the past 200 years, only one-fifth of the GTA remains forest-covered today — and that includes parks, Crown land, conservation areas, and private woodlots. There is disturbing evidence that the trees still remaining — like their urban cousins — are under significant stress from drought, salt, and other pollutants.

WILDLIFE

Ever since the first European settlement, there has been a dramatic decrease in the diversity and abundance of wildlife in the bioregion, and remaining wildlife populations are under stress. The primary causes have been, and continue to be: loss, alteration, and fragmentation of habitat; fishing and hunting; pollution of ecosystems by excess nutrients and persistent chemicals; and the introduction of non-native animal and plant species.

As a result of these stresses, some species, like the passenger pigeon, have become extinct. Others, including the timber wolf, black bear, lynx, and elk, are no longer found in this bioregion. An increasing number of species are becoming rare: in the GTA today, there are as many as 114 provincially rare kinds of plants, reptiles, amphibians, mammals, and fish.



Muskrat

WATER SUPPLY

Most residents of the Greater Toronto bioregion get their water from Lake Ontario. However, a large part of York Region, including rapidly growing communities like Aurora and Newmarket, as well as the northern parts of Halton, Peel, and Durham regions, depends primarily on groundwater supplies.

This has caused serious water quantity and quality issues: first, there is evidence that in several areas, aquifers are actually being “mined” — water is being withdrawn faster than it is being naturally replenished. Second, in some areas, groundwater has been contaminated by a variety of sources including agricultural and industrial chemicals, leachate from landfills, road salt (groundwater in the lower Don Valley is as saline as seawater), and inadequate septic systems. Third, groundwater provides about 40 per cent of the water flow in the bioregion’s rivers and streams, making them vulnerable to changes in water flows and purity. All three issues may be critical, limiting future growth in groundwater-dependent regions, unless water is piped from Georgian Bay or Lake Ontario.

Even in the areas supplied by Lake Ontario water, it is becoming evident that we need to reduce total consumption — not

because of any lack of water (there is plenty in the lake), but there are the mounting costs of treating the water before it is used and of treating large volumes of sewage, as well as the impact on the environment of streams, rivers, and the waterfront that comes from stormwater and combined sewer overflows.

WATER QUALITY

As explained earlier, the Metro Toronto waterfront is one of 43 “hot spots” around the Great Lakes, identified by the International Joint Commission as needing Remedial Action Plans (RAPs) because of water quality problems. In the Metro Toronto RAP area, bottom sediments are contaminated, organisms living in them show bioaccumulation of toxic substances, fish of some species have such high levels of contaminants they cannot be safely eaten by humans, aquatic life is stressed from pollution, and swimming beaches are frequently closed during the summer.

For the most part, sewage treatment plants in the bioregion meet provincial standards for concentrations of different pollutants they discharge, but they contribute massive loads of nutrients, heavy metals, and organic chemicals to the waterfront. It is clear that substantial improvements are required to most existing sewage treatment facilities, just to ensure that the wastes of the present residents of the bioregion are adequately handled. In addition, further capacity will be required to treat wastes generated by the expected increases in population over the coming decades.

The condition of the 60 or so rivers and tributaries in the Greater Toronto bioregion varies considerably. Although a few are still fairly healthy, many have been

seriously degraded. Forest cutting has removed shade and caused banks to erode. Pesticides, fertilizers, and topsoil from farms, as well as a potent cocktail of rain-washed pollutants from urban areas, flow into the rivers. In some municipalities, when there are heavy rains, sewers overflow into rivers and the waterfront, carrying a bacteria-laden mixture of stormwater and sewage that means beaches have to be posted to warn people not to swim.

AGGREGATES

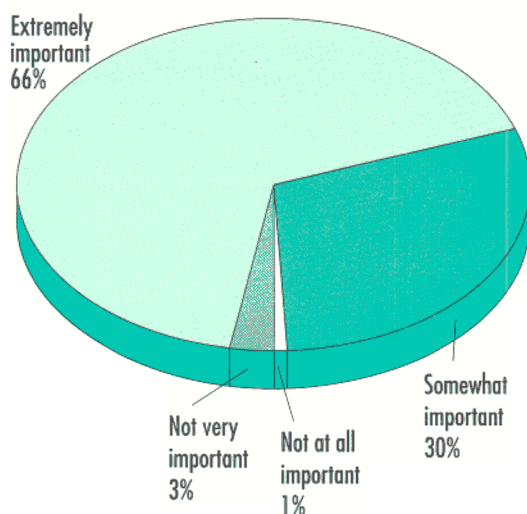
Glacial deposits of sand and gravel in the bioregion provide extensive aggregate resources, a fifth of those produced in the province. It is ironic, indeed, that the areas richest in aggregates — the Niagara Escarpment and the Oak Ridges Moraine — are the most sensitive to the extraction process. Removing aggregate from the Niagara Escarpment threatens its integrity as a landform and its natural habitats, while doing so in the moraine interferes with its hydrogeological functions as an aquifer and the source of many rivers.

SOILS

In some parts of the bioregion, soils are contaminated with heavy metals and organic chemicals, often the legacy of industrial activities, lakefilling, transportation or waste dumping. Although the extent of soil contamination from industrial activities throughout the region is not known, there is reason to believe that many former and existing industrial and refinery sites are contaminated as the result of poor handling of hazardous materials in the past.

In this century, significant lakefilling has been carried out to create land for industry, transportation corridors, ports,

Importance of Water Clean-Up



Two-thirds of the respondents believe it is “extremely important” that a major effort be made to clean up the Lake Ontario waterfront and rivers like the Don, the Humber, the Rouge, and the Credit so people can safely swim and fish in them again.

Source: Environics Poll, 1991.

N.B. Due to rounding figures may not add to 100.

and parks. Until very recently, and particularly along the central Toronto waterfront, this lakefilling included contaminated materials from construction sites, sewage sludge, incinerator refuse, and municipal garbage.

Inland, there are as many as 276 abandoned landfill sites throughout the GTA. Because waste dumping was virtually unregulated until about 20 years ago, there is little information about what may have been dumped in these sites or, for most of them, whether pollutants are now leaking into groundwater or nearby streams.

AIR

Air quality in the Greater Toronto bioregion is influenced by many sources, some of which are hundreds of kilometres

away. For example, trace toxic organic chemicals can be carried long distances from other parts of Ontario, the United States, and beyond, and most chemical precursors of smog (ground-level ozone) come from American sources. Air quality is also influenced by activities in the bioregion itself — particularly from automobiles, coal-fired generating stations, incinerators, and industry, as well as from furnaces for heating homes, offices, and other structures.

Over the past few decades, levels of sulphur dioxide, particulates, carbon monoxide, and some metals have been declining, because of a combination of regulations controlling the sulphur content of coal and gas, a shift from coal and oil to natural gas, and replacement of leaded with unleaded gasoline. However, levels of nitrogen dioxide and volatile organic compounds (contributors to acid rain and ozone) have remained fairly constant and at high levels. Improved control of the main sources of these pollutants — automobiles, power plants, and certain industries — has been offset by increased numbers of automobiles on the roads.

For the last 10 years, levels of ground-level ozone have remained fairly constant, and are quite uniform across southern Ontario. However, they are highest in the City of Toronto, where they regularly exceed health-related guidelines on warm, sunny days in spring and summer.

ENERGY

Canadians consume more energy per capita than any other people in the world. The high proportion of Canada’s population and industrial base in the Greater Toronto bioregion may make this one of the most energy-intensive regions in the world. Approximately 275 gigajoules of energy

per person per year (the equivalent of 8,000 litres of gasoline) are consumed for transportation, heating/cooling, lighting, and industrial processes combined.

Some of the energy we consume is generated by the coal-burning Lakeview Generating Station in Mississauga and by the Pickering Nuclear Station. Once the Darlington Nuclear Station comes on line, a greater proportion of our electricity will be generated in the Greater Toronto bioregion. At the present, however, the bioregion is largely dependent on outside sources of electricity — on energy from distant nuclear and hydro plants, as well as on oil and natural gas brought by tanker, truck, and pipeline from other provinces and countries.

Because so much of the energy we use comes from outside the bioregion, we experience few of the direct effects of energy extraction and transformation. We do, however, suffer the consequences of energy consumption: burning fossil fuels to generate heat and electricity, and to power cars and trucks, releases greenhouse gases and contributes to rising global temperatures, acid deposition, and local air pollution. While nuclear energy avoids most of those air pollution problems, it raises other environmental, economic, and social issues — including the high costs of building nuclear reactors, uncertainty about their long-term safety and viability, health risks to people working in and living near nuclear stations, and how to dispose of nuclear fuel wastes.

Meeting our future energy needs will probably involve conservation programs and alternative energy supplies. It will be cheaper and more environmentally sound to conserve power than to build new generating plants. Further financial and environmental savings may be achieved through



Pickering Nuclear Power Station

alternative energy sources such as wind and solar power. Co-generation — using heat normally wasted when electricity is produced for industrial processes and space heating — may also play an important role in reducing the impact of our energy-consuming lifestyles.

TRANSPORTATION

In the past 10 to 15 years, very little has been invested in transportation infrastructure in the Greater Toronto bioregion, while transportation demand has far outstripped the supply of new roads, transit facilities, and parking spaces. The result is that roads are congested, commuting takes longer, energy is used inefficiently, air pollution increases, and people suffer more stress.

The volume of traffic has been growing, and is expected to continue to grow, at a rate of six per cent per year. If that happens, total traffic volumes will triple by 2011. The Province has few plans for major new highways in the area (although they will build Highway 407, complete Highway 403, and build a new Highway 6), so future transportation needs will have to be met in other ways, if severe gridlock is to be avoided.

At present, 64 per cent of all GTA commuters drive cars to work or school; 25 per cent use public transit; and 10 per cent walk or cycle. The percentage of transit use in the City of Toronto is much higher: in the downtown core, for example, 47 per cent of commuters use public transit.

If current trends continue, commuting between homes in one part of the Greater Toronto bioregion and jobs in another will continue to increase. In 1986, close to 270,000 commuter trips were made each day into Metro Toronto from the four surrounding regions. By 2011, this could reach nearly 500,000. Unless there is dramatically less dependence on cars for making these trips, and more people are able to work close to home, the road system will be unable to cope with traffic needs.

Transit systems must have a population density of at least 4,000 people per square kilometre (10,360 people per square mile). This is achieved in the central city, but densities in suburban regions are much too low. The density is 6,000 people per square kilometre (15,540 people per square mile) in the City of Toronto, and 3,500 (9,065 people per square mile) across Metro. But in developed areas outside Metro, the population density is only 2,100 (5,439 people per square mile). Unless densities in outlying areas increase enough to support public transit, or industry and commerce decentralize to allow people to live near their workplaces, the Greater Toronto bioregion could become "California North" — a nightmare of too many cars going too slowly on too few roads.

GARBAGE

Canadians produce more garbage per capita than the people of any other nation.

Every year, homes, institutions, industries, and commercial establishments in the GTA produce 4.5 million tonnes (5 million tons) of garbage — enough to fill six Skydomes to the roof. With existing landfill sites nearly at capacity and due to close in 1993 or 1994, the question of where to put all this garbage has become one of the most emotional and pressing in the bioregion.

To date, Halton is the only region in the GTA to successfully site a new landfill. Because the Province believes that the remaining regions should deal with their waste within their own borders, it created an Interim Waste Authority in June 1991 to search for landfill sites for the regions of Peel and Durham, and for the combined York Region and Metro Toronto.

Increased efforts at waste reduction, recycling, and composting programs, as well as higher tipping fees, are reducing the total amounts of waste going to landfill sites in the area. Diversion from disposal sites ranges from about six per cent in York Region to 21 per cent in Peel — short of the 25-per-cent reduction target set by the Province for 1992.

Increased tipping fees are having another effect: thousands of tonnes of privately collected garbage are being trucked to cheaper disposal sites elsewhere in the province and in the United States, creating losses of waste-disposal revenue in the bioregion, adding unnecessary air pollution from extra truck traffic, and raising questions about the ethics of transporting one community's garbage to another.

DEMOGRAPHIC TRENDS

The traditional structure of families in the bioregion, like that of families everywhere, is changing: there are more single-parent families, smaller family sizes, and an

increasing number of dependent seniors. The age profile of the population is also shifting: there are a declining proportion of children and more older people. In 1991, 19 per cent of the GTA population was over 55, a figure that is expected to increase to 32 per cent by 2031.

The cultural diversity of the Greater Toronto bioregion is one of its most distinguishing characteristics: there are some 80 ethnic groups in the area. More than a third of all immigrants to Canada settle in the region, bringing with them special needs for language training and assistance in integrating into Canada's social and economic life.

These trends make increasing demands on communities and governments in the Greater Toronto bioregion. For example, a better supply of suitable housing is needed for different age groups and family types; there must be better transit networks; and social services and health care systems must be expanded.

SOCIAL NEEDS

The bioregion's demographic trends affect every part of it, from downtown Toronto to the older suburbs of Metro and the new suburbs of the outlying regions of York, Durham, Halton, and Peel. Similarly, social problems — poverty, homelessness, hunger, substance abuse, family violence, suicide — are no longer limited to the urban core, but strain the resources of municipal governments and non-profit groups throughout the region. The recession has exacerbated these problems, with increasing numbers of people competing for limited

social services, which are, in turn, being constrained by funding cutbacks.

Access to services is becoming an increasingly serious problem, for a variety of reasons. People from ethnic groups are often limited by cultural and language barriers. In the suburbs, lack of public transit means physical isolation, especially of women. Sometimes, appropriate services are simply not available, or have long waiting lists.

Thousands of people in the Greater Toronto bioregion are either homeless or living in overcrowded conditions. Causes include a shortage of suitable houses and apartments and an inability to pay high prices or rents. There are an estimated 20,000 homeless people in Metro Toronto alone; in 1986, nearly 28,000 families,

seniors, and single people were on the provincial waiting list for geared-to-income non-profit housing.

A wide variety of housing types is avail-

able in the Greater Toronto bioregion with Metro offering the broadest range and about 76 per cent of all social housing in the GTA. The Region of York has the least diversity: 80 per cent of its housing comprises single-family detached houses.

ECONOMY

The Greater Toronto region has traditionally been described as Canada's "economic engine", generating nearly one-fifth of the nation's income, with per capita incomes that are approximately 25 per cent higher than the national average.

In the past 15 years, the Greater Toronto region has been Canada's pre-eminent job-producing area. According

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to a paper prepared for the Commission by University of Toronto economic geographer Meric Gertler (1990), titled *Toronto: The State of the Regional Economy*, total employment in the Toronto Census Metropolitan Area (CMA) grew by an impressive 43 per cent between 1976 and 1990. Even higher growth rates — exceeding 70 per cent — occurred in community, business, and personal services, and in finance, insurance, and real estate. Although manufacturing remained a significant part of the economy, employment growth was slower there than in the service sector, reflecting a relative decline in the importance of manufacturing employment to the regional economy.

But there are signs of economic distress in the bioregion. The current recession has hit hard here, as in the rest of the country. There have been substantial declines in output and employment, and many observers suggest that the current downturn will be deeper and longer-lasting than first predicted. That makes it difficult to predict the future of the regional economy: its effects are mingled with other changes, more structural and fundamental, including the relative decline in manufacturing, the Free Trade Agreement with the United States (and the possibility that there will be a North American Free Trade Agreement, which will include Mexico), and imposition of the Goods and Services Tax.

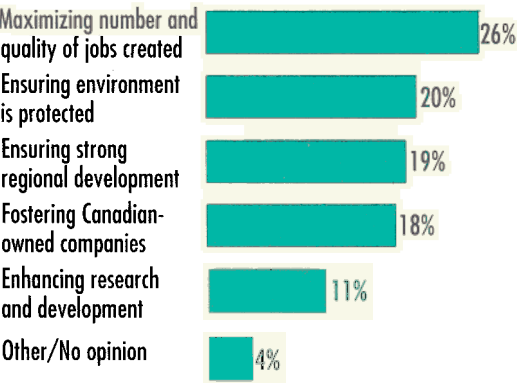
One of the most notable trends of the past two decades is the decentralization of manufacturing activity from the City of Toronto — first to Metro's outer fringes and more recently to outlying regions in York, Durham, and Peel. However, it is impossible to predict whether this trend will continue, or whether industries will move out of the bioregion to other parts of Ontario, or go south to the United States or Mexico.

At the same time as manufacturing has declined, office-based employment, particularly in financial services, has grown in the City of Toronto and other urban centres; but there are different opinions about the extent to which this growth will resume after the recession. Some economists see the boom in financial services as a one-time event, made possible by financial deregulation, while others feel that the sector has considerable potential for continued growth, because: ongoing innovations in financial services products are meeting the needs of more sophisticated investors and borrowers; as the baby boom generation ages, there will be more demand for a variety of new savings vehicles; and many financial services are not easily automated and offer continued employment growth.

Another significant factor is the high quality of life the Greater Toronto bioregion can still offer, which attracts people in the financial services sector. This is in sharp contrast to New York City — Toronto's major competitor in the field — which is reaching limits to financial service growth, because of a combination of impending labour shortages, high house prices, decaying infrastructure, a deteriorating local education system, and an increasingly strained quality of life. Those responsible for the economy of the Greater Toronto bioregion would be well advised to consider New York's situation, which offers important lessons about the social, environmental, and cultural milieu necessary for sustained prosperity.

While some economists are optimistic about future increases in the office-based economy in the Greater Toronto bioregion, its role in stimulating the entire economy may be more limited than the one played by manufacturing-sector growth after the last

Most Important Consideration in a GTA Development Strategy



One-fifth of the respondents believe that despite the current recession, environmental protection should be a major part of an economic development strategy.

Source: Environics Poll, 1991.

recession. This is mainly because the intra-regional multiplier effects (purchases from other parts of the economy) from financial services do not even remotely match those from manufacturing industries.

These and other reasons should induce caution among those who would assume that, once there is a “recovery” from recession, it will herald an automatic return to business as usual. In fact, the major restructuring now occurring may result in quite a different economic picture, in terms of the key sectors, their relative rates of growth, the way they are distributed in the bioregion, and the types and numbers of jobs available.

CONCLUSIONS

These examples indicate the economic, social, and environmental pressures being exerted on the Greater Toronto bioregion, and make clear the fact that we can no longer take economic prosperity or quality

of life in Greater Toronto for granted. Although it has many advantages, the bioregion’s future health and environmental sustainability will depend on how we manage the assets we have: in addition to remediating problems caused by past activities, we must develop strategies to encourage more environmentally responsible lifestyles and development patterns, to nurture a vibrant regional economy, and to address pressing social needs.

It is also clear that tackling such issues means taking different approaches to problems, to decision-making, and to the way we get things done. It won’t be easy. The Greater Toronto bioregion is governed by five regional municipalities, 53 local municipalities, four counties, six conservation authorities, and numerous federal and provincial ministries, departments, boards, agencies, and commissions. In an era when it has become clear that governments cannot solve environmental, social, and economic problems by themselves, the thousands of businesses and four million residents of the bioregion also have a role to play.

As the Royal Commission suggested in its *Watershed* report, the ecosystem approach appears to offer real and constructive alternatives to traditional ways of acting. The Commission has found the approach extremely helpful, as applied to its own work — a point that subsequent chapters of this final report will make clear. But, first, some observations about the ideas embodied in the ecosystem approach, and their relevance to the Greater Toronto waterfront and bioregion.

ECOSYSTEMS

The ecosystem approach is both a way of doing things and a way of thinking, a

renewal of values and philosophy. It is not really a new concept: since time immemorial, aboriginal peoples around the world have understood their connectedness to the rest of the ecosystem — to the land, water, air, and other life forms. But, under many influences, and over many centuries, our society has lost its awareness of our place in ecosystems and, with it, our understanding of how they function.

What is new in the 1990s is a growing recognition that, unless we regain an awareness of humans as being part of ecosystems, and unless we respond to that awareness by changing the processes and criteria of decision-making, we will not be able to improve, and will even lose, the quality of life for which so many generations laboured.

In exploring the ecosystem approach, the Commission found that it integrates ideas from a variety of concepts and movements concerned about environmental and human well-being. Sporting different labels, but with many common elements, these include bioregionalism, green or eco-cities, the liveable metropolis, healthy communities, sustainable development, and the conserver society. A careful consideration of the philosophy behind all these concepts leads us to identify five fundamental themes of the ecosystem approach:

- the ecosystem as “home”;
- everything is connected to everything else;
- sustainability;

- understanding places; and
- integrating processes.

THE ECOSYSTEM AS “HOME”

The ecosystem concept is an extension of the traditional view of the environment as all that surrounds us and influences us: something “out there”, in the same way that a house comprises bricks and mortar. In contrast, an ecosystem is a “home”, with a spiritual dimension transcending its physical structures. Ecosystems are dynamic, interacting, living systems; humans are part of them, not separate.

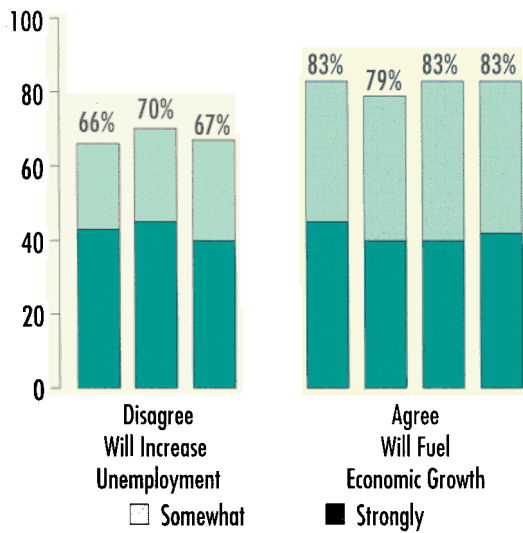
The “home” analogy is crucial to understanding our roles and responsibilities as co-habitants of ecosystems. Most people conceive of home as a special place providing more than shelter and a place to sleep. We cherish and care for our homes, and share them with our

Unless we regain an awareness of humans as being part of ecosystems, and unless we respond to that awareness by changing the processes and criteria of decision-making, we will not be able to improve, and will even lose, the quality of life for which so many generations laboured.

families, friends, and pets. Similarly, ecosystems provide for both our physical and our spiritual needs; in turn, we are responsible for part of maintaining and protecting their health. In the words of Professor Bill Rees of the University of British Columbia, “people must acquire in their bones a sense that violation of the biosphere is a violation of self”.

The life of each of us is a fleeting moment in the history of the biosphere; we are stewards of the land and waters, but for a short time only. How do our lives affect our co-habitants — other people, wild animals, plants — in Toronto, in Canada, and in other countries? What legacy will we

Economic Impact of Environmental Protection



Two-thirds of Canadians disagree that environmental protection will harm employment in Canada. Four-fifths of Canadians believe environmental protection will fuel economic growth.

Source: Canada. House of Commons. Standing Committee on the Environment. 1991. Minutes of Proceedings, no. 6A, 26 September.

leave for the generations to come? These questions were addressed by the Brundtland Commission on Environment and Development (1987), which concluded in *Our Common Future* that:

The Earth is one but the world is not. We all depend on one biosphere for sustaining our lives. Yet each community, each country, strives for survival and prosperity with little regard for its impact on others. Some consume the Earth's resources at a rate that would leave little for future generations. Others, many more in number, consume far too little and live with the prospect of hunger, squalor, disease and early death.

It is difficult, if not impossible, for most of us to see how, as individuals, we can

even begin to respond to these global issues. However, there is a great deal of value in the environmental imperative to "think globally, act locally". It is there we must begin thinking about the Greater Toronto waterfront and its bioregion, guided by principles of stewardship and equity.

This implies caring for land, water, air, and living beings, including humans, other animals, and plants, in order to ensure their health in the long term as well as for today. It means that those with power and opportunities have a responsibility to act in ways that respect the needs of others, and the limits of the physical environment. And it means working to ensure that everyone has access to opportunities for a good quality of life — education, housing, jobs, social services, recreation, safety, a supportive community, attractive places, and a healthy environment.

The ecosystem concept recognizes that you are new, yet not new. The molecules in your body have been parts of other organisms and will travel to other destinations in the future. Right now, in your lungs, there is likely to be at least one molecule from the breath of every human being who has lived in the past 3,000 years; the air around you will be used tomorrow by deer, lake trout, mosquitoes, and maple trees. The same is true of water, sunshine, and minerals. Everything in the biosphere is shared.

Christie, W. J. et al. 1986. "Special contribution on: managing the Great Lakes Basin as a home." *Journal of Great Lakes Research* 12(1).

EVERYTHING IS CONNECTED TO EVERYTHING ELSE

A key to understanding ecosystems is to recognize that everything is connected to everything else. Therefore, we must examine the entire web of links among and within elements of ecosystems: air, soils, water, wildlife, land uses, communities, economic activities, and the like. By doing so, we can begin to understand how the parts affect, and are affected by, one another, and we can appreciate the complexities of the whole. For example, water pollution along Toronto's waterfront represents the combination, or cumulative effects of, many influences — from development in the headwaters of the rivers, to stormwater management in the suburbs, to sewage treatment on the lakefront, to lakewide inputs from the Niagara River.

In viewing a city as an ecosystem, we can look at supply, flows, transformation, storage, and disposal of energy and materials. For example:

- What energy, materials, capital, and labour go into the urban ecosystem?
- How are these transformed to provide services and produce goods?
- What are the waste by-products of our goods and services: heat, pollution, garbage, etc?
- How are these waste products managed? For example, is waste from one process used as the raw material for another, or is it simply discharged into the environment?

As a result of that kind of analysis, we can identify ways in which human activities can be reintegrated with ecological processes to ensure more efficient use of resources,

reduce wastes and pollution, increase recycling, and conserve energy — measures that offer both environmental and economic benefits. There will have to be a shift in our thinking about environmental management: from the current emphasis on regulation and remediation, to a more proactive approach that focuses on preventing damage rather than fixing up problems after the fact. “End-of-pipe” pollution control and restoring already damaged ecosystems are clearly more expensive and less effective than dealing with problems at source, before they become problems.

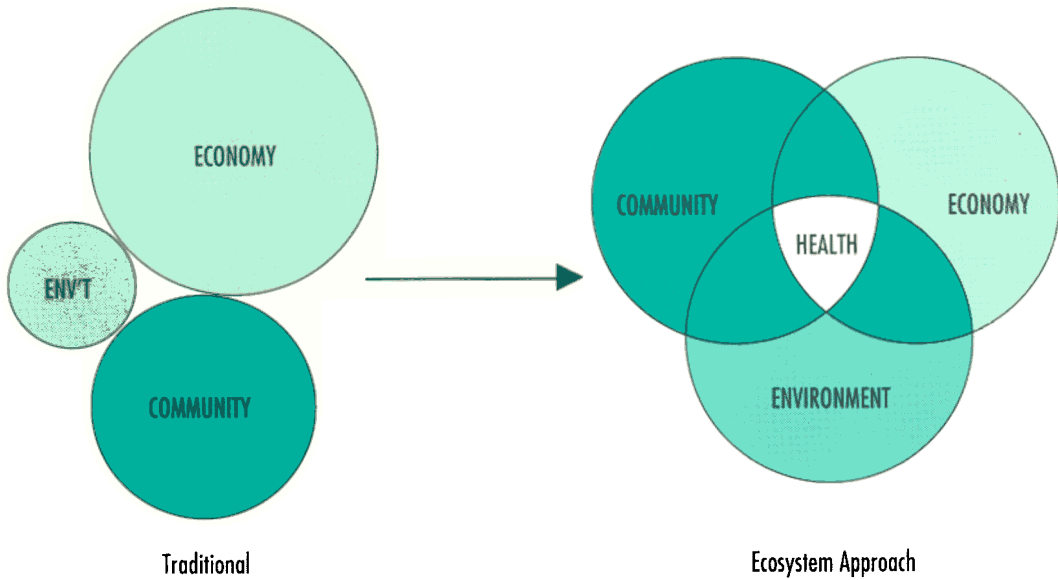
Relationships within ecosystems can best be visualized as three interlocking circles: environment, community, and economy. However, most decision-making separates the three, with little understanding, for example, of the effects of economic decisions on community needs or environmental health. Too frequently, there is more emphasis on economic and social issues than on the environment.

The challenge now is two-fold: to understand the links in the ecosystem, and to redress the balance among them.

Therefore, studies and plans must be undertaken in an integrated way, examining the links among economic, social, and environmental matters. This is a major departure from current processes, which tend to regard environmental concerns as a separate area of study: the “green chapter” in a report unconnected to the remainder.

It is encouraging to note that efforts are now being made to recognize, and respond to, these links. For example, the “healthy city” concept is based on the realization that individual human health depends on many factors beyond the health

Figure 1.1 The Shift from Traditional to Ecosystem-Based Decision-Making



care system and medical treatments. As a recent report by the Canadian Medical Association (1991) explained:

Whereas in the 1970s there was a new emphasis on the effect of personal lifestyle choices on our health, in the 1990s it is becoming clear how seriously our collective lifestyle choices, and their impact on the environment, can threaten our health and well-being.

It is becoming increasingly clear that our health depends on the quality of the social, physical, and economic environments, and on equal access to the opportunities they provide: a “healthy city” is defined as one designed, built, and managed to truly contribute to the health and well-being of all its inhabitants. As Figure 1.1 shows, that means providing:

- an environment that is viable (i.e., supports human and non-human life), liveable, and sustainable;

- an economy that is equitable, sustainable, and adequately prosperous; and
- a community that is liveable, equitable, and convivial (Hancock 1990).

Since the 1980s, Toronto has played a key role in developing the healthy city concept and promoting it around the world. In 1989, in response to a report called *Healthy Toronto 2000* (1988), a Healthy City Office was created by unanimous Council decision, and given the mandate of working in partnership with government departments and the community to improve the quality of life in the City. The office focuses on three major issues — social equity, environmental protection, and community empowerment — and has established a wide range of programs — including those related to affordable housing, urban gardening, healthy workplaces, literacy, minimizing automobile use, main-street housing, report cards on the state of the city, and others.

Looking at economy/environment/community relationships from another perspective, communities must consider the quality of life they can offer as an important factor in attracting and keeping businesses, jobs, and a strong tax base. Table 1.1 shows how quality of life in a healthy community depends on a constellation of characteristics, including a good educational system, access to health care, economic opportunities, low crime rates, recreation and cultural facilities, clean air and water, and green space.

Just as municipalities are starting to consider the role of a healthy community in ensuring economic vitality and satisfying social needs, the business sector is beginning to recognize the value of maintaining environmental health. For example, in their book *Green Is Gold*, Patrick Carson and Julia Moulden (1991) advance a variety of compelling reasons for businesses to “go green”. Among them:

- the rise of the “neo-traditionalist” consumer whose values are based on both the traditional and the new, and who seeks goods that are well-made, honestly presented, and reliable, and questions the environmental and moral implications of product choices;
- the power of local communities to demand clean industries and the NIMBY (“not in my backyard”) syndrome in relation to undesirable facilities, such as landfill sites;
- tougher government regulations; and
- the significant bottom-line benefits that result from getting more out of less, reducing wastes, and preventing pollution.

Table 1.1 Examples of Indicators of Quality of Life for a Healthy Community

Economic Indicators

Average income level
Availability of employment
Diversified economic structure

Social Indicators

Availability of health care
Availability of social support systems
Good educational opportunities
Cultural and recreational facilities
Adequate affordable housing
Crime rate/personal security
Availability of public transit
Access to adequate food

Environmental Indicators

Clean air, soils, and water
Land-use patterns in relation to ecological processes
Diverse, healthy wildlife habitats
Noise
Safety from floods, erosion, and other hazards

Aesthetic Indicators

Community design — sense of place
Connections with cultural and natural heritage

Institutional Indicators

Public involvement in making community decisions
Role of volunteers
Role of community organizations
Integration among jurisdictions and agencies

Source: Adapted from Alberta. Urban Environment Subcommittee. 1988. *Environment by design: the urban place in Alberta*. N.p.: Alberta. Environment Council of Alberta.

A view has long been held that we must choose between jobs and the environment and there have been cases in which new environmental regulations have been the “straw that broke the camel’s back” for an industry already facing difficulties. More realistically, however, a growing number of companies benefit from their “greenness”, and are using it as a strong competitive edge over “dinosaurs” that refuse to change their

ways. There is ready evidence of this trend in the products, services, and advertisements of companies that range from diaper manufacturers to food stores.

Carson and Moulden point out that our society currently treats nature as it treated workers 100 years ago when business did not calculate the cost, nor the benefits, of a healthy and socially secure work force. In the same way, society often fails to include the costs and benefits of a healthy and secure environment. Instead, we all bear the costs of diminishing resources, disappearance of valuable species, health problems, global warming, polluted rivers, unswimmable beaches, and the like. Fortunately, there is a growing understanding of the need to build true environmental costs into doing business in every economic sector.

Environmental costs may be added to those of production — for equipment or processes necessary for meeting stricter environmental regulations — and can then be passed on directly to the consumer. Similarly, as waste disposal costs escalate, prices of goods and services may go up. Alternatively, new uses for wastes can be found, with one company's garbage becoming another company's resource. Some current examples on the waterfront include the recycling of building materials generated by redevelopment of the Daniel's site in Etobicoke, and the Harkow proposal to build a recycling centre in the Port Industrial Area to sort and reprocess various construction materials.

Subsidies of several kinds can mask the true costs of providing services. For example, water rates paid by municipal customers in Ontario account for only 65 per cent of the money spent on providing water, treating sewage, and managing

stormwater; the balance comes from provincial subsidies, property taxes, and subdivision charges.

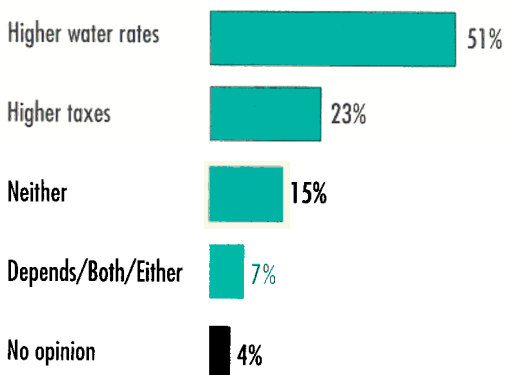
In addition, much more money is needed to replace and upgrade inadequate infrastructure, and meet today's expectations of a clean environment. A 1991 report by the Province's Municipal/Industrial Strategy for Abatement (MISA) Advisory Committee concludes that the full cost of providing improved municipal water and sewer services, rather than being the present average bill of about \$70 per person per year, is actually about \$250 (still considerably less than typical household energy costs). An additional benefit of full cost pricing is that by helping consumers to recognize the true value of water and sewer services, it would lead to water conservation and more careful management of pollution sources.

Right now, as we enter a more technologically intensive economic system, we have unparalleled opportunities to build high environmental quality and sustainability standards into such sectors as computers, electronic components, instrumentation,

One of the dilemmas addressed by the "sustainable development" perspective is that modern industrial economies have dealt so effectively with the scarcity of food, manufactured goods, and services in developing their societies that they have created new scarcities of clean earth, clean air and clean water.

Manitoba Environment. N.d. Discussion paper: harnessing market forces to support the environment. Winnipeg: Manitoba Environment.

Paying for River and Waterfront Improvements



Half of the respondents favour higher water rates to fund improvements to Toronto's rivers and waterfront.

Source: Environics Poll, 1991.

health and medical supplies, and communication. As discussed in a recent report, *The New "Big Picture"* (Nuala Beck & Associates 1991), considering likely environmental implications of these sectors now is going to be much easier and more effective than imitating our current approach to most industries: attempting to regulate their activities, and cleaning up the degradation they cause — after they are well-established.

In his book, *Competitive Advantage of Nations*, Michael Porter (1990) concludes that environmental protection measures can benefit national economies. His research shows that countries with the most rigorous environmental requirements often lead in exports of affected products; he says that the right kind of regulations — those that stress pollution prevention rather than simply abatement or clean-up — can result in significant innovations with both environmental and financial benefits: companies are stimulated to develop less polluting or more resource-efficient products that save

industries money at home and are highly valued abroad.

SUSTAINABILITY

Another key concept inherent in the ecosystem approach is that, to have lasting value, efforts at ensuring health, stewardship, and equity must be sustainable: we must accept, and act on, the aphorism that we have not inherited the earth from our ancestors, but are borrowing it from our grandchildren.

Mohawk culture effectively integrates that perspective into decision-making by appointing someone to represent the seventh generation — to consider how the decisions being discussed today may be viewed seven generations from now. Given this kind of thinking, municipal decision-making (among other kinds) would have to take into account time well beyond the usual three or five years of a politician's term of office — beyond even the 10 to 20 years usually adopted as the context for official plans.

The idea of sustainability was most recently popularized by the Brundtland Commission on Environment and Development. It concluded that the only way to address issues associated with global development — poverty, hunger, and disease — at the same time as we deal with environmental degradation of the biosphere, is to pursue "environmentally sustainable economic development": development that meets present needs without compromising the ability of future generations to meet their own needs.

The Brundtland Commission report, made to the UN in 1987, evoked a proliferation of responses, reflected in growing international, national, provincial, and local awareness of the issues, at least in terms of

words: speeches, papers, books, and reports abound. Although these can be important precursors, they are not change itself. That can be measured only by what is actually done.

The evidence is that we are taking relatively tiny steps (curbside recycling, for example), not the enormous strides required (changing to less consumption-focused lifestyles).

While there is general consensus that sustainability is a vital goal at all levels — global, national, provincial, and municipal — there is much less agreement about what it means and how it can be reached.

It has been suggested that the Brundtland Commission was deliberately vague on this point, judging that the best way to put these new imperatives on the international agenda was to sell the idea that we can eat our cake (economic development) and have it too (a healthy environment).

But some of the tough implications of sustainable development were left undescribed. The Brundtland Commission suggested more rapid economic growth in both industrial and developing countries, in order to raise consumption standards in poorer nations. However, this ignores the sense that there will have to be fundamental changes in the way we use energy and materials, if we expect ecological processes and biosphere resources to provide First World living standards for a global population.

Understanding the ways in which ecosystems work makes it possible to understand the limits of the biosphere. Living

organisms depend continually on energy, water, and nutrients. The water and nutrients (carbon, nitrogen, minerals, among them) cycle throughout the ecosystem: they are used, stored, transformed, and repeatedly reused. By contrast, energy, supplied by the sun, gradually dissipates as it is transferred from one organism to the next through the food chain. Thus, the growth of ecosystems is limited by the availability of materials and the rate of energy supplied by the sun.

On the other hand, many human economic systems are based on non-renewable forms of energy (oil, gas, and coal). The

materials they use are not continually recycled but eventually wind up as pollutants in air, water or soil, or discarded in mountains of consumer waste in landfill sites.

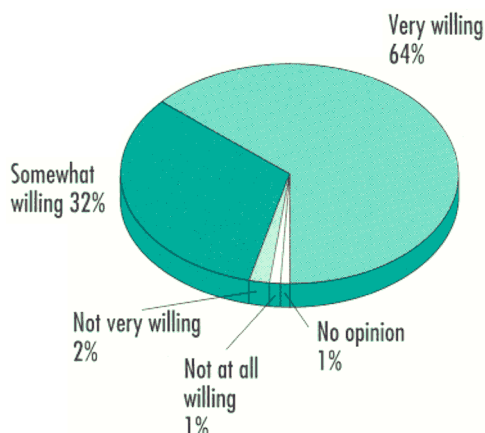
All this places further

stress on ecosystems, reducing their productivity and ability to support life.

Perhaps we should look more closely at the related concepts of growth and development: if limitless quantitative growth is impossible, we should strive for development that offers “qualitative change in a physically non-growing economic system in dynamic equilibrium with the environment” (as described by Herman Daly and John Cobb (1989) in their book, *For the Common Good*). In other words, we have to sustain natural capital — forests, foodlands, clean air and water, minerals — and live off the interest. While that may sound simple, it in fact means making a fundamental shift from a consumer to a conserver society, reducing consumption and learning to do more and better with less.

“Environmentally sustainable economic development”: *development that meets present needs without compromising the ability of future generations to meet their own needs.*

Willingness to Change Lifestyle



Two-thirds of the respondents are "very willing" to make major changes in their daily lifestyles to help achieve an environmentally sustainable economy; a further third would be "somewhat willing" to make these changes.

Source: Environics Poll, 1991.

How do these issues affect the residents of the Greater Toronto region?

First, as biosphere co-habitants with others, we are responsible for ensuring that activities and lifestyles in this region contribute to global sustainability. More than 90 per cent of the GTA population lives in urban areas. This is similar to the global situation: nearly half the world's population lives in cities and towns and, in wealthier countries, more than 70 per cent are urban dwellers. Therefore, it is reasonable to assert that urban activities have a cumulative worldwide effect, as well as within their immediate environments. This global influence is the result of producing food for export; transporting food, energy, and materials; and polluting air and water, both locally and over a wide area. It is manifest in such problems as the long-range transport of airborne pollutants, destruction of rainforests, thinning of the ozone layer, and the greenhouse effect.

Second, as residents of the Greater Toronto bioregion, we must ask:

- How sustainable are the economy, natural environment, and quality of life here?
- What are the probable correlations among population growth, economic trends, and future environmental quality?
- As the population of this area grows, will we be able to maintain the current quality of life, let alone improve it?
- How will trends in economic activities affect the use of materials and energy, and the production of pollution and wastes?
- What is the carrying capacity of the bioregion, for people and wildlife?
- What are the natural limits of the ecosystem in supporting and tolerating human activities?

The signs of stress already evident in the Greater Toronto bioregion would seem to indicate that, if present trends continue, environmental health, the economy, and quality of life will not be at all sustainable. Clearly, therefore, strategies and plans for the future must be established in the context of sustainability that is fully and honestly explored, and constructively addressed.

UNDERSTANDING PLACES

Ecosystems may be understood on different scales: the largest one, of course, is the biosphere. Almost self-contained, it has its own atmosphere, water, minerals, soils, and life forms. However, like all ecosystems, the biosphere is not completely self-sufficient: it depends on energy from the sun, and is influenced by the gravitational

forces of the sun, the moon, and other planets. Many interacting ecosystems are nested within the biosphere. As Figure 1.2 shows, a watershed in the Toronto region is part of the Greater Toronto bioregion, which, in turn, lies within the Great Lakes Basin, which is part of the larger Great Lakes-St. Lawrence system and so on.

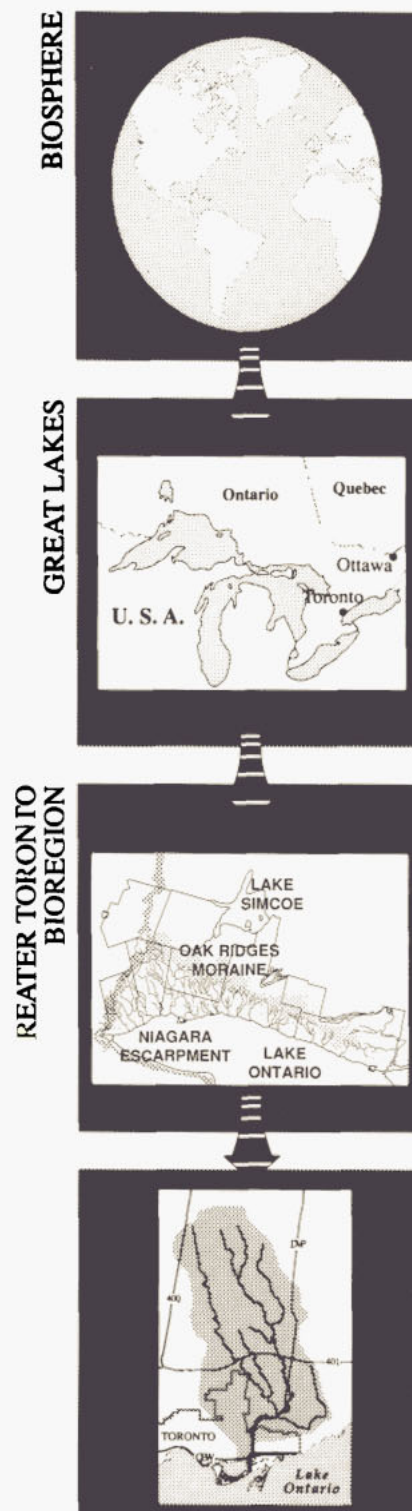
One characteristic of ecological processes is that they rarely conform to political boundaries, such as city limits. Although the many interactions between ecosystems make it impossible to identify distinct boundaries, for practical purposes the key is to identify natural boundaries based on such characteristics as drainage patterns, landforms, vegetation, and climate.

As explained previously, the Royal Commission used the principle of natural boundaries to define the Greater Toronto bioregion: the Niagara Escarpment, the Oak Ridges Moraine, and Lake Ontario. Lands and waters in this bioregion share climatic and many ecological similarities, and the 60 or so watersheds all drain into Lake Ontario. Most of this area now falls within Toronto's commuter and economic orbit; in that sense it is our home — the ecosystem in which we live, work, and play.

Thinking about the whole bioregion helps focus attention on the interdependency and links that exist within it: between city and countryside, natural and cultural processes, water and land, economic activities and quality of life.

As Kirkpatrick Sale (1985) explains in his book, *Dwellers in the Land*, we must begin by understanding the bioregion: its geology and soils, weather, animals and plants, and human interrelations with those various elements. What natural processes are at work?

Figure 1.2 Ecosystems



What do forms of wildlife need to survive? How have people affected the natural processes and how do they interact with wildlife? What is the aboriginal history of the place? What can we learn about ourselves from the settlement and development history of this area? In other words, how does this bioregion work and what distinguishes it from others?

Such thinking rekindles our sense of place, of rootedness, and of continuity with the past. It also shows what we have already lost, and what we stand to lose unless we begin making decisions based on an awareness of the region's full natural and cultural potential.

As "dwellers in the land", all of us — whether our families have been here for centuries or whether we are relative newcomers — need to feel connected with the natural world in a daily, physical way. The better we understand the bioregion in which we live, the more we will perceive it as "home", the more our decision-making and

behaviour will become harmonized with its special qualities, potentials, and sensitivities.

In his book, *Out of Place*, Michael Hough (1990) explores the tendency towards homogenization of urban places and the resulting loss of distinct regional identity. He says,

... if it were possible to transport a visitor on a magic carpet around the world and set him down in the suburbs of Toronto, Bournemouth or Chicago, it is quite likely that he would have difficulty knowing where he was.

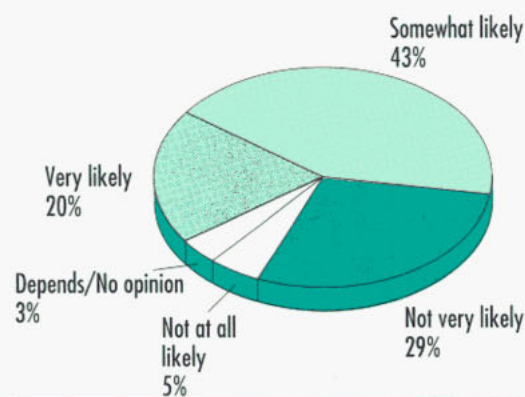
Since the Second World War, urban growth has occurred at an unprecedented scale and speed, frequently ignoring a place's unique natural and cultural attributes. Natural landscapes have become fragmented, the distinctions between town and country have been blurred, and a standardized pattern of freeways, subdivisions, malls, and strip development has become the norm.

A great deal of development that has taken place in the Greater Toronto bioregion since the end of the war ignored the bioregion's distinctive natural features and strong historical roots, creating landscapes that could be anywhere.

Instead, we should be taking advantage of the bioregion's true potential to create more distinct, memorable, and enjoyable places. A greater awareness of the bioregion's natural attributes — the bluffs and beaches of the Lake Ontario waterfront, the cliffs of the Niagara Escarpment, the rolling hills of the Oak Ridges Moraine, the deep river valleys and rivermouth wetlands — an understanding of how they were formed, and the processes they undergo, would help us to do this.

We also need to read, and learn from, the aboriginal and pioneer history evident

Likelihood of Developing an Environmentally Sustainable Economy



There is optimism among the respondents that we can develop an environmentally sustainable economy over the next decade.

Source: Environics Poll, 1991.



This community could be anywhere in North America

in the countryside, the old downtown neighbourhoods, the port and industrial lands. All these and more remind us that we have a rich heritage of people interacting with each other and with this region. There is an opportunity now to retain what exists, rehabilitate what has been damaged, and work carefully with this heritage as we move toward the future.

Vistas are important and valuable in our experience of place because they help define and give character to the landscape. Vistas may be based on natural features, or created by people, over time, as they build cities or modify landscapes. Conversely, views may be lost or damaged if they are ignored when development or redevelopment takes place.

Compared with people of other major Canadian cities that have ocean or river waterfronts — Halifax, Vancouver, and Ottawa-Hull, for example — in modern times, Torontonians have not paid as much

If there is any scale at which ecological consciousness can be developed, at which citizens can see themselves as being the *cause* for the environmental effect, it is at the regional level; there all ecological questions are taken out of the realm of the philosophical and the moral and are dealt with as immediate and personal. People do not, other things being equal, pollute and damage those natural systems on which they depend for life and livelihood if they see directly what is happening; nor voluntarily use up a resource under their feet and before their eyes if they perceive that it is precious, needed, vital; nor kill off species they can see are important for the smooth functioning of the ecosystem.

Sale, K. 1985. *Dwellers in the land: the bioregional vision*. San Francisco: Sierra Club.

attention to public vistas as they might have. Halifax has strict guidelines about viewing planes between the Citadel and the water. Vancouver stringently protects views of water and mountains. Ottawa-Hull controls views of the Parliament buildings from across the Ottawa River, and limits downtown building heights to ensure they do not overwhelm the prospect of the Peace Tower.

This is more than mere symbolism: it helps protect and maintain the unique qualities of these cities, and influences urban form and structure just as powerfully as natural features or the configuration of roads and blocks.

Although often taken for granted, the vistas of the Greater Toronto waterfront are among the most powerful elements in creating memorable experiences there. The expanses of sky and water allow views across bays; from the land; from boats, islands,

and peninsulas to the waterfront; and views down on the entire waterfront panorama from aircraft. These are rarely the same from one day to the next: different weather, times of day, and seasons create ever-changing moods, colours, and lighting.

Monuments — such as the lion that marks the opening of the Queen Elizabeth Way 53 years ago, which is now situated near the Humber River, or the Princes' Gate at the Canadian National Exhibition — can be important aspects of vistas and help create a sense of place. They may commemorate an event, celebrate a place or interpret an aspect of history. But we have tended to neglect the importance and potential of monuments in place-making.

Some municipalities along the Greater Toronto waterfront have special provisions to take advantage of waterfront views, such as Burlington's Windows-on-the-Lake program.



A distinct and memorable place, Kensington Market

Overall, however, planning policies, design guidelines, development approvals, and other instruments could give more consideration to the special views that characterize waterfront places.

Having considered the unique attributes of the bioregion and how they can help us to protect and enhance its distinctiveness and diversity, making better places for living, playing, and working, attention must be given to the region's economy and the need to be sensitive to local and regional conditions and potentials, within larger national and international contexts.

As Meric Gertler (1990) explains in his working paper for the Commission, *Toronto: The State of the Regional Economy*, there are opportunities to develop regionally based economic strategies for the Greater Toronto region, building on existing advantages. These could look at the importance of quantity and quality of local goods and services, as well as at the local resource base, particularly its labour force and infrastructure. Local demand is essential in helping firms compete successfully in other regions and countries: sophisticated and demanding consumers in the market at home seem to act as the foundation on which firms compete effectively in other regions and countries. Competition with other firms in the same sector at home also spurs companies to innovate and produce superior products. And, as New York's experience shows, maintaining a high quality of life — a healthy environment, suitable housing, good social services, recreational opportunities, high-quality education, and so on — is crucial to a prosperous economy.

Despite that, no government entity is responsible for monitoring and responding

to changes in the economic fortunes of this region as an integrated whole. The region is larger than any of the individual municipal or regional governments in the area, but smaller than the next largest level, the Province. However, despite the importance of the region's economy in the economy of Canada, neither provincial nor federal governments give it the care and attention it needs if it is to continue fulfilling this role.

INTEGRATED PROCESSES

The report of the World Commission on Environment and Development (1987) called for major alterations in the way we do business, and emphasized the need to integrate economic decision-making with environmental decision-making processes. It concluded, as has the Royal Commission, that sustainability requires a revolution in our thinking and in our institutional arrangements. Many traditional barriers will have to be overcome if we are going to respond to our current environmental and economic crises.

The past is important: it tells us where we have come from; what shapes what we are and influences what we will become. The built environment — historically, architecturally, and culturally rich buildings, districts and landscapes — gives us a sense of place. . . It provides a physical bond with a shared past and helps provide mental and physical stability in a rapidly changing world.

Parks, Pleasures, and Public Amenities Work Group. 1989. *Parks, pleasures, and public amenities*. Toronto: Royal Commission on the Future of the Toronto Waterfront.

Two of the most intractable obstacles to implementing an ecosystem approach — and to the economic and environmental regeneration it would provide — are rigidity of bureaucratic systems and fragmentation of jurisdictions. They combine to create a high degree of paralysis that pervades our systems of governance, and makes it difficult, if not impossible, to make sound, integrated decisions.

While it may now be considered trite to say that, *if we want to improve the kind of decisions we make*, we are going to have to change the *way* we make decisions, the fact is that the multidisciplinary, cross-sectoral, and multijurisdictional nature of today's environmental and economic problems means cutting across disciplines, sectors, and jurisdictions. Ten provincial round tables, two territorial round tables, a National Round Table, and hundreds of municipal round tables are examples of how new institutions can be created to adapt to this challenge. While still early in its existence, the round-table movement has already proven effective in bringing people together from diverse backgrounds so that they can talk and find ways to overcome old antagonisms, using innovative forms of consensus decision-making. Other advisory bodies, commissions, and task forces can also act as agents of change and vehicles to overcome institutional rigidities. Such catalysts as round tables can be important in fostering partnerships across sectors, among institutions within sectors, and across jurisdictions.

In the process of carrying out its mandate, the Royal Commission acted as a

catalyst to promote change in the way we study, plan, and implement policies that will foster more sustainable waterfronts, cities, and regions, and its experience may suggest ways for others to do so. In fact, during the Commission's life, many people asked us to describe our methods, and have begun applying some of them: perhaps some aspects of our work may be usefully replicated in other areas (although, they may need to be adapted for different regions and circumstances).

The Commission's mandate required the Commissioner to seek full consultation with all interested parties and to seek the concurrence of affected agencies with his

If we want to improve the kind of decisions we make, we are going to have to change the way we make decisions.

recommendations. In working to fulfil its mandate, the Commission used a cross-sectoral approach to its research and analysis and worked

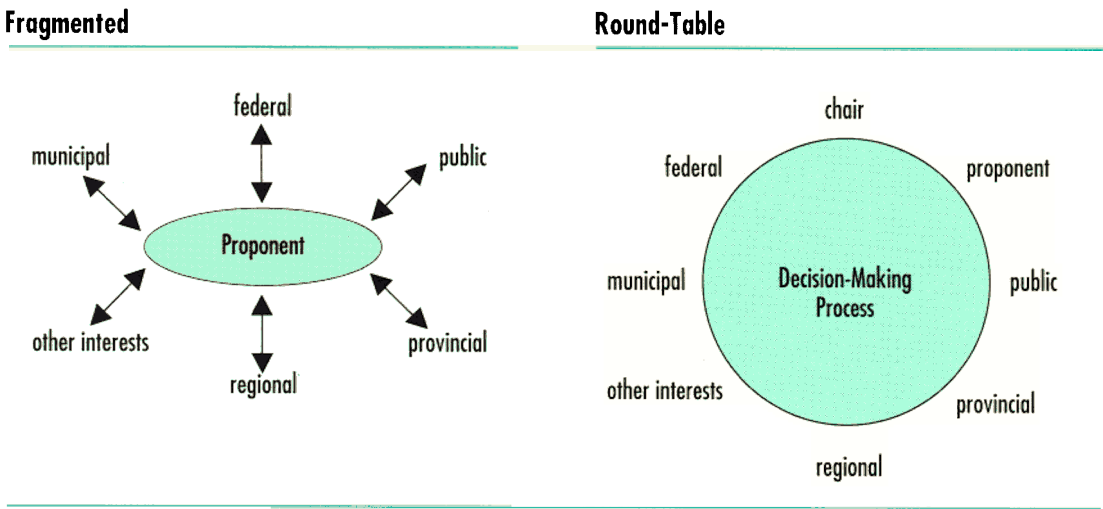
actively to see that its recommendations were implemented. By doing so, the Commission came to be an agent of change to help overcome the inertia it encountered. Its agent-of-change activities can be grouped as: linking resources, helping processes, acting as a catalyst, and finding solutions.

LINKING RESOURCES

In its multidisciplinary, multijurisdictional, and multi-stakeholder approach, the Commission linked agencies, organizations, levels of government, and individuals together — in some cases, those that had never worked with or even met each other before.

In the three years of its life, the Commission created 16 different teams to prepare reports, always drawing members

Figure 1.3 Contrasting decision-making processes



Source: Barrett, S., and J. Kidd. 1991. *Pathways: towards an ecosystem approach: a report of phases I and II of an environmental audit of Toronto's East Bayfront and Port Industrial Area*. Publication no. 11. Toronto RCFTW.

from different sectors, backgrounds, and interests: developers began talking with environmentalists, traffic engineers with landscape architects, scientists with community activists, and federal public servants with city officials. This often led to consensus, trust, and promotion of partnerships that would not otherwise have emerged. Furthermore, these interactions sometimes extended beyond the individuals directly involved, to link their networks — their colleagues, values, information, and resources.

The use of multi-stakeholder teams to produce discussion papers that focused consultations worked only because participants were asked *not* to act as stakeholders, to “park their team jackets at the door”. They were to reflect but *not* represent their sector organizations. Many participants reported that this was quite liberating, enabling them to set aside territoriality, to escape cramped adherence to old ways of viewing problems and, instead, to see them on the basis of new information, understanding, and perspectives.

While the 15 work group reports and 14 technical papers, prepared at arm’s length from the Commission, were particularly creative, they were also grounded in the hard reality that comes from subjecting each position or recommendation to the test of feasibility and acceptability.

HELPING PROCESSES

Just by providing “good offices” the Commission was often able to help a stalled process move forward; creating a steering committee, calling a meeting, acting as a facilitator (and sometimes mediator) allowed the Commission to analyse issues and promote change, breaking out of long-standing jurisdictional gridlock. Because the Commission was only advisory, took away no one’s jurisdiction, and was temporary in its duration, it could act as an honest broker, to a greater degree than could a permanent body with legal powers.

The Commission’s use of public hearings (described in the Introduction)

helped the process: friendly and informed hearings ensured open communication and made lawyers unnecessary. The free flow of information opened many processes that had formerly been closed; several groups said they felt empowered by participating in an open forum at which they could express their positions in their own words.

The public is often consulted too early or too late: too early before a paper has been prepared to focus discussion and suggest options; or too late after most decisions have been developed, leaving citizens with the suspicion they were simply being used as window dressing. The Commission's hearings were always based on discussion papers prepared by the representatives of diverse stakeholders.

The Commission's "family" of regular deputants and interested parties were kept involved by a variety of means, not least the *Newsletter*. Desk-top published in-house at modest cost, it became an effective way of ensuring that participants knew what the Commission, and other groups, were doing. By the end of the Commission's life, it had a mailing list of more than 7,500 people.

ACTING AS A CATALYST

Royal commissions have the right to be independent, but are not obliged to be so. In preparing recommendations, the Commission often tested drafts with affected agencies, frequently with the help of work group members, and then worked to advocate positions it had taken.

This proactive and interventionist stance was not greeted warmly at first by all the many agencies and special purpose bodies that have jurisdiction in the region. By the second year, however, most of these

bodies had come to see the Commission's process as a way of breaking the debilitating constraints of fragmented bureaucratic systems.

The Commission's interim reports were essential to the success of its function as a catalyst. Very early on, deputants saw that they had been listened to; governments and their agencies were able to respond quickly, thereby giving credibility to the entire process. Problems could be solved as they arose, freeing the Commission to concentrate on other subjects.

By issuing interim reports, the Commission avoided the perception — and the reality — in which commission documents simply gather dust on a shelf: ours were not orphans in a bureaucratic system. Before being released, each had been the subject of a great deal of groundwork by the work groups and in the consultation processes. After the interim reports were released, we could continue actively working with other agencies that would adopt and implement our recommendations.

FINDING SOLUTIONS

After analysing and synthesizing many issues, and having focused debate, crystallized positions, and overcome inertia, the Commission made recommendations on possible solutions to what, in many cases, had been longstanding and persistent problems. Most major recommendations in the first two interim reports have now been adopted and implemented, either partially or fully.

Some workable solutions were found, in part, as the result of the broadly based, interactive consultation process used from the outset. If politics is the art of the possible, policy-making is the art of the

feasible and there is no better way to find out what is possible than subjecting a discussion of ideas to full, open, and public critique. While many of our negotiated solutions were somewhat ragged, they were broadly acceptable. Rather than using conventional systems of policy-making, which often impose constraints on testing options openly, we could re-evaluate initial positions and, before making recommendations, adapt or retreat, in ways that would be difficult for governments and their permanent agencies.

INITIATIVES

The integrated processes used by the Commission helped to break down some of the existing barriers to research, analysis, decision-making, and implementation that threaten our ability to deal effectively with today's economic, social, and environmental problems. These efforts to implement the ecosystem approach are not without precedent: many steps are being taken in this direction, in Canada and worldwide.

In 1992, the United Nations will host a major conference on Environment and Development in Brazil, at which representatives from countries around the world will come together, share experiences, and develop, among other things, ways of addressing the cumulative effects of urban living on the biosphere. Given that nearly half the world's population lives in cities and towns, the conference has the potential to make significant changes.

The International Council for Local Environmental Initiatives (ICLEI) helps municipalities around the world address environmental issues. In the summer of 1991, it opened its World Secretariat and North American Headquarters in Toronto,

having chosen this region because of its reputation for actively promoting effective local environmental management. ICLEI will represent local governments to international organizations dealing with the environment, collaborate with municipalities worldwide on major environmental issues, and promote excellence in municipal management of the environment.

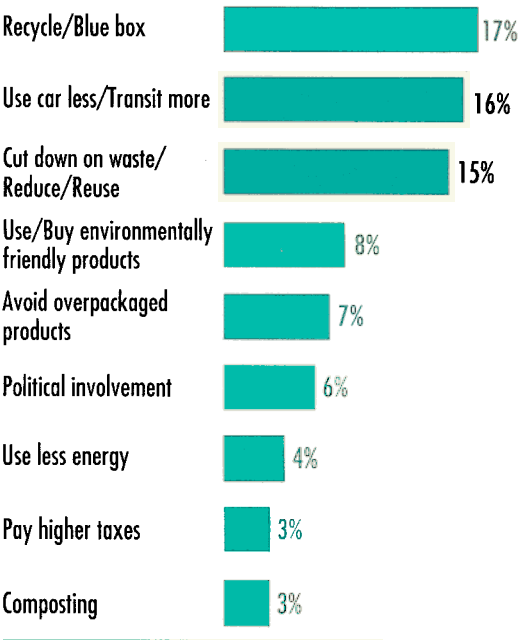
As ICLEI has found, many Ontario municipalities have already taken initiatives that reduce their impact on both global and local environments. New processes, planning studies, policies, by-laws, programs, environmental advisory committees, municipal environmental assessment processes, and development requirements help municipalities bring environmental considerations into their decision-making processes. Community initiatives have also become popular as citizens seek to address their local environmental priorities.

The City of Toronto's Healthy City Office demonstrates how processes can be adapted to facilitate co-ordinated municipal action. The Office acts as an agent of change, working with people in the community, in business, and government, with the goal of creating a good quality of life for everyone. For example, one of its recent projects focuses on transportation systems that are more socially and environmentally sensible than those now in use. The Office's recently published report, *Evaluating the Role of the Automobile: A Municipal Strategy* (Toronto 1991), was prepared by a work group that included representatives from municipal government, the Toronto Transit Commission, GO Transit, business, environmental groups, and ratepayers. It highlights the real costs of automobile use (energy use, air and noise pollution, health effects, use of land for

roads and parking, etc.) and proposes a comprehensive strategy that could reduce the effects of automobiles by controlling emissions, reducing traffic, changing land-use patterns, and promoting alternative forms of transportation.

Increasingly, municipal planning studies are evolving to incorporate environmental concerns. For example, Halton Region (1990) has prepared a new regional plan that provides a vision of what its landscape and communities should be like in the very long term — 50, 100 or 500 years from now. Halton plans to reach its ultimate goal of sustainable development guided by two principles: land stewardship and healthy communities. The intention is to preserve landforms and inhibit urban sprawl so that there is a healthy

Most Significant Lifestyle Change



Recycling, using transit, and cutting down on waste are some of the changes the respondents are willing to make to achieve an environmentally sustainable economy.

Source: Environics Poll. 1991.

balance among the social, economic, and environmental needs of the community.

A number of municipalities have also proposed new Official Plans that place much more emphasis on the environment than did previous versions. For example, Metro Toronto's *Towards A Liveable Metropolis* (1991) suggests innovative ways of dealing with the issues currently faced by its communities. These include a new framework for decision-making, based on the three components of liveability: environmental integrity, economic viability, and social well-being. Initiatives outlined in the report include integrating environmental, social, and economic considerations into a revised development review process, assessing the state of the environment in Metropolitan Toronto, and developing a strategy to ensure that corporate practices and policies are environmentally responsible.

The City of Toronto's *Cityplan '91* also has a strong environmental focus, based on the principle that:

Toronto's residents, workers, and visitors have the right to an environment that is protective of their health and well-being, and . . . have the responsibility to maintain the environment for future generations.

Many of the plan's proposals are intended to protect and enhance the City's natural heritage directly, while others incorporate environmental considerations indirectly.

The Township of Mono, which recognizes the importance of managing water on a sustainable basis, has formed a committee to examine the cumulative effects of development taking place in the headwater areas of the northwestern part of the bioregion. Along with the local conservation authorities,

the Niagara Escarpment Commission, and the ministries of Municipal Affairs and of the Environment, Mono hosted a conference in October 1991 that examined the state of our water resources, current water planning practices, and responsibilities for water management.

The Credit Valley Conservation Authority (CVCA) has also been active in protecting and maintaining water resources, in this case the Credit River and its tributaries. In the late 1980s, the Authority recognized that the traditional approach to water management, stressing engineering, was not going to maintain the long-term health of the river. After undertaking extensive water resource studies, it developed an ecosystem approach to water management, which emphasizes understanding environmental conditions and only then developing sub-watershed plans. CVCA is currently involved in four sub-watershed plans with local municipalities, developers, and government agencies. Involving all interested parties has meant that, from the outset, decision-makers understand the constraints and opportunities that may exist in each sub-watershed.

In addition to participating in the CVCA sub-watershed planning exercise, the ministries of Natural Resources (MNR) and the Environment (MOE) have, with municipal and conservation authority representatives and other government agencies, been developing a framework for managing watersheds in urbanizing areas of Ontario. Founded on an ecosystem approach, draft interim guidelines for the preparation and implementation of sub-watershed plans and for the integration of water resource management objectives into Official Plans have been developed for discussion.

A number of municipalities have programs to protect environmentally significant areas. For example, Halton Region's Official Plan includes provisions for designating Environmentally Sensitive Areas (ESAs); it prohibits development in ESAs and requires an environmental impact study for development on land adjacent to an ESA.

In Halton, as in a number of other places in the bioregion, there is growing interest in maintaining more than the "islands of green" represented by ESAs. In 1989, the Metropolitan Toronto and Region Conservation Authority (MTRCA) adopted a *Greenspace Strategy for the Greater Toronto Region* (1989) encompassing integrated management of natural lands and resources within the region. Programs arising from the strategy include a proposed multi-stakeholder process for watershed planning in the Don Valley, and a Greater Toronto Region Trail System connecting the waterfront, the river valleys, and the Oak Ridges Moraine.

In 1989-90, Ron Kanter, then a Liberal MPP, working on behalf of the Province, studied options for a greenlands strategy in the Greater Toronto Area. His report, *Space for All* (1990), identifies existing greenland resources and calls for immediate action to secure them for the future, recognizing their importance to a good quality of life and a healthy environment.

As a contribution to Kanter's study, or in response to it, many municipalities (Halton, Scarborough, and Whitby, among them) prepared their own greenlands strategies. These would protect and link ESAs, valleylands, wetlands, groundwater recharge areas, woodlots, parks, waterfront lands, and the like.

The City of North York is a pioneer in working to expand and enhance existing

natural areas through naturalization. By planting native vegetation, the City creates new habitat for wildlife and gives citizens a diverse and healthy environment in which to enjoy passive recreation. Naturalized parks are a step towards sustainability: because they are adapted to local environmental conditions, native species require less maintenance, fewer chemicals, and less water.

Governments at all levels are major consumers and can have a potentially significant role in stimulating the market for durable, reuseable, and recyclable products. The Regional Municipality of Metropolitan Toronto has asked its constituent municipalities to establish environmental purchasing policies, including such measures as using re-refined oil in municipal vehicles, reuseable eating utensils, and recycled paper.

Some municipalities are examining the state of the local environment as a quality-of-life issue and asking residents to offer ideas and a vision that will help focus long-term planning. For example, the Region of Waterloo appointed a Citizens' Advisory Committee on the Quality of Life, which is to gather opinions from members of the public and frame a consensus within which future community development can be guided. The committee found that sustainable development must become the basis for personal and community decision-making if the quality of life in the region is to be maintained and improved.

By-laws can also be used to promote sustainability. Recognizing the dangers of ozone-depleting substances to human and ecosystem health, the City of Toronto (1990) passed a by-law that prohibits and regulates the use, recovery, and disposal of products

containing, or manufactured with, chloro-fluorocarbons, halons, and other ozone-depleting substances. Such equipment as refrigerators, air conditioners, and fire extinguishers must now be drained before they are discarded for disposal, chloro-fluorocarbons and halons must be recovered from them, and the chemicals must be deposited at an authorized site.

The City of Toronto has adopted requirements for developments, to ensure that they are more environmentally responsible. An applicant must submit a noise impact statement forecasting noise emissions and ways to minimize their impact on the surrounding environment. All major development projects must now include waste reduction and recycling strategies in their proposals. New developments of more than 10,000 square metres (107,600 square feet) must meet water and energy conservation and efficiency standards. In order to minimize automobile use, a new proposal for a non-residential development, which would normally be required to include no fewer than 75 parking spaces, must now provide a traffic management plan suggesting alternative ways for future employees in the development to travel to work.

Citizens' groups have also taken powerful initiatives to protect and enhance the natural heritage: the Black Creek Project, begun in the early 1980s by several citizens in the Black Creek watershed, has fought for the protection and rehabilitation of the creek. It has planted more than 2,000 trees and shrubs in the creek valley, brought modifications of development proposals so they take environmental health into consideration, and tackled bank erosion with rocks that provide habitat. Funding from various levels of government and co-operation with the

Conservation Council of Ontario (CCO) has helped the Black Creek Project in its work.

CCO is also reaching out to other communities, encouraging them to become effectively involved in supporting a healthy environment. With its assistance, interested communities will develop environmental action plans that list their existing environmental and resource issues, and propose remediation strategies to be implemented over the next several years. The Regional Municipality of Metropolitan Toronto will be the first municipality to prepare an action plan and will focus on four key areas: waste reduction, natural areas, water conservation, and air quality.

Partnerships among various levels of government can facilitate environmental action. For example, as part of the Hamilton Harbour Remedial Action Plan, a program is being developed to restore 605 hectares (1,495 acres) of fish and wildlife habitat in Cootes Paradise and the mouth of Grindstone Creek. It is proposed that this work be undertaken as a joint project among the federal, provincial, and municipal governments, as well as with the private sector. Environment Canada recently allocated \$4.2 million (one-third of the total projected costs) for the project, from the Great Lakes Clean-up Fund.

Provincial planning initiatives can also be important in promoting sustainability. The Niagara Escarpment Plan is one of the few land-use plans in Canada and the only one in Ontario that has jurisdiction on the basis of an ecological entity. The plan controls development that is incompatible with the natural environment and threatens the continuity of the escarpment and its vicinity.

Similar development pressures are occurring on the Oak Ridges Moraine, a

hydrologically sensitive and important landform north of Toronto. The Province has undertaken a two-year planning study to develop a long-term strategy for the moraine. Until then, Provincial Implementation Guidelines on the Oak Ridges Moraine (1991) are intended to ensure that permission is given only to developments that are compatible with the environmentally sensitive nature of the Oak Ridges Moraine. For example, natural areas, groundwater recharge areas, and landforms are to be protected by the guidelines until the strategy is complete.

Growth pressures in the GTA prompted the Province to undertake the Greater Toronto Area Urban Concept Study, completed in 1990. It estimates infrastructure requirements, comparative capital costs, quality and effectiveness of urban services, and the environmental impact of three possible patterns of future development in the GTA — “spread”, “central”, and “nodal”. Of the three, the “spread” concept, continued low-density development outside the existing built-up areas, was found to use the most rural land and natural resources; moreover, because it depended so heavily on automobile use, it would consume the most energy and contribute significantly to air pollution.

The “central” concept — new high-density growth concentrating development in existing built-up areas, particularly in Metropolitan Toronto, would be most energy- and land-use efficient, but would make it difficult to provide adequate open space in urban areas. The “nodal” concept, distributing new growth amongst nodes throughout the GTA, based on existing settlements and in a compact form, was judged least disruptive to existing communities;

STREAM REHABILITATION: THE BLACK CREEK PROJECT

Traditionally, cities and streams have not co-existed well: human settlements of any size usually herald habitat destruction, water pollution, and, in time, reshaping of a river's course to fit human habitation and infrastructure. This is more or less true around the world: the Seine in Paris, the Choa Phya in Bangkok, and the Vistula in Warsaw. Nor are Toronto's streams and rivers an exception. What is exceptional is the response of a group of citizens to the deterioration of their local stream — more specifically, the fight by the Black Creek Project for the health of Black Creek.

In 1982, Sandy Agnew, who grew up beside the river, and John Maher, who lived near Black Creek, got together with a few other neighbours and formed the Black Creek Project. Its goal was to protect and enhance Black Creek and its associated ecosystems — no small task, then or now.

Black Creek, a tributary of the Humber River, has suffered much since the first European settlement in the area. Most of the watershed was cleared for agriculture and later paved over by urban growth; a large proportion of the watershed was rendered impermeable by pavement and buildings; a great deal of water falling as rain and snow could no longer enter the soil to be released slowly into the river. Instead, precipitation hit pavement and roofs and was funnelled into storm sewers.

Today moderate to heavy precipitation results in sudden, powerful river flows. The high-velocity water is dangerous to both wildlife and humans, and severely erodes the riverbank. In parts of the stream that have been channelled, the water picks up speed as it rushes through the slick straight gutters.

Forcing the river into a concrete straightjacket also eliminates aquatic and shore habitat, and increases flood damage. Such artificial reaches of the stream are devoid of rocks under which water insects can hide, as well as the vegetation cover that is forage for small mammals and birds.

Some of Black Creek's tributaries are in even worse shape: they have been completely covered and are now part of the city's storm-sewer network; furthermore, like most urban streams, Black Creek and its tributaries suffer from pollution. Sediment from construction activity washes into the creek, blocking the light the aquatic community needs and blanketing the river bottom, which suffocates plant and animal life there. Discharges from industries in the storm sewershed; lawn chemicals; the soap people use in washing their cars; the oil and other chemicals we routinely pour down our drains — all make their way into the creek. Few species can survive in such a hostile environment.

One of the first rehabilitation activities of the Black Creek Project was to plant trees in the watershed. The restoration of some plant species that grew in the area before urbanization has enlarged wildlife habitat and slowed water percolation in the soil, giving the river a more stable water flow in planted areas.

Plantings of shrubs and trees have also helped stabilize riverbanks, while rocks placed along the creek banks have helped reduce erosion. The Black Creek Project usually has

many planting days each year at which members and the public, frequently local students, work together to dig holes and plant trees in various parts of the watershed. There have been clean-up days involving the public as well as Environmental Youth Corps staff, at which garbage (including several hundred shopping carts) has been cleared from the river.

The Black Creek Project has also been instrumental in protecting the river by influencing development plans. In 1983, members persuaded the City of York to refuse creation of a snow-dumping ground, which would have further degraded Lavender Creek. In 1985, the Project stopped the bulldozing of a woodlot in Vaughan in order to create a stormwater management pond. The pond exists today — right beside the woodlot, in fact — but it is a positive addition to the woodlot's natural heritage because, acting in accordance with advice from members of the Project, designers ensured that it includes wetland areas.

Using funds from various levels of government and private donations, the Black Creek Project has supervised inventories of the natural heritage in the watershed, put in



Pond in the Black Creek valley provides stormwater management and wildlife habitat

300 metres (985 feet) of erosion control riprap, planned a bike path and nature trail system for the entire valley, and planted several thousand trees.

Future plans include replacing some of the channelled portions of the creek with natural stream beds and banks. At the mouth of the creek, this would allow fish from the Humber River to gain access to Black Creek again and would create habitat throughout the creek for many species of wildlife. Restoration is a slow process and

there may sometimes be as many steps backwards as there are forwards. Ultimately, long-term success depends on the willingness of watershed residents to take on the role of stewards of the river.

provided the greatest diversity in types of housing, densities, and population/employment mixes; and wasted less energy and fewer resources than the “spread” concept.

Responses to the study show a general consensus in favour of some form of nodal growth; however, the study also recognized the need for more work on the idea: to define a shared vision for the

Greater Toronto region; analyse future economic prospects and their impact on growth; examine human service needs; develop models for more compact, liveable communities; and improve understanding of environmental and open-space implications. The GTA office is currently preparing a “vision” paper as the basis for establishing common values and directions for this complex and dynamic region.



Niagara Escarpment, near Milton

PRINCIPLES FOR REGENERATING THE WATERFRONT

All these studies and initiatives indicate deep and growing concern about the future of the Greater Toronto region, and show that there is an emerging consensus about the need to act, and act soon, to secure a healthy and sustainable future. While people are responding to these challenges in a myriad of ways, there is a need now to co-ordinate efforts and place them in a framework that makes a larger, more effective whole. The Royal Commission believes this can be achieved by working to regenerate the waterfront and the bioregion.

We view regeneration as a healing process that restores and maintains environmental health, as well as anticipating and preventing future harm. This means striving to ensure that existing land uses and activities are adapted, and all new development is designed, to contribute to the health, diversity, and sustainability of the entire ecosystem: the physical environment, human communities, and economic activities.

To help meet these needs, the Commission's *Watershed* report identified nine principles that can be applied to make the Greater Toronto waterfront healthier and more sustainable: clean, green, connected, open, accessible, useable, diverse, affordable, and attractive. (Applications of

the principles are discussed in *Watershed* and in subsequent chapters of this report.)

CLEAN



All activities and future development should work with natural processes to contribute to environmental health. Air, land, sediments, and water should be free of contaminants that impair beneficial uses by people and other living beings.

Polluted soils, groundwater, sediments, and water should be remediated. New development should include the best possible means of controlling stormwater flows and pollution, reducing energy use for heating/cooling, minimizing automobile dependence, reducing and recycling wastes, and reducing water consumption. Where possible, existing development should be adapted or retrofitted to achieve these goals.

GREEN



Natural features and topography should form a “green infrastructure” for the bioregion’s cities, suburbs, and countryside. A

green infrastructure may include natural habitat areas such as wetlands and forests; landforms such as bluffs, valleys, beaches, and cliffs; aquifer recharge areas; and parks and other open spaces.

The diversity and productivity of ecological communities should be protected and restored through measures that:

- preserve the genetic diversity of indigenous plants and animals;
- protect and restore healthy natural habitats and communities; and
- maintain natural ecological processes.

CONNECTED



Throughout the bioregion, connections with the region’s natural and cultural heritage should be restored and maintained. This should include links among:

- wildlife habitats;
- city and countryside;
- social communities;
- past and present; and
- people and nature.

A network of greenways should connect the natural habitats and human communities of the waterfront, valley systems, tablelands, the Niagara Escarpment, and the Oak Ridges Moraine. As much as possible, greenways should connect and incorporate existing

public lands, to form a “linked-nodal” pattern throughout the bioregion. Continuous pedestrian and bicycle trails should be developed in these greenways to provide recreational and commuting opportunities.

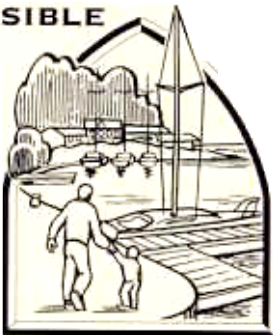
When redevelopment is undertaken, cultural and built heritage should be respected and incorporated, so that continuity with the past is protected and distinctive places are maintained.

OPEN



Existing vistas of Lake Ontario and its bays, bluffs, peninsulas, and islands should be maintained. Moreover, vistas made possible by the open expanses of water (e.g., views of the city from Ontario Place, or across Humber Bay) should be treated as important values in waterfront development. Density and design of waterfront structures should not be permitted to create a visual barrier to the lake or intrude on the water’s edge.

ACCESSIBLE



Nodes and communities of waterfront activity should be serviced by public transit

as well as by road, with transit increasingly emphasized. People should be able to get to, and enjoy, the waterfront on foot or by bicycle, with major improvements made where necessary to overcome the barriers presented by road and rail corridors. The waterfront should be safe and accessible to all sectors of society, including the disabled, children, and older adults.

Where feasible, the water’s edge should be — and should be clearly identified as being — open to public access. New developments should include public access to and along the waterfront. Where continuous access to the waterfront is not possible, it should be provided at convenient intervals, with parallel connections back from the shore.

Providing regional access for visitors, in areas where there are already residential neighbourhoods on the waterfront, should be handled carefully and with respect for local needs for privacy and safety.

USEABLE



The waterfront should continue to support a mix of public and private uses that:

- are primarily water-related;
- permit public access, use, and enjoyment of the water’s edge;
- enhance residential neighbourhoods and appropriate commercial and industrial uses;

- decrease need for commuting by providing a local balance of employment and residential opportunities;
- are environmentally friendly in form and function;
- minimize conflicts with adjacent communities or uses; and
- are designed and managed to improve microclimate and promote greater year-round comfort and use.

Design, use, and management of waterfront places should enhance safety and minimize risks caused by:

- threats to personal safety from other users;
- flooding and erosion; and
- incidents involving hazardous materials.

DIVERSE



The waterfront should provide diverse landscapes, places, wildlife habitats, uses, programs, and experiences. This will offer varied opportunities for visiting and resident people, as well as for resident, migrating, and over-wintering wildlife.

The mix of land uses and facilities for competing public demands within environmental limits should be balanced between:

- public and private;
- urban and rural;
- regional and local;

- residential and recreational;
- industrial and commercial;
- built and natural environments;
- large- and small-scale;
- active and passive;
- busy and quiet; and
- free and user-pay.

AFFORDABLE



Waterfront development and management should be undertaken in ways that provide opportunities for economic renewal and for efficient use of limited government and private-sector resources.

Where possible, social, environmental, and economic objectives should be integrated with each other, in order to achieve them as effectively as possible. For example:

- projects might be more affordable if partners co-ordinate activities and share resources;
- projects could be designed to yield multiple benefits;
- a healthy environment is a more productive setting for economic activities.

A long-term view should be adopted when decisions are being considered so that the full societal and environmental costs of proposed activities become factors in whatever choices are made. For example, incorporating environmental protection at the

outset may reduce the need for environmental rehabilitation later, thus improving long-term affordability and sustainability.

A range of waterfront parks and facilities should be available to provide opportunities for all income groups. Waterfront residential projects should offer a variety of housing types and prices, including affordable and rental housing.

ATTRACTIVE



Design and landscaping should protect, enhance, and create distinctive and memorable places along the waterfront. This means excellence in design of neighbourhoods and other developments, individual buildings, transportation elements, parks, recreational facilities, outdoor furniture, and other amenities.

Design on the waterfront should:

- protect vistas and views of the lake;
- provide a sense of continuity with the past;
- emphasize sensitive design and massing of buildings;
- consider the relationships among buildings, open spaces, and the water;
- use harmonious colours, textures, and materials; and
- include a range of landscape types, from wild and natural to manicured and formal.

SUMMARY

Ecosystem principles will help to make the most of the qualities of the Greater Toronto waterfront — the historic birthplace of our communities, the source of our drinking water, a home for wildlife, a place for recreation and relaxation, and the setting for vistas across the water.

This waterfront is inextricably linked, not only to the lake, but to the 60 watersheds that drain into it. Together, the waterfront, watersheds, Niagara Escarpment and Oak Ridges Moraine, form a major bioregion in Ontario. But the bioregion is under considerable economic, social, and environmental stress. We can no longer take its economic prosperity or quality of life for granted. It has also become clear that institutional arrangements in the bioregion are often part of the problem; bureaucratic systems are often rigid and jurisdictions fragmented.

In exploring these issues, the Commission found that the ecosystem approach offered some fresh insights and possible new ways of doing things.

By thinking of ecosystems as living systems, of which humans are a part, we can better understand our roles now and our responsibility to future generations. In the past, decision-making has often been based primarily on economic and social objectives, often at a cost to the environment. The ecosystem approach is based on the reality that everything is connected to everything else, which means that environmental considerations must be part of the decision-making process, so that relationships within ecosystems are viewed as comprising three interlinked circles: environment, community, and economy.

Viewing the bioregion as a whole helps to enhance the sense of place, as well as

understanding of the links within it: between city and countryside, natural and cultural processes, water and land, economic activities and quality of life. It also shows how regionally based economic strategies can be developed for the Greater Toronto region, building on existing advantages.

It is apparent that, to achieve healthy, sustainable communities, we must find ways to adapt and improve many processes for studying, analysing, planning, reviewing, consulting, and decision-making. The changes already under way are reflected in various organizations and processes — the work of the Brundtland Commission; the existence of national, provincial, and territorial round tables on environment and economy; new initiatives by many municipalities, conservation authorities, environmental groups, and government agencies; and increased public awareness of the issues. The Royal Commission's work demonstrated how the ecosystem approach could be applied in specific areas and situations, as described in subsequent chapters of this report.

The bioregion's future health and quality of life, as well as its environmental and economic sustainability, will depend on how we choose to manage the assets we have. The Commission believes that using an ecosystem approach can help to assure a future that is indeed clean, green, connected, open, accessible, useable, diverse, affordable, and attractive.