

▶ **ENVIRONMENTAL
QUALITY AND
REGIONAL
ECONOMIC
DEVELOPMENT**

Prepared for

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INTRODUCTION

Background

This report is intended to provide broad background support to economic and environmental planners, to stakeholders in planning processes, to businessmen and community activists, and to students and educators in small and large communities in British Columbia. It outlines some of the recently recognized connections between environmental protection and enhancement, community well-being, and economic development, connections often summed up by the term “sustainability.” It shows how a new awareness of long-term consequences and of the need for strategic planning in environmental issues is rapidly spreading through both private and public sectors.

Planners and advocates have faced a persistent battle against certain traditional arguments, now almost ingrained in popular thinking, which create a kind of prejudice against environmental planning for communities. Here are some examples:

- **Long run vs short run:** There isn't much use thinking far ahead. The future is much too complex and unpredictable. Besides, we get to the future day by day, by surviving the here and now. As a famous economist once said: “In the long run, we're all dead.”
- **Markets decide:** In this age of global competition, costs and prices make the world, and people have to fit in. Markets establish the framework and create winners and losers. Planning can help with some transitions, but it won't alter the fact that money ultimately determines what happens.
- **Jobs vs environment:** British Columbia is a resource economy. Harvesting nature is the basis of our prosperity. Restricting the harvest means limiting our prosperity. Of course we want to balance environment and jobs, but there is indeed a tradeoff, so the environment has to give way to protect jobs, especially in times of recession.

These arguments, and others like them, make people passive and reluctant to become proactive about community and environmental planning.

As this report shows, these popular opinions also happen to be wrong. More accurately, their validity (if they ever had much) is declining, and they are being overtaken and pushed aside by larger opposing truths:

- **The importance of goals:** Earlier generations faced less change and had fewer choices. Jobs often lasted a lifetime. Communities grew slowly and were more stable. Most people lived quite well without thinking ahead. But this traditional

*Old prejudices
linger.*

complacency is being driven out by accelerated change and uncertainty. Increasingly, personal careers and community development depend on preparation and conscious decisions. The modern form of stability comes from working, amid ever-changing circumstances, towards accepted goals and visions of the future. In short, from planned action.

New realities emerge.

- **People decide; markets provide opportunities:** Markets are becoming more volatile, less stable and reliable. Fluctuating and declining prices can disrupt lives and communities. But a single dominant market loses its dictating power with the growth of multiple markets and diverse sources of income. As international prices become less reliable, people find ways to become less dependent on them by greater self-sufficiency and by searching out new markets for different skills and new products. Markets punish passivity but reward proactive planning and initiative.
- **Prosperity is increasingly dependent on environments:** Economic development always brings a shift from extraction to manufacturing to services, as shown by the growth of cities. An early narrow focus on dominant resource exports is replaced by a broader concern for environmental values and amenities associated with the well-being of a whole population. In North America, people are moving to valued surroundings, and businesses follow them. Prosperity is increasingly associated with attractive locations, and environmental management is increasingly part of strategic planning and corporate performance.

With these new realities, community and environmental planning is becoming recognized as a key to well-being.

The environment will be more important in future, not less. But that importance will be broader and more diversified rather than confined to a few commercially valuable resources. “The environment” will actually be many environments, as people in different places and walks of life find themselves appreciating different aspects of the same landscape or cityscape. Custody of these environments will be shared among stakeholders, and the process of sharing custody will further reveal the similarities and sharpen the differences among perspectives.

Well-being is increasingly based on environmental management.

The traditional distinction between the human, or built, and natural environments is being, and will be further, blurred. Both will have to be increasingly protected from unsustainable growth and wasteful technologies. These environments will have to be managed, and that means developing shared goals and plans. In some cases planning and management will be done by communities and governments; in other cases it will be done by corporations and non-profit organizations. As this report shows, the methods of decision-making, the technological alternatives, the administrative arrangements, and the design concepts that will be required for sustainability are already being developed and demonstrated across the province, the country, the continent, and the globe.

Orientation

The terms associated with environment and sustainability are used in different ways, but always revolving around a group of concepts. This report adheres to the following generally accepted usages:

The idea of the **environment** has expanded beyond nature to include human-created surroundings. It is often useful to think of environments in the plural, referring not only to ecological and physical phenomena but also to economic, social, cultural, and urban phenomena. Yet the term retains the idea of context, milieu, surroundings, or circumstances within which something is situated and enmeshed.

Situated in and enmeshed with the environment is the **economy**. Since the landmark Brundtland Report (1987) there has been a new appreciation of the interconnections between the environment and the economy. The health of one depends on the health of the other. Brundtland analysed these interconnections and popularized the term **sustainability** to refer to the maintenance of mutually supportive relations between economy and environment and between both of them and the **community**. Human well-being in the long term depends, according to the Brundtland concept of sustainability, on a positive interplay of economy, environment, and community. The discussion in this report reflects these interconnections.

Just as the environment has expanded to include more than nature, so the **economy** has expanded to include more than the traditional commercial sector. There is a renewed interest in the local economy, with its diversification, services, non-market exchanges, self-sufficiency, and mutual support. Often overlooked in the general fascination with global trade, a healthy local economy is increasingly seen as indispensable to the well being of most people and vital for sustaining the environment. The view that income from industrial exports is superior to other kinds of income and is the “lifeblood” of an economy is obsolete. Moreover, what modern economies seek is not greater quantities of goods and services but higher qualities. Not more things or bigger things but better things. This emphasis on quality, apparent in all advanced economies and corporations, provides a new definition of economic development that reconciles corporate objectives with environmental goals, as this report describes.

The importance of **community** is that people (as distinct from abstract “individuals”) live and work and have identities as members of particular social networks and relationships. When they interact with environments or participate in economies, people rely on, express, and extend these relationships. Personal health and well-being are increasingly recognized as connected with healthy relationships. An economy that serves human well-being is therefore one that supports thriving communities. On the other hand, a suffering community can exact a heavy toll on its environments.

Sustainable approaches pay much attention to **values**. They do so for two reasons. First, the participatory nature of community decision-making means that differences in people’s values permeate community deliberations and decisions. New planning

Sustainability connects environment, economy, and community.

methods focus on addressing and surmounting these differences in values. Secondly, not all values have prices. That is, sustainability recognizes all kinds of non-market values. Some planning processes try to attribute surrogate market prices to such values in order to propose decision-making on a financial accounting analogy. Other processes do not. But there is always a significant effort to deal with the multiplicity of points of view involved in community-based decisions.

Structure

The five chapters of the report show a variety of newly understood relationships between environmental quality and regional economic development.

Chapter 1, **Location decisions**, looks at how important “quality of life” and environmental amenities are to people and businesses when they relocate. These things are becoming decisive to a growing proportion of the population, the businesses that employ them, and the communities that wish to attract and keep them.

Chapter 2, **Resource communities in transition**, considers the opportunities available to a town with a dominant industry as the industry declines or closes down. Opportunities for community renewal arise from a reconsideration of environmental assets and a new focus on developing the local economy.

Chapter 3, **Industrial ecology**, examines in some detail the tendency of businesses to form interrelating clusters, and at how such groupings are being encouraged and managed for “eco-efficiency.” High-tech clusters are a leading example.

Chapter 4, **Business and the environment**, looks at the remarkable proliferation of voluntary environmental commitments being made by businesses in Europe and North America, sometimes in response to, but often going well beyond, regulatory requirements. Economy and ecology are increasingly to be found on the same side.

Chapter 5, **Sustainable communities**, turns to urban environments, and the planning and management issues arising in the struggle towards sustainability. The inventiveness and vitality fostered by strategies of sustainable development are displayed on all sides in the modern city.

A brief **Conclusion** sums up the changes in attitude and practice associated with sustainability concepts and presents some of the major lessons in the preceding chapters as useful strategies for environmental and economic planners.

Finally, an extensive list of references suggests many sources for further reading on the themes of this report.

1. LOCATION DECISIONS

Why people move where they do

British Columbia's natural beauty, clean environment, and climate have long been recognized as a lure for people and the businesses that employ them.

People are drawn to communities that provide well for their "quality of life" – towns and cities where the air is fit to breathe and the water safe to drink, where neighbourhoods are pleasing and safe, where their children can go to good schools and universities, and where there are opportunities for entertainment and recreation. Economists call these characteristics "public goods" and "amenities." They use the term "disamenities" to describe negative characteristics such as polluted air and water, crime, or a lack of theatres and parks. Researchers have investigated how these characteristics affect people's location decisions.

It has now become standard practice in regional economic analysis to measure local amenities and public goods (including such factors as low crime rate and abundant sunshine) when trying to explain the dynamics of economic change. (Power, 1996b, 42)

It has become clear that where people once sought out communities that provided the jobs or a good income, now more are looking primarily for nice places to live: "During the 1980s, while most of nonmetropolitan America suffered a depression, the economies of many rural counties with attractive landscape features experienced ongoing growth, testimony to the powerful draw of desirable living environments." (Power, 1996b, 14)

People vote for the environment with their feet.

At a local scale, geographers have investigated the effects of disamenities on residential choices. For example, they have measured "geographic discounting" – including how close people are willing to live to nuclear power plants, and the effect of proximity to a new shopping centre on housing values (Hannon, 1994).

Migration trends in British Columbia

In recent years, BC has been the fastest growing province in Canada, with 13.5 per cent population growth between 1991 and 1996, compared to 5.7 per cent for the country as a whole (GVRD, 1997, 1).

Three trends are notable:

- Immigration from abroad: Most immigrants settle in Greater Vancouver.

- Migration to British Columbia from other provinces: Vancouver receives almost half of net interprovincial migration (ie subtracting migrants out of B.C.), with significant shares going to places such as Vancouver Island and the Okanagan.
- Migration within British Columbia: Most movement is out of Vancouver, or to a lesser extent Victoria, and into other parts of Vancouver Island (eg Nanaimo and Courtenay), the Fraser Valley, and the Okanagan. (BC Stats, Migration Components for Regional Districts 1976-77 - 1995/96)

In 1991, Statistics Canada investigated why people had moved to British Columbia from other provinces and countries between 1986 and 1991 (Supplement to the Labour Force Survey, Current Population Profile 9102). In a survey, 1,426 newcomers to British Columbia answered the question: "What was the main reason for moving?" A large proportion of interprovincial migrants moved for reasons not related to employment – to be closer to family and friends (16 per cent), B.C.'s climate and scenery (11 per cent), to go to school (4 per cent), and retirement (4 per cent). Only 22 per cent reported that they had moved for employment-related reasons, though another response category – dependents of movers (39 per cent) – implies employment-related reasons as well (BC Stats, 1992).

The migration out of Vancouver and Victoria is of two kinds. First, retired persons are moving north on Vancouver Island and to the Okanagan in search of better climate, lower housing prices, and more rural settings. Second, working people are also moving out of the largest cities, in particular Vancouver, again for cheaper housing and for similar lifestyle reasons, such as avoiding urban problems. For example, the migration from Greater Vancouver into surrounding areas of the Fraser Valley is part of this "rural rebound" effect.

Immigration: the lure

Greater Vancouver receives more than 80 per cent of B.C.'s net immigration. The majority of these immigrants come from Asia (84 per cent), followed by Europe (7 per cent). The top ten countries of origin, including Hong Kong and seven other Asian nations, make up 80 per cent of BC immigration. In addition to bringing cultural diversity, these immigrants have generated considerable wealth and job creation. In 1996, B.C. attracted more than half of Canada's "investor class" immigrants, and over one-third each of entrepreneurial and self-employed immigrants – all of which typically create employment in the local economy where they settle (BC Stats, 1997b). "The empirical evidence covering the period 1950 to 1990 indicates that immigration directly creates at least one new job for each working-aged newcomer. Job creation and immigration reinforce one another in a way that can be summarized with an employment multiplier of approximately 3" (Power, 1996b, 44).

Asian immigrants have been drawn to Vancouver because of its Pacific Rim connection, previous tourist experience in British Columbia, family ties, and the city's metropolitan amenities compared to the disamenities (in particular, crime) of American cities.

***People find
quality of life in
British Columbia.***

***Vancouver draws
immigrants.***

The Swiss-based Corporate Resources Group in its 1996 survey (conducted annually to help multinationals determine compensation for employees in different locations) ranked Vancouver first among 161 cities in terms of quality of life. The ranking included 42 indicators, such as political and social environment, health, education, public services, recreation, consumer goods, housing, and natural environment. Toronto ranked second (“Are We There Yet?,” 1997, 146).

Greater Vancouver showed the highest metropolitan population growth across Canada between 1991 and 1996 (14.3 per cent), considerably higher than Toronto (9.4 per cent) and Calgary (9.0 per cent), and twice the national average (GVRD, 1997, 1). Today, the city ranks among the five fastest-growing metropolitan areas in North America, in company with Orlando, Sacramento, San Diego, and Seattle (“Are We There Yet?,” 1997, 147).

With this population expansion are the problems of rapid growth – air pollution and municipal waste, traffic congestion, a higher cost of living (land and housing), social (including ethnic) conflict and crime, and so on. We examine issues of growth management Chapter 5, Sustainable Communities.

Urban environments are no less important.

What people want: a view from B.C.'s municipalities

In the early 1990s, pressure was growing for the adoption of growth strategies and the promotion of greater livability in the Lower Mainland and other high-growth areas. In an extensive 1992 survey of some 75 jurisdictions, 90 per cent of which responded, the Urban Development Institute (Pacific Region) asked mayors and planners throughout the province their opinions of why people move to B.C. municipalities (Urban Development Institute, 1993). The survey found that British Columbians on the whole seek out environmental and quality of life considerations, even despite higher costs of living and career advancement prospects (see table). Respondents indicated that people move predominantly for safe neighbourhoods, family reasons, clean air and water, and recreational enjoyment (ibid, 3). The survey concluded: “People have always looked to their communities for the goods and services they provide, but today they are more inclined to value them for the quality of life they offer.”

While urban and rural communities might be thought to attract people for different reasons (eg cultural amenities versus open space and environmental quality), the UDI survey didn't find much difference in terms of the top three reasons why people move. However, the rankings did vary for perceived impediments to moving (see table).

Thus, according to mayors and planners, people moving to B.C. municipalities are mainly drawn by the quality of life in both urban and rural environments.

Reasons for people to move to a BC municipality in the next two years: all provinces

Most likely reasons	Least likely reasons
<ul style="list-style-type: none"> ▶ A good place to retire ▶ A good place to raise a family ▶ Recreational opportunities ▶ Mountains, beaches ▶ Clean air, water ▶ Rural features ▶ High community involvement in public decisions ▶ Good social services 	<ul style="list-style-type: none"> ▶ Don't need a car ▶ Good theatres & restaurants ▶ High land values ▶ Good for jobs and career ▶ Low property taxes ▶ Low housing costs ▶ Low cost of living

Source: Urban Development Institute (1993), 5

Reasons for people to move to a BC municipality in the next two years: urban versus rural

Urban municipalities Most likely reasons	Rural municipalities Most likely reasons
<ul style="list-style-type: none"> ▶ A good place to raise a family ▶ A good place to retire ▶ Recreational opportunities 	<ul style="list-style-type: none"> ▶ Rural features ▶ A good place to retire ▶ A good place to raise a family
Greatest impediments	Greatest impediments
<ul style="list-style-type: none"> ▶ High property taxes ▶ High housing costs ▶ High cost of living 	<ul style="list-style-type: none"> ▶ Car ownership is imperative ▶ Deficient public services ▶ High property taxes

Source: Urban Development Institute (1993), 8

The importance of community – residents in the Lower Mainland

In 1992, the Greater Vancouver Regional District (GVRD) conducted a telephone travel survey of some 15,000 households in the Lower Mainland, stretching from Lions Bay to Chilliwack (GVRD, 1994, 8). As part of the survey, a subset of 3,745 households were asked questions about their residential location decisions. The key question posed was: “What was the most important factor to you when you selected the home where you live now?”

From six categories of possible responses, a plurality (40 per cent) of households ranked neighbourhood and social factors the most important reason for their home location decision, followed by housing prices or rents (17 per cent), characteristics of the house itself (15 per cent), closeness to work or college (12 per cent), road or public transportation advantages (12 per cent), and broader regional characteristics (4 per cent). Regardless of the sub-groups of respondents surveyed (one- or two-person households, families with children, etc.), neighbourhood and social factors consistently showed the highest ranking (38-48 per cent of responses).

The study remarked: “The most important conclusion to be drawn from the residential location questionnaire results is the clear preference of most respondent households for homes in ‘good’ neighbourhoods (i.e., close to shopping, close to family, quite, safe, with a sense of community, etc)” (GVRD, 1994, 20).

Retired people – an economic staple for communities

Of all migrants, retired people are, by inclination and ability, perhaps most likely to be drawn by scenic beauty, climate, and other quality of life factors. As the population ages, seniors are making a more important contribution to the provincial and local economies. Since their income is not from employment, they offer the possibility of a non-resource-based, non-cyclical economic sector for B.C. communities in their diversification away from primary resource industry: “Statistical analysis of the impact of nonemployment income flow on local economic activity indicates that it can have an impact as great as or greater than income from basic industry” (Power, 1996b, 39).

B.C.’s population is getting older on average, although migration to the province has slowed the process, since migrants tend to be younger than the population average. Between 1991 and 1996, the fastest-growing age segment was the older working-age group (45-64), with almost double the growth (24 per cent) of other cohorts. While seniors have remained a fairly constant share of the population (13 per cent, compared to the national average of 11 per cent), the aging baby-boomers will soon swell the ranks of the retired people – to 18 per cent in 20 years (BC Stats, 1997c)

Seniors constitute more than 30 per cent of the population in a number of BC municipalities, such as Qualicum Beach, Osoyoos, Sidney, White Rock, and West Vancouver. At the other end of the spectrum are largely resource industry-based towns, such as Taylor, Tumbler Ridge, Chetwynd, and Fort Nelson, which are

Social relations and community are part of the environment.

Stable retirement incomes are a boon to communities.

dominated by younger people. But all municipalities have at least 12 per cent of their population in the 45-64 age group, indicating the growing influence that seniors will exert province-wide.

Already retirement income is a significant factor for many BC communities. For a number of locations, non-labour income, including retirement and investment income, already accounts for a third or more of local economic activity. For example (non-labour income percentage in parentheses): Penticton 48, Kelowna 47, Victoria 43, Nanaimo 41, Nelson 37, Kamloops 35, Cranbrook-Kimberley 34, Revelstoke 28, Golden 25 (BC Ministry of Finance and Corporate Relations, 1995).

Non-employment income is growing in importance across North America:

On average, over a third of all dollars received by Americans comes in the form of nonemployment income. For communities with higher concentrations of retirees or those receiving incomes maintenance support, 40 to 50 per cent of all income received is nonemployment. Moreover, nonemployment income is growing in importance while both manufacturing and extractive activity are declining as sources of income. (Power, 1996b, 39)

Retired persons have higher health care and social services costs. These costs will not be additional to the health system (except for migrants from outside the province). But the expenditures will occur locally and thus represent a redistribution of provincial expenditures towards retirement communities.

Why businesses locate where they do

For decades, economic geographers and urban planners have studied business location decisions to develop theories of what motivates companies and industries to settle in certain areas, or to relocate their business. It is customary to cite three basic geographic attractions for business location (Power, 1996b, 32-3):

Businesses are attracted by natural and human-built environments.

- Resources: site-specific transportable resources. These might be materials (eg wood or minerals), or attributes (eg scenery or recreational opportunities), or social advantages (eg cultural amenities, low crime).
- Markets: access and transportation costs to markets for buying inputs (including labour) and for selling products to customers. This has more to do with access to communications and delivery systems than with physical proximity.
- Other businesses: firms tend to cluster and group to gain energy from a scale and mix of economic activity that suits them. Such areas become “incubators” of new products, processes, and services (Hoover, 1948). Business sections, high streets, manufacturing areas, financial centres, etc reveal this tendency.

Even this brief summary sheds new light on the importance of the natural and the human environments in attracting businesses. Natural resources include not only materials for bulk commodity production but also many other kinds of value (habitat, landscape, recreational, air and water quality, etc), some of which may be incompatible with material extraction. Where non-transportable materials or other

natural values are crucial, businesses move towards those resources and workers follow. All other business attractions – social resources, markets, and other businesses – are creations of the human-built environment. For most businesses, therefore, location mainly involves choices within and among built environments. That is why business generally follows people, rather than the other way round.

In this light, a small resource community based on a single extractive industry has three directions for diversification:

- new landscape values are found that attract a greater variety of businesses.
- more businesses are attracted to serve and take advantage of the growing economic activity, broadening labour force, and increasing social amenities.
- new residents and workers with new skills are attracted by the combination of natural and social amenities and work opportunities offered by the growing town.

At the heart of this transition is a steady improvement in the quality of life:

What then draws a firm to a particular site? Transportation costs and the size of the local and regional markets are still very important, but they only help in choosing a general region. Local qualities play a major role: the quality of the workforce, given the prevailing wage; the quality and range of commercial services available; the quality of the public infrastructure; the quality of the community as a place to live; the quality of the school system; the quality of the entertainment and recreational opportunities; the quality of the natural environment; and so on. Without making reference to these, one could never explain the geographic distribution of businesses and population location.

Businesses appreciate these factors for several reasons. First, they want to attract and hold a high-quality workforce with relatively low wages. In addition, by drawing population to an area or holding it there, these qualities create larger markets for a broad range of businesses. Finally, businesses are run by people, and most people care about their communities, in terms of both the richness and diversity of existing businesses and the overall quality of life. (Power, 1996a, 135)

In its recent annual survey of top global cities for business, the Corporate Research Group based in Geneva rated Vancouver as the best of 161 cities in terms of quality of life (“Are We There Yet,” 1997, 146). In the words of *Fortune Magazine* on recent business location trends:

As life and work become more intertwined, people will flock to cities that cater most appealingly to both. No matter what operations a company is moving to a city, it had better be a nice place to live. Top-quality workers demand a top-quality living environment. That means affordable housing, good infrastructure, and plenty of opportunities for recreation and culture. Lifestyle matters to talented people who have a choice of locations – and nearly all do. (Barlyn, 1995, 1-2)

**Businesses
locate where
skilled labour
wants to live.**

Footloose industries and the new economy

Footloose industries are part of the new economy.

Certain kinds of businesses are especially mobile. Owing to the nature of their business, these “footloose” firms are easily able to relocate and easily persuaded to do so. Usually they are able to take advantage of new communications technologies to locate at any distance from suppliers, customers, and even skilled workers. Frequently these companies are found in computer software development or in professional financial and business services. Their mobility allows company principals to choose among a wide variety of locations, and they often place a high value on recreational opportunities, cultural activities, and other quality of life considerations. Their incomes are often high enough that they will accept less remuneration in exchange for the amenities they desire.

Aside from their potential for employment and wealth creation, footloose industries are desirable for cities because of their smaller environmental footprint. “In the past, Vancouver suffered from being far away from big population centres and markets. In today’s information economy, that’s less of a problem,” says Ian Mellor, an investment facilitator for the Ministry of Small Business, Investment and Trade. “Basically what moves around is a very light product and smart people” (*BC Business*, 150). Stuart McKay of consulting firm KPMG’s Vancouver office says: “Vancouver’s advantage over other Canadian cities really comes down to people wanting to live here. This is what brings companies like Disney Animation and Newbridge Networks to set up shop here” (ibid).

But high-tech and other service industries are also attractive to smaller communities for their role in diversifying and building local economies. New Internet services such as telecommuting and computerized linking of financial markets can facilitate that development. The B.C. community of Nelson has an initiative of this kind.

Location decisions by high-tech firms

Environment and a good university are key for high-tech firms.

According to a recent study by the Conference Board of Canada, a skilled workforce, a good local university, and high quality of life are the most important considerations for high-technology companies choosing where to locate or expand their business (Zieminski and Warda, 1997, 10). The study examined 139 companies from 12 industrial cluster regions (including Ottawa and Montreal) in North America, Europe, Asia, and a handful of newly industrialized countries (eg Brazil and South America) elsewhere in the world. The companies and regional clusters in the sample were chosen for their differences in size (i.e. revenues), maturity, and amount of research and development activity. In all cases, however, the firms were from high-tech industries and had relatively high levels of R&D spending.

Executives from successful companies were asked to rate the importance of factors contributing to their choice of location – location costs, proximity to markets, quality of local suppliers, access to transportation and other infrastructure, availability and skill level of labour force, government taxes and regulations, etc. Contrary to popular belief, considerations such as tax breaks and proximity to markets were much less important than a skilled workforce and quality of life in explaining location decisions.

The survey looked at what is needed both to encourage indigenous start-ups and small- to medium-sized firms – i.e. to “grow” local high-tech businesses – and to attract larger, more mature companies.

- In North America, small local high-tech firms are likely to be drawn to areas with a significant pool of skilled labour and, to a lesser extent, a well-established, reputable university. Asian companies tend to seek out government incentives, as well as a skilled workforce, while European firms look for local evidence of successful start-ups and fast-growing businesses. Small companies in new industrialized countries appear most interested in high quality of life (Zieminski and Warda, 1997, 6-7).
- When it comes to the bigger firms, the reasons for locating in specific areas are more numerous. In North America and Europe, a skilled workforce, quality of life, and the local university’s reputation go to the top of the list. In new industrialized nations, quality of life becomes only one of several factors, with low location costs ranked the highest overall. For large Asian companies, quality of life and the presence of successful start-ups are more important than government incentives and a skilled workforce (Zieminski and Warda, 1997, 8-10).

The survey results were reinforced at a September 1997 international conference on urban concentrations of knowledge-based industries. Held in Ottawa and with The Conference Board of Canada as co-host, “Technopolis97” was an unprecedented gathering of high-tech industry representatives from more than 20 countries and a wide range of companies. Participants were asked to rank issues of importance from their particular perspectives (industry, government, and academic) to encouraging development of successful industrial clusters. Quality of life was the highest-ranked factor among the participants as a whole (more than half of whom were Canadians).

Everything considered, the findings of both surveys indicate quite consistently that a skilled workforce and quality of life are key factors influencing decisions on where to locate among the businesses surveyed. “Companies come for the highly skilled pool of labour that offers them opportunity for growth. They also know that a high quality of life is the best way to keep the best and the brightest. While companies welcome government grants and tax incentives, they do not figure prominently into the decision on where to locate or expand.” (Gilles Rhéaume, Vice-President of Policy, Business and Society, The Conference Board of Canada, News Release, September 10, 1997)

***Environment
outweighs salaries
and taxes.***

Skilled people and quality of life: the connection

The lifestyle preferences of skilled and creative people increasingly determine where business locates. Cultural and intellectual stimulation, leisure opportunities, a livable climate, personal security and a clean environment are typically important values. British Columbia rates highly on these factors. (BC Ministry of Employment and Investment, 1996)

The Conference Board’s survey, mentioned above, found that corporate executives believed their employees were not overly concerned with cost of living, financing

costs, or salary levels. High taxes were perceived as the typical “tradeoff” or price to be paid for pursuing quality of life (Zieminski and Warda, 1997, 13).

According to a headhunting firm specializing in high-tech companies, “people coming to Vancouver come for weather and recreation and not for the pay or career opportunities.” For high-tech workers, wages in Vancouver are in the low- to medium-pay range relative to the rest of Canada. “If you come from Toronto, Ottawa, or Montreal, you’ll have to take a cut in salary, plus face a higher cost of living by 5 to 25 per cent” (Lee Brebber, Forbes and Gunn Consulting, personal communication, December 1997). Still, they come.

Role of government

There is growing evidence that tax breaks and other government incentives are not critical to company location decisions – in North America and Europe, at least. This apparent disregard for incentives (after having received them for some time!) reflects the growing maturity of the high-tech sector globally and a corresponding perception that less government support is now required. Companies do express concern about growing bureaucratic red tape, which may indicate their hope for less government direct involvement in the industry’s future.

According to the Conference Board survey, high-tech executives believe that government should spend its money on cultivating a skilled workforce and high quality of life, since these are the operative factors for attracting companies (Zieminski and Warda, 1997, 27). That means providing support for education and training, and investing in local educational infrastructure. It also means taking action to guarantee the natural and social environment – reducing pollution and traffic congestion, alleviating crime and social conflict, improving housing and cultural/recreational amenities, and protecting parks and wilderness areas.

Conclusion

Across North America, and perhaps in British Columbia more than in many places, people appreciate their environment for its beauty and its opportunities. To a considerable extent, these expectations are carried over to their built environment – the cities and communities and structures in which people live. People want to live and work in attractive locations.

As economic development proceeds, businesses become increasingly dependent on the skills and attitudes of their employees. They find themselves drawn to locate where the work force they need chooses to live and work. In this way people seeking desirable environments bring economic development in their wake.

To encourage businesses increasingly means to attract their work force, which in turn means creating an attractive place for living and working. Protecting and enhancing natural and built environments is therefore closely linked to sustaining communities and economies.

2. RESOURCE COMMUNITIES IN TRANSITION

The decline of the old ways

Some 1300 to 1500 single-industry towns across Canada contribute enormously to Canada's economy through the pulp, paper, lumber, metallic minerals, and agricultural products which comprise their livelihood and the basis of most of Canada's exports. These communities represent one of our nation's major economic strengths — yet they are extremely vulnerable. (Decter, 1989, 1)

At one time the resource industries were a source of strength. They fostered the growth of single-industry, “company” towns across Canada and British Columbia. The company and labour unions typically gave support and leadership to the workers and families by building schools, recreation and entertainment facilities and sponsoring community programs. Residents felt economically and socially secure in their company town. They formed a tightly knit group with a high degree of loyalty to the company on which they depended for so much.

The cost crisis

The international markets, which in earlier years presented a golden opportunity, have gradually become crowded with suppliers. British Columbia's export products, at one time prized specialties, have been turned into global “commodities”: products made uniformly in large quantities which compete mainly in price with other virtually identical products from other countries in world markets. Coal, copper, pulp, tinned salmon, softwood, and other B.C. exports now join long lines of anonymous competing products in the worldwide exchange of resource commodities.

Resource exports continually decline in value.

Global competition enforces standardization of these commodities and imposes a competition based on price. Driven by price pressures, commodity suppliers have to cut costs ruthlessly. In resource industries that means replacing workers with machines. With low profit margins per unit, commodity producers depend on high shipment volumes, and thus on high harvesting rates. In these ways the commodity export industries have become channels that expose their communities and environments to the cycles and pressures of world markets.

Vulnerability

As a result, in recent years conditions in these industries have been not at all like the “good old days” of early growth. The sense of security has been replaced by a new

sense of vulnerability and exposure to risk:

- The local plant is overtaken by transnational decisions and world price trends. Obsolete equipment is not replaced. There is a new obsession with efficiency. Layoffs and cutbacks are increasingly frequent.
- New technologies have been changing much of the work. Industry workers, who left school early to get the high-paying resource jobs, find their skills are confined to industry-specific technologies which are rapidly changing. Traditional skills seem more and more like a trap. Few are inspired by the intimidating prospect of building entirely new careers, probably somewhere else.
- Political issues have become acute. More and more seems to depend on government decisions. Residents increasingly find themselves drawn into disputes about environmental issues. Often they feel bound to defend traditional practices.

Strength has become vulnerability.

And yet, when they lose their jobs, most workers and their families do not simply pull up stakes to go elsewhere to find work, as some economists might believe. They stay. With great difficulty they keep going on their local roots. As they try to live with dignity and hope, they are sustained by family and friends and familiar places. The high unemployment in single-industry towns after a shutdown is in fact a vote of confidence in the value of the community. What's left after the company goes is the community itself.

The rise of new attitudes

A town that loses a large industry which has supported local working families for generations faces a crisis of identity. Residents can no longer sit back and wait for decisions on their future to be made in distant corporate headquarters and government offices. They have to cease thinking of their town as industry-dependent. Henceforth, opportunities will be ones that they themselves take the initiative to search out and create. They must come to rely more on each other, finding better forms of joint discussion and decision-making. Their local environment, no longer the source of masses of raw materials for processing, reveals new and different values. Forest assets become much more than marketable fibre.

Residents soon find themselves considering new possibilities, as we shall see. After extensive research into transitional resource towns across the United States, one researcher concludes that, after an extractive industry closes down, local communities recover very quickly, continue developing, and show little interest in looking for another extractive industry to replace the one that went. (Power, 1996b, 166)

Conquering the myth of dependence

Residents in towns where a major industry is in difficulty discover they are less dependent on that industry than they had thought.

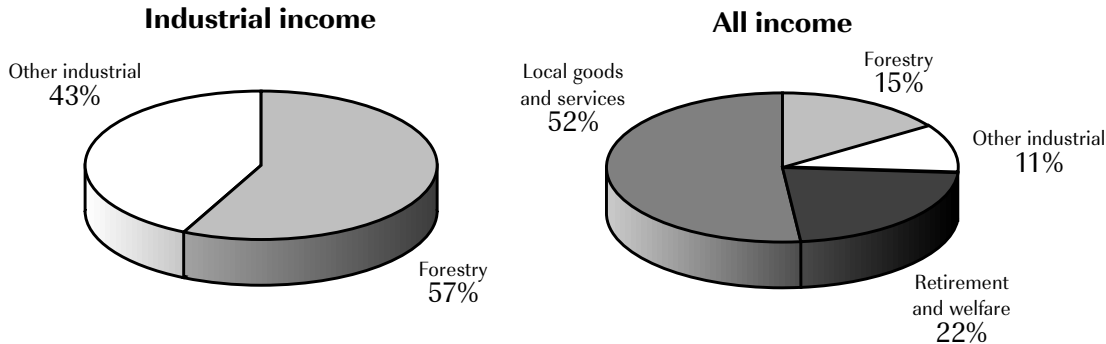
Communities are taking responsibility for the future.

- Even in BC’s most resource-based communities (e.g., Powell River, Quesnel, Port Alberni, Golden, and Prince George), the predominant resource industry makes up less than one-third of net incomes. In most resource towns, the proportion is lower. Usually, the public sector accounts for a bigger income share than the main industry (Horne and Powell, 1995, 21-2).
- A study of 220 “resource-dependent” communities across Canada discovered that other sectors, such as tourism and services, typically make a large contribution to employment and economic activity. (Randall and Ironside, 1996)
- A recent American study shows that “about 60 per cent of U.S. economic activity is local.” This percentage varies little between large cities and rural towns. (Power, 1996b, 37, 43)

The myth of dependence hides this local diversity by focusing on the income created by the industry alone. A clearer view is given by considering all the sources of income recognized by Revenue Canada. Consider the case of Nelson B.C. a few years ago:

Dependence is a state of mind.

Considering all income reduces forestry dominance (Forest products in the economy of Nelson, BC)



Source: Based on Thomas Power, Background Paper for BC Forest Resources Commission, February 1992

The firm belief that Nelson was dependent on the forest industry resulted in statistics that reinforced the belief. “Dependence” turned out to be largely a state of mind.

Discovering the local economy

As a town grows, what increasingly matters is not its major industry but its local economy. In both Canada and the United States, the history of economic development has been a story of diversification away from “extraction-and-export.” The successive Canadian export staples, cod, fur, timber, and wheat, have become

The local economy is the core of sustainable development.

steadily less important to the economy they helped create. The gradual shift of every economy from extraction to manufacturing to services has become a truism. In the larger view, a community that tries to remain focused on an extractive industry is trying to stand apart from the general movement of the economy, while one that tries to diversify is participating in it.

In this view, for a community to make strenuous “smokestack-chasing” efforts to attract large new factories or businesses by competing in incentives with rival communities is to invest only in future dependence and disappointment. It also downgrades other local assets whose values are rising: “Commodities are cheap and easily replaced ... Remnant natural landscapes are scarce, relatively unique, irreplaceable assets. In many cases, if we opt for extractive activity to keep the local economy afloat, we will be sacrificing what is scarce and unique for what is common and cheap” (Power, 1996b, 254).

Attention should therefore shift from large export employers to small, community-based businesses, which account for most job creation, are sensitive to local needs, and circulate money back into the community. The economy should be seen as having a local core of people doing things for each other. Residents provide one another “with the goods and services that make their lives comfortable. This includes retail activities; personal, repair, medical, educational, and professional services; construction; public utilities; local transportation; financial institutions; real estate; and government services.” (Power, 1996b, 37, 43)

Diversification and mutual support go together.

Resource towns in transition are quickly recognizing the importance of developing a diversified local economy. In Coos Bay, Oregon, a town where the dominant forest industry has collapsed completely, citizens have recognized that they have to work together to create new sustainable local industries. A documentary on the Coos Bay experience was recently reviewed by community leaders in Port Alberni, B.C., where downsizing has hit the local forest products industry. Mayor Gillian Trumper emphasized the importance of diversification into new activities, which is already well under way in Port Alberni (CBC-TV news, Vancouver, 4-5 February 1998).

This grassroots view of an economy reverses the traditional emphasis on large resource export enterprises. This bottom-up approach is often called Community Economic Development, “a process by which communities can initiate and generate their own solutions to their economic problems and thereby build long-term community capacity and foster the integration of economic, social and environmental objectives.” (CED Centre, SFU, 1996) From a CED standpoint, the key to long-run well-being is the development of the local economy with the guidance of community decisions. Only at the community level can real economic stability, meaningful work, environmental stewardship, and reinvestment vitality be based.

New sources of income

The traditional scorn of high-paid industry workers for service work (“McJobs”) is rapidly disappearing. After all, jobs in the extractive industry are increasingly associated with periods on employment insurance or social assistance. On the other

hand, wages in service jobs are improving. For women, earnings have always been better in services than in industry. For men, service wages average about 90 per cent of blue-collar wages at similar skill levels when hours are counted. Career paths exist in services for those with white-collar skills. However, those skills are associated with formal education, and for blue-collar workers who in the past abandoned school for high-paying industry work, lack of education becomes an obstacle to finding good work in the service sector (Power, 1996b, 61-80).

Income levels are no longer as important in gauging the quality of life in a community. In small towns and rural areas, the opposite is increasingly true. “There may be a tendency in an attractive high-amenity area to have lower wages and higher unemployment because people want to live there. In this case, lower wages and higher unemployment are not a sign of economic malaise but of how attractive the area is.” (Power, 1996b, 21)

Furthermore, an important growth opportunity in the local economy is the attraction of new residents who desire to live and work among the amenities of a small town in a scenic location. Some of these people will have “footloose” skills – for example, they may work in electronics or communications – and can locate anywhere. Others create small businesses, making specialty products for niche markets, or home-based businesses in areas such as child care and craft manufacturing. Another increasingly important source of new residents is retired persons and people living on investment incomes. Not only do retired people spend more on local services than on imported goods but they do not fill jobs their expenditures create and they put less pressure on local services, such as schools.

People forgo income to live in attractive places.

British Columbia case studies

A number of B.C. communities have set examples in moving from resource-based company towns to diversified autonomous centres. We look at how residents of Chemainus, Kimberley, Nelson, and Revelstoke took the initiative in seeking more sustainable futures for themselves.

Chemainus

In 1983, the city of Chemainus on Vancouver Island was already in economic trouble, with lots of empty stores, when Macmillan Bloedel announced that it would close down the inefficient 56-year-old local sawmill, laying off 700 people in a town of about 3,000. City leaders established a Merchants’ Revitalization Committee for the downtown core.

For more than a decade, some residents had been advocating the idea of painting murals which would depict the history of the town, a concept drawn from towns in Eastern Europe. When the mill closed, the town organized a festival of mural painting which attracted many artists and over 20,000 tourists. From the initial five murals, there are now more than 30, which have encouraged the establishment of antique dealers, art galleries, and other tourist-related businesses. The mural concept has been exported to other provinces (eg Boissevain, Manitoba, and Kenora, Ontario)

Chemainus painted its way out of a corner.

and countries. The murals cause no environmental harm, and, because of the care taken to choose the artists, have made the town a tourist attraction. In Chemainus, tourism has become a year-round industry, with 400,000 visitors annually.

MacMillan Bloedel has since built a new automated plant employing about 150 people and making wood products locally available (unlike the original mill, which made lumber only for export). This has drawn other small value-added wood-based businesses. The population, at 3900, is now nearly one-third larger than when the mill closed. The town is still growing, attracting artists and cottage industries, and there is talk of opening another art gallery.

By diversifying its economy, Chemainus took a vital step that other British Columbia forestry towns may be forced to take sometime soon. (Meisler, 1994)

The diversification of Chemainus also shows how a positive cycle can be developed. The new economic base has reduced industrial pollution and broadened business opportunities, and these improvements in turn have stimulated tourism and lessened resource dependence. The town is well on its way to a different future.

Kimberley

Kimberley, in the southeastern corner of the province near the Alberta and Montana borders, twins with nearby Cranbrook to form a centre similar to Kitchener-Waterloo in Ontario. The previous regional economy dominated by mining, forestry, and agriculture has given way to diversification, with steady growth in tourism and cottage industries. Today, the population is relatively stable at around 7,000.

Originally a mining camp, Kimberley was dominated by Cominco's Sullivan mine (lead/zinc, hard rock). Since it was an underground mine, there were few visible impacts, and since the ore was shipped to Trail, there was no smelter. But in the last 20 years, the number of mineworkers has dropped from 2,000 to 650, and the depleted mine is slated to close in four years. Forestry has also been in decline, facing the challenges of insufficient wood supply, high costs of processing, and the vagaries of Asian markets.

Kimberley residents look to their future.

Some comments from Kimberley residents (all from Koch, 1996):

You've got a problem if people aren't interested (in keeping the town alive) but we have a lot of people working on it. (Cominco employee).

I transferred here with the company 20 years ago and ended up staying. I just love the place. Our strength is our community spirit. (Cominco employee).

It has been and is now a better place to live, not just a place to get a job. (Businessman).

It's no big deal where I live. Tourism and the fact that it's a cheaper place to live will attract people when the mine shuts down. (Cominco employee who will be too young to retire when the mine closes down permanently).

If the Japanese don't buy Kimberley, it won't make it. It'll be a town of retired people, welfare families and families of fly-in/fly-out workers. The city caters to the tourist, not to the taxpayers. We won't make it on tourism - it's not a Fairmont, Whistler or Banff. Kimberley has lost its sense of community. Cominco is what kept this town going and it's what has kept it together. (Wife of Cominco employee, resident for 12 years).

In the 1970s, neighbouring Cranbrook was emerging as a regional service centre, with malls and retail growth, while Kimberley was not. Kimberley decided to revitalize its downtown core. A Bavarian theme was chosen. The surrounding scenery resembles Bavaria in its location between two mountain ranges (the Rockies and the Purcells), and residents didn't want to pursue the alternative "cowboy" option. The "Bavarianization" now includes "Happy Hans," a "platzl" (remodelled town square), renovated storefronts, World's Largest Cuckoo Clock, and other features.

Tourism is now a substantial share of the Kimberley's economy. There is an ongoing effort to make the town a year-round resort destination, in part based on the numerous recreational facilities, including a ski hill built 40 years ago with Cominco's help.

Residents feel that the town has benefited more than just economically. Diversification has improved aesthetics – Kimberley prefers its "village look and feel" to the American strip city design of Cranbrook – and the quality of life and has provided affordable housing and other amenities, such as ski passes. Many people employed at Cranbrook's College of the Rockies choose to live in Kimberley.

Kimberley is proud to be "clean and green." Its objective is "to make a transition to a prosperous diversified economy while maintaining the desirable social and environmental qualities of the region" (City of Kimberley, 1997, Introduction).

Lifestyle has become the main attraction.

Surveys of Kimberley residents in 1990-91 indicated 35 per cent were living there because of the lifestyle of the area compared to 24 per cent who were there because of work. Fifty-four per cent of respondents cited the attractiveness of the area and its small-town feel as the best aspect of living there, 21 per cent cited recreational opportunities and eight per cent the availability of work (Koch, 1996, 23).

The surveys also indicated job opportunities brought most residents to Kimberley in the past, but the lifestyle has overtaken employment as the main attraction: Asked why they originally moved to the town, 50 per cent of respondents said for the work, 24 per cent because they liked the area; asked why other people were moving to Kimberley at the time of the survey, 67 per cent credited the attractiveness of the area while 32 per cent cited employment.

The proportion of Kimberley's total labour force employed by Cominco dropped from 60 per cent in 1961 to 27 per cent in 1991 (Koch, 1996, 40).

Nelson

Nelson, picturesquely situated on the shores of Kootenay Lake in the Selkirk Mountains, has a population of 9,500 and growing (15,000 for the entire Nelson area). Nelson is a draw for tourists and new residents alike, with more than 350 heritage buildings and an active arts and culture scene. The filming of the movie *Roxanne* ten years ago generated tourist interest which continues to this day. There has been a conscious effort to keep the city's aesthetic appeal (for example, the Main Street Revitalization Project, waterfront pathway development).

The city has had a number of large industries come and go, including a smelter and a pulp mill. The largest industrial loss occurred in the late 1980s when Canadian Pacific closed its locomotive repair shops, the largest such facility west of Winnipeg, when 2,500 jobs were lost.

Nelson's city vision (in its Official Community Plan) is to retain its heritage and artistic characteristics, attract service and high-tech industries, and strengthen its tourism and other commercial bases.

More than ever before . . . tourists are inquiring about work opportunities and housing prices in the area. It is readily apparent that the scenery, clean water, and great hospitality offered throughout the area is indeed making the West Kootenays a preferred place to live and to vacation. (Arrow Lakes News, Sept. 16, 1992, quoted in Copeland, 1994, 17)

The distinguishing feature of Nelson's "restructuring" has been the rapid growth in small- and medium-size businesses. Its economy is now largely based on these smaller businesses – sportswear manufacture, artisans, and other activities using local skills. Tourism has grown rapidly, with an estimated one in eight local jobs now being tourism-related.

Nelson also has several educational institutions, including a satellite campus of Selkirk College (based in Castlegar), Kootenay School of the Arts (with a specialty co-op program), Nelson University College, and Canadian International College (an ESL school).

Nelson shows definite signs of the new "global economy" (some of these global trends were cited in Copeland, 1994). Examples include:

- Home-based businesses have sprung up in Nelson, spurred by new technologies, lifestyle choices and economic necessity, with around 400 such local businesses in 1992. Many of these businesses are operated by women, in areas such as child care and craft manufacturing.
- Other home-based consulting business, such as research scientists, computer programmers and stock analysts serve clients in Vancouver, Eastern Canada, the United States, and elsewhere.
- Nelson is one of the top five communities in Canada for Internet connection, with 30 per cent market penetration. A local "cybercity" initiative seeks to develop a

***Nelson is
diversifying and
going on-line.***

“knowledge centre” and internet connections for municipal services, telecommuting, distance learning, and small businesses to supply remote customers.

- Some local firms are producing specialty goods and services for niche markets – e.g., mountain bike lights produced by BLT Lighting Systems and automatic headlight devices made by Pacific Insight Electronics for major automakers.
- The local economy is also being buoyed by retirement and investment income (low housing prices and Nelson’s quality of life have attracted new residents, for example from Vancouver and Toronto), as well as the non-traditional economy (barter, mushroom picking, and community volunteer activities).

Some communities will probably continue to do all they can to milk the last years of an era of unsustainable resource exploitation. But the resources will eventually run out and these communities will face, like Nelson did, the need to diversify and build a much different economy. (Copeland, 1994, 22)

Revelstoke

Revelstoke, a historic community in the Columbia Mountains, began in the 1880s as a transportation and supply centre for the mining industry. A CPR station and maintenance yard followed, leading to development of the timber industry. In 1965, construction began on three hydroelectric dams which flooded vast expanses of prime agricultural and forest land. The city has been in transition since the mid-1980s when work on the hydro dams and Rogers Pass ended, and a major sawmill closed. Within two years, the population fell from 10,000 to 7,500, and the unemployment rate reached 25 per cent.

Responding quickly to these events, community leaders prepared and carried out the first in a series of economic development strategies to restore and diversify the local economy.

Nine teen eighty-five marked a real turning point in our history - a realization of a do or die situation for the local economy and a realization that only we could do something about it. (Mayor Shelby Harvey, presentation to Energy 2000 Forum in Aspen, Colorado, Oct. 2, 1997)

The focus of effort between 1985 and 1995 was on developing infrastructure and building community capacity. Examples include:

- A \$3-million downtown revitalization project to restore Revelstoke’s Victorian heritage for residents and tourists.
- The formation of centres for encouraging local enterprise (government-business partnering), providing training and skills upgrading, and offering job search and career development services, especially for youth and displaced forestry workers.
- A new storefront office in the downtown for walk-in economic development advice.

Revelstoke is working towards its community vision.

- Expanded tourism marketing and the construction of a state-of-the-art railway museum both as a tourist attraction and to honour the town's history and the contribution of railway workers.

In 1992, Revelstoke embarked on a process to develop a community “vision statement” to help guide the transition from an extractive resource-based economy. With no patterns to follow, participants developed a participatory process and a vision statement which has attracted interest across North America. In 1993, Revelstoke became the first community in BC to purchase its own timber licence. The creation of the Columbia Mountains Institute of Applied Ecology is being proposed by local governments, chambers of commerce, educational institutions and others to encourage and co-ordinate applied ecological research, technical training and community efforts to support the sustainability of forestry, hydroelectric development, transportation, settlement, tourism, and other human activities in the Columbia Mountains region.

In 1995, Revelstoke was hit again by reductions in the timber harvest and layoffs at CP Rail. A new strategic plan was developed in 1996 which identified specific sectors and projects to further diversify the economic base. Priorities include financing for value-added manufacturing, continued support for small business and tourism, development of telecommunications infrastructure, and promotion of the film industry. The city now holds annual planning meetings to review projects and assess progress on specific initiatives – timelines, financial and human resources.

Today, the population has climbed again to 8,800. Tourism is now the largest sector, with 725 people employed.

Community renewal

A number of approaches and initiatives are common to resource communities seeking to diversify and develop their local economic base. They reveal a revitalization of community spirit and a sense of new possibilities in building a future together.

Visioning and planning

Community-based thinking focuses on people taking charge of their situation. In this view, a cause of environmental devastation and unsustainable practices is a habit of local passivity and helplessness that comes from allowing distant corporate headquarters and levels of government to make decisions.

What's needed is a shift to proactive community engagement, in which residents assert their responsibility for their future. Members rediscover forms of joint discussion, goal-setting, and decision-making at the grassroots level, and communities begin to undertake for themselves a kind of strategic planning.

“The vision is only the first step in a strategic planning process leading to the development of objectives, strategies, and action plans”:

***Finding a vision
is a first step.***

In order to be sustainable, communities need to become learning communities. This means to be engaged in an interactive learning relationship with the internal and external environments, aided by flexible communication and public participation structures which could enable information flow, and flow of educational learning among stakeholders. Such a community would be one of empowered stakeholders, whose planning and development is guided by visionary planners cum educators. (Jamal and Getz, 1997, 217)

Community development or redevelopment is successful when sparked by local initiative, when goals and strategic plans have broad local public support, when needs identified by the community are addressed, and when the development program is focused on self-help and community self-reliance (Young and Charland, 1992, *passim*).

There is a growing literature of very practical manuals to help communities do this. For example, in 1997, the Rocky Mountain Institute in Colorado published the third edition of its *Economic Renewal Guide: A Collaborative Process for Sustainable Community Development*. This clearly-written, understandable explanation of sustainable development at the community level sets out seven steps of economic renewal: Mobilizing the Community, Envisioning the Community's Future, Identifying What You Have to Work With, Discovering New Opportunities, Generating Project Ideas, Evaluating Project Ideas, Selecting Projects, and Developing Project Action Plans. As elsewhere, the emphasis is on helping communities take charge of their local economies.

Strategies of community development

Several strategies are almost universally adopted by communities planning for development (Simon Fraser University, CEDC web site):

- Increase civic involvement: eg encourage citizen awareness of local issues, involve residents in community planning, develop methods of participatory democracy.
- Strengthen natural ecosystems: eg plan for a sustainable environment, promote responsible consumption, conserve wilderness and resources.
- Plug the leaks (what economists call "import substitution"): eg buy local, match local buyers and sellers, pursue value-added opportunities, use barter etc, to put more money back into the local economy.
- Support community enterprise: eg encourage existing and new small businesses, cooperatives and non-profit organizations, recruit "compatible" new firms, encourage industry clusters.
- Build local capacity: eg improve community infrastructure (transportation, energy, water, and other services), education and skills of residents, community-based resource management, local financing of businesses.

These strategies identify and build on community assets and capabilities to strengthen the local economy from the bottom up.

Community strategies work from the bottom up.

Sustainable use of resources

The emphasis on local economies does not mean that natural resources are declining in importance. It means that their importance is changing. Their value as sources of bulk material is decreasing. Their value as environmental amenities is increasing:

Natural resources are revealing many new values.

- as landscape for recreation and tourism,
- as places to live offering alternatives to urban life (lower density, parklike settings, less social conflict),
- as sources of unusual flora and fauna,
- as repositories of cultural, historical, and spiritual values,
- as sources of clean air, water, ecological diversity, and scenic beauty.

In the next few decades, British Columbia will transform from a society that relies heavily on a primary resource base to an established, sustained resource management society. . . The best sites for damming have been dammed, highways and railways are through most low passes and people live in most of the hospitable terrain. The primary forests are being cut in valleys, and we are beginning to rely on second growth. This transformation may be difficult for not only the social and economic systems but the ecological systems on which we rely. (Columbia Mountains Institute of Applied Ecology Proposal)

The trend away from simple extraction has been going on for centuries. The movement of people off the land and into non-extractive kinds of work has been shown historically by the growth of towns and cities.

As the global population expands and the urbanization of society continues, intensifying stress on the environment and increasing our mutual interdependency, well-being will depend more and more on the quality of our social and natural environments and less and less on the private goods we purchase. (Power, 1996b, 248)

As the economy grows it becomes increasingly important to use resources sustainably.

Is tourism an answer?

Advantages

Smaller communities seeking to diversify their economy may consider their tourism potential, especially because of British Columbia's spectacular scenery. Some general advantages of tourist development stand out:

Tourism brings money.

Tourism is the only industry with a positive net flow of funds from wealthier to poorer regions. Unlike all other industries, tourism takes the people to the product, not the product to the people. As such, tourism serves as a vital element in trade within local and regional economies, notably for small population centres. (Manning, Keynote, 3)

The revenue flow [can have] a five to seven times multiplier effect within the host community. Because of the nature of the tourism business, the majority of the money spent is money that comes from another geographical region and is new to the host community. Since the services provided are of an immediate basis – meals, lodging, entertainment, recreation – the effect of this new money is felt quickly within the host community. Food purchases from local purveyors, wages and tips earned by hotel staff, fees paid at local golf courses, etc. new money with an almost immediate flow-through to the community – one of the main reasons developing areas look to tourism as a key industry. (Shoaf, Sundance)

For workers accustomed to high-paid employment in mines or mills, tourism jobs may seem a come-down. But such a judgment may be premature, especially in view of the changes occurring in community opportunities. Many residents may be shifting their perspective from that of a “career” to that of assembling sources of income to support a quality of life they have come to value:

The seasonality of jobs is particularly important in tourism. Furthermore, the notion of job quality is crucial. Often seen as providing low-quality jobs (for example part-time, low-paid, female), tourism jobs must be seen within the characteristics of a local area. They may interact with other household employment where they can form the principal source of income, a useful supplement, or help sustain other enterprises such as farming or local shops [In some areas] combining part-time jobs is part of the way of life, and a sizable proportion of the population live there for quality of life reasons rather than for purely economic ones. A number of studies have shown that farm tourism provides not only additional income but forms an important social function for farming groups. (Towner et al, 1993, 27)

A variety of income sources replaces a single career.

As a contributing part of a diversified local economy, tourism may in some cases have a very useful role to play.

Business considerations

In recent planning discussions for B.C. tourism, industry participants noted that although the industry is strongly growing, it is also facing new pressures. In particular, competition with other destinations around the world is increasing, and greater emphasis is being placed on quality of facilities and services. For example, a greater diversity of things for visitors to do, higher quality attractions, and upgraded interpretive experiences will be important to stay competitive (*Tourism Industry Product Overview*, 1996, A3-6). Ensuring the quality of visits may be especially important for smaller communities. In British Columbia, tourist activity is highly concentrated in the Lower Mainland and Victoria, and planning participants noted the lower quality of facilities and services in other regions and communities, and the frequent difficulty of access. (ibid, A3-5)

Tourism analysts emphasize the importance of planning and developing a regional experience, consisting of a cluster of destination zones and attractions and touring circuits. It may be desirable for several communities to develop jointly an interesting route and series of things to do. It is widely accepted that attractions should be

The quality of tourist experience must be planned for.

grouped so that it would take more than a day for a visitor to participate in all of them, even to get the interest of tourists who spend only a few hours in the area. (Fagence, 1993, 1-4)

Tourism depends crucially on awareness by the travelling public. The B.C. tourism industry planning group named “lack of integrated marketing, leading to low consumer awareness” as the leading growth constraint, by a wide margin. (*Tourism Industry Product Overview*, 1996, A5-3)

Environmental considerations

Resource access

Tourism of the outdoor and recreational types is particularly sensitive to environmental degradation caused by other resource uses. Tourism planning participants repeatedly emphasized their fears of loss of scenic values, wildlife habitat, and fish habitat in all non-urban sectors of the industry. Visible logging and mine development were singled out as examples of how deteriorating quality of setting is undermining the overall quality of the visitor experience (*Tourism Industry Product Overview*, 1996, A3-3,4). These impacts are not merely local and hidden away but can be found near some of the main highways and access routes where no tourist will miss them. Participants also acknowledged that many of the threats to landscape values come from the tourists themselves.

Tourism is sensitive to environmental degradation.

Impacts of tourism

Authorities broadly agree that tourist development can be double-edged:

While a certain amount of development is desirable, it must not reach the point when overcrowding destroys the atmosphere that initially provided the base from which the tourist development evolved. (Mitchell et al, 1993, 22)

A weakness of the multiplier approach is that it assumes that increases in the output required to meet increased tourist demand can be met from the same sources and that no change will occur in the pattern of transactions as expenditure, consumption, and incomes rise. (Towner et al, 1993, 26)

In the recent past, tourists devegetated some of the more easily accessible alpine meadows through cumulative effects of their footsteps on the very fragile plant species which tourists were coming to see (eg summit of Mt Revelstoke) The sustainability of tourism, in particular, relies on ensuring that carrying capacity is not exceeded In practice, social carrying capacity may be even more sensitive than ecological carrying capacity [Community] values may become violated at levels which are still well within biological thresholds. (Manning, 1996, 4-5)

Uncontrolled tourism can be harmful and unrewarding.

Four negative structural characteristics have been identified in remote destinations which have experienced tourists' loss of privacy; destruction of the culture that attracts visitors as attractions are transformed into a museum; hostility at perceived exploitation, commodification, and lack of consultation; and inability to charge admission fees for general tourism (as opposed to fixed attractions). (Craik, 1995, 91)

Many mountain communities have compromised the needs of the resident community to achieve tourism development goals. Examples of this can be found in most tourist towns that have evolved without an employee housing policy. While the cost of providing employee housing acts as a disincentive to early investors, failure to do so has created serious employee recruitment and retention problems in many communities once land values have increased. Affordable housing provisions tend to be weak or unenforced. (Gill and Williams, 1994, 218)

In short, smaller communities need to have strategies for mitigating undesirable changes to social and natural environments. (Smith, 1996, 176)

Similar concerns are evident in the B.C. towns just discussed:

- Revelstoke could have handled a ski development the size of Garibaldi and Whistler combined on Mount Mackenzie, but determined to keep the development at a capacity of 6,000 a day or less. As Mayor Shelby Harvey has said: "Our greatest concern is that we will lose the very character that makes us attractive and unique if the resort is too big" (to Forum 2000, Aspen, Oct. 2, 1997).
- Though tourism has been pursued by Kimberley and recreation is an important part of the local lifestyle, Kimberley residents are concerned about relying on tourism and the ability of tourism to provide jobs that will allow families to relocate or stay in Kimberley. They are concerned that children will not have the choice to stay. (Koch, 1996, executive summary).
- A recent survey of Nelson residents revealed concern that uncontrolled growth could lead to a deterioration in quality of life. Although they supported "an appropriate amount" of tourism, most didn't want to turn Nelson into a Banff overrun with tourists. They preferred a degree-granting educational institution as a means of expanding the economy without compromising the environment, more small and home-based businesses, secondary manufacturing and farming (Johnson, 1993).

Tourism planning must be part of community planning.

The need for planning

Planners are increasingly being expected to use greater community participation in tourism planning: first, because of the impacts of tourism felt at the destination; second, because the cooperation of community residents is an essential ingredient in the "hospitality atmosphere" of the destination. (Simmons, 1994, 98)

Tourism must be part of community planning.

Planning approaches vary.

Participants at a 1995 national conference on tourism planning therefore found themselves really talking about planning for sustainable development. Workshop discussants identified two contrasting approaches to planning for sustainable community development:

- “Rational planning”: Hire outside experts who use formal methods to (1) identify community resources, (2) identify development constraints, (3) forecast market potentials for types of products that could be offered locally, (4) match resources, constraints, and markets, (5) form development plans, (6) implement monitoring techniques.
- “Community development”: (1) identify common values and a shared vision among residents, (2) identify local strengths and weaknesses, (3) hire outside facilitators to help the community do its own planning.

These approaches in their view were not mutually exclusive, nor was one inherently better than the other. In fact, a blend was preferable, to deal with the weaknesses in each. The rational approach needs to have community involvement and ownership from the outset. The community development approach needs recognized standards, criteria, and procedures to be credible and successful. Most communities, therefore, will develop their own combination of the two approaches (Smith, 1996, 178).

Conclusion

The decline or collapse of a dominant export industry does not mean the end of a community. A time of retrenchment follows, in which the community reassesses its strengths and begins to diversify the local economy. Visioning and strategic planning processes can help chart a new course.

Numerous examples of such communities in British Columbia and elsewhere in the Pacific Northwest suggest lessons such as the following:

- Resource-dependent communities should begin transition planning for a different future and not wait for export industries to shut down. They should focus on diversifying the local economy and building an attractive community offering quality of life and environmental amenities. Building-from-within and environmental maintenance provide the basis for future prosperity and economic development.
- Smaller communities should welcome and seek to attract the growing numbers of people who value the advantages they can provide in quality of life and environment. These include, among others, retired persons and workers in knowledge-based “footloose” industries. People who can choose where to live and work are a growing and increasingly important economic resource for smaller communities. Business increasingly is attracted by the same things people are, because of its growing reliance on skilled labour.

- Smaller communities should assess their tourism opportunities. Planning is needed both to provide quality experiences, usually involving many sites in an area, and to ensure that tourist traffic itself does not degrade sensitive sites or harm community relations. Strong local support for tourism is also vital because of the importance of resident attitudes to a positive tourist experience.

Deliberate steps to maintain and develop both the natural and community environments become a key to revitalization.

3. INDUSTRIAL ECOLOGY

Industrial clusters

For a long time in communities of every size there has been a noticeable trend for firms to locate near other firms, especially those in related areas of business. This tendency seems to be growing stronger in “the new global economy,” even though the “communications revolution” might have been expected to lessen the need for such clustering.

Businesses tend to cluster and form networks.

Harvard Business Professor Michael Porter, for example, predicts that nations will remain competitive in this new economy not by diversifying over a range of isolated industries, but rather by establishing clusters of industries that are vertically and horizontally connected (Porter, 1990).

With globalization and the shift to a knowledge-based world economy, time-to-market and just-in-time delivery become more critical. This encourages the clustering of capabilities in regional/local centres to support the innovation process and thus to minimize the leakage of external benefits outside the community. Firms are attracted to communities that provide the key functions needed to bring their products or services to market rapidly. (Voyer, 1997b, 2)

In effect, an industrial cluster amounts to a local economy of its own. It consists of a geographic concentration of firms, with a core industry or industries, supported by a network of specialized supplier and related industries, education and training institutions, providers of business services, financial institutions, and transportation and other infrastructure. The cluster can be formed around any kind of manufacturing, supply, or service activity, from microelectronics to wine-making to footwear to telemarketing.

The tendency to cluster can also make environmental sense, of the kind summed up in the term “industrial ecology.” In this concept, drawing on the biological metaphor, businesses locate and interact in a networked “industrial ecosystem.” Byproducts of one firm become inputs of another, thus reducing pollution and waste, while creating symbiotic synergies.

This concept has led to several planning strategies:

- Eco-industrial parks – industrial zones in which firms operate on the basis of industrial ecology, with the goal of improving economic and environmental performance.

- Zero-emissions parks – advanced eco-industrial parks where wastes are totally eliminated, by attracting non-emitting industries and/or by locating firms so that all wastes are completely recycled through the system (Smart Growth Network web site).

Planners have also become conscious of an informal version (sometimes called a “virtual eco-industrial park”), a network of related regional companies which, although not physically located in the same park, work together to use resources more efficiently, such as by sharing environmental engineering expertise, cooperative purchasing of goods with a higher recycled content, etc.

Eco-industrial parks

Eco-industrial development is part of the emerging field of industrial ecology, which applies principles of natural ecosystems to business planning and operations. In Eco-Industrial Parks (EIPs), the linkages between companies go beyond standard supplier and service relationships to include the exchange of resources and wastes aimed at reducing overall costs and environmental impacts. “The Ecological Industrial Park offers entry into a new kind of industrial development that seeks synergy between business and environmental performance” (Cornell University web site, Cornell’s Perspective on Eco-Industrial Parks).

EIPs do not need to be high-tech or environmental (eg, recycling) in orientation. Heavy manufacturing plants are also candidates for attracting to an EIP, and the desirable industrial mix may be varied, depending on the community involved.

Among the advantages to business are better operating performance by saving on the costs of waste disposal and raw materials. Through such efforts, firms can realize an excellent return on assets of up to 30 to 50 per cent above the industry average. In addition, as environmental performance becomes increasingly important to consumers and investors, companies can improve their market position and financial attractiveness by becoming “green manufacturers.”

But the benefits to communities can be even more substantial. Eco-industrial development offers more high-quality sustainable jobs. Recycling of wastes and resources means less reliance on imported goods and services, reduced landfill demand, and greater local job creation. Community support for an EIP is essential, and communities can be proactive in attracting and growing compatible industry:

Local action can include: involvement of municipal waste authorities, streamlining permitting processes, providing environmental services or enhancements and promoting flexible transportation systems. Communities must choose between continuing out of date strategies such as putting up for sale sign or offering tax selloffs to whomever comes by; or adopting a systematic strategy that explicitly seeks the best while requiring continuous new explorations in search of best strategies for common advantage. (Cornell University web site, Eco-Industrial Development Program)

Clusters can be planned for ecological efficiency.

Communities benefit from planned clusters.

Examples of eco-industrial parks

The concept of eco-industrial development is not exactly new. For the past 20 years, a prototype industrial ecosystem has been operating in Kalundborg, Denmark, linking several industries in a profitable symbiotic relationship. The firms involved include a power station, oil refinery, plasterboard factory, biotechnology company, municipal services, and some small agricultural operations. Within the system, resources and wastes (materials, energy, water, and steam) are exchanged through negotiated market relationships (Cornell, Eco-Industrial Development Program). While the original intent of the networking was to reduce operating costs, environmental protection has become another key benefit.

In the US, the President's Council for Sustainable Development designated four demonstration sites for EIPs in 1994, which are currently being administered by the Environmental Protection Agency (EPA):

Clusters are appearing everywhere.

- The Fairfield project in Baltimore, Maryland is “retrofitting” industrial ecology principles into an existing industrial site dominated by petroleum and organic chemical producers.
- In Cape Charles, Virginia, an area has been custom-zoned as a Sustainable Technologies Industrial park, and will include a coastal dune habitat preserve and wetlands for wastewater treatment.
- Brownsville, Texas on the U.S./Mexico border is being investigated for a virtual EIP, and is targeting a variety of recycling plants for development.
- Thirty years after being named “American’s most polluted city,” Chattanooga, Tennessee, is now being touted as a model for regional sustainability planning, with a range of EIP options being considered that mix industrial, service, tourist, and residential use (Cohen-Rosenthal et al., 1996).

Aside from these demonstration sites, a number of other American communities are pursuing eco-industrial development:

- The Civano project in Tucson, Arizona, is building a “greenfield” (previously undeveloped site) EIP as part of an environmentally-friendly mixed use residential, commercial and industrial community currently under construction [Civano is profiled under Sustainable Communities].
- Eco-industrial redevelopment is being considered for Seattle, Washington’s Duwamish Corridor, a once-thriving area for industries such as steel, shipbuilding, and aerospace.
- The Green Institute of Minneapolis, Minnesota is studying the potential for building an EIP on a small (3 to 4 acres) greenfield site.

A Canadian industrial park as ecosystem

The Burnside Industrial Park near Dartmouth, Nova Scotia is being investigated for the potential benefits of applying industrial ecology practices. The park is home to more than 1,200 businesses on almost 2,000 acres of land. For five years, it has been the subject of a major research project led by Dalhousie University's School for Resource and Environmental Studies.

In 1992, a research team of academics and consultants surveyed 278 local businesses on their raw material requirements, waste production, pollution prevention opportunities, and individual perceptions. The survey was followed by nearly two years of intensive studies in the park. Based on the results, a report was produced setting out principles and guidelines for Designing and Operating Industrial Parks as Ecosystems (Dalhousie web site, The Burnside Industrial Park as Ecosystem).

Subsequent research has documented case studies for improved resource use and waste reduction between businesses in a number of local industries – including commercial printing, vehicle maintenance, computer assembly and distribution, chemical manufacturing and distribution, and paint and coatings. A cross-sectoral case study has recommended a Centre for Repackaging Use to deal with the large share of waste materials accounted for by packaging.

One participant is Farnell Packaging, a leading manufacturer of plastic packaging in the Atlantic Region. Among many initiatives, the company has switched production to linear low-density polyethylene, creating thinner plastic bags and diverting substantial waste from landfills. Most of the plant's waste plastic is recycled in closed-loop systems. Resin that is not reused is sent to another company. Inks used in the printing press are now based on vegetable oil and water, and spent solvents are distilled and recovered to clean the presses. Farnell Packaging is also looking at "potato plastic," an American invention that is completely biodegradable and composted.

Redeveloping brownfields

"Brownfields" are abandoned industrial sites, usually located in urban areas, which have real or perceived contamination problems. Abandonment typically leads to community economic decline and increased urban sprawl, as developers move to more distant greenfields. In the United States, where brownfields are pervasive, the EPA has more than sixty redevelopment pilot projects underway. Most of the EIP pilots mentioned above are brownfield projects.

Brownfield redevelopment is an attractive option for siting businesses because it helps community sustainability, reduces environmental impact (through cleanup efforts and better industrial practices), and offers companies better access to urban markets and transportation.

Existing industrial parks can be upgraded ecologically.

Abandoned industrial sites can be revitalized.

Clustering and sustainability: the Italian experience

The Emilio-Romagna region of Northern Italy, containing cities such as Bologna and Parma, is an example of a region with concentrated industrial activity that has actively pursued environmental sustainability. The region's industrial strategy, which has focused on supporting the clustering of small manufacturing firms, led to *Time Magazine* judging it one of the world's best areas for quality of life in 1994 (OECD, 1996, 246-7).

Environmental sustainability is a basis for development in Northern Italy.

In 1995, the regional government established ARPA, the Regional Health-Safety and Environment Agency, with the responsibility, among other things, of conducting environmental monitoring, providing support for environmental planning by industry, and publishing state-of-the-environment reports. ARPA has deliberately moved away from "command and control" regulation to work in close partnership with companies on pollution prevention planning, Environmental Management and Audit Schemes (EMAs, the European equivalent of Environmental Management Systems, also known as "eco-audits"), and other innovative strategies for environmental sustainability (Zavatti, 1997).

- **CIBA, in Bologna, a model of sustainability planning.** Acquired from a local entrepreneur in 1979, CIBA faces the challenge of being the only chemical plant in a largely residential area with relatively high per capita incomes and a strong orientation towards the services sector. Not only has the company made substantial strides in improving its environmental and safety performance record – by adapting production processes, purchasing and distribution policies, etc. – but it has also worked hard to develop a better relationship with the local community. Since 1991, CIBA has undertaken an extensive program of public surveys, meetings, focus groups, and site visits (including separate projects for youth, who have been the most critical environmental opponents), as well as signing cooperation agreements with the local university, trade union and other stakeholders. An Environmental Balance project measuring the plant's inflows and outflows produced a special report for the general public that earned the company an environmental award in 1993 (Righini, 1997).

High-tech clusters

The high-tech industry is a leading sector of "the new global economy" and also leading candidate for clustering. To an unusual extent, a high-tech company's R&D activity will spill over to other similar/competing firms in the community – for example, through employees changing firms or leaving to start up their own companies – spurring local economic development. Whatever the reasons, high-tech clustering is common.

High-tech firms cluster readily.

By far the most mature and self-sufficient high-tech cluster is the familiar Silicon Valley (Santa Clara Valley, California), with more than 1 million people in over 6,000 firms. But the United States also has high-tech industrial clusters in Austin, Texas, and Boston's Route 128. France, Germany, The Netherlands, Italy, Spain, and Japan

have major regional concentrations of high-tech industry activity. A large, mature high-tech cluster has its own local economy, including a network of technical, financial, legal, and other business support services required to reduce reliance on outside resources (“plug the leaks”) and sustain local economic activity.

Canada's developing high-tech clusters

Canada's knowledge-based clusters are still relatively young by world standards, but are growing fast – in Ottawa-Hull, Montreal, Toronto, Guelph-Kitchener-Waterloo (the Cambridge Technology Triangle), Calgary, and Vancouver (Industry Canada web site).

All these regions advertise quality of life as one of their major drawing points for high-tech business. Here are some examples:

- “The Corporate Resources Group, a Swiss-based management firm, has ranked the Ottawa Region sixth in the world in terms of its quality of life...The Ottawa Region boasts good health for its citizens, safe neighbourhoods, and access to good schools and after-school activities with no tolerance for drugs and violence. Ottawa has been described as one of the most beautiful capitals in the world ... Ottawa enjoys the attributes of a major centre for the visual and performing arts, as well as other big-city attractions, while maintaining the accessibility, atmosphere and charm of a smaller city.” (Ottawa Region web site)
- Montreal emphasizes its ranking among the top 10 metropolitan areas in North America (Price Waterhouse ranking), relatively low crime rate (compared to other countries) and declining incidence of violent crime, lowest cost of living and doing business among G7 countries, and “unequaled quality of life.” (Nakhleh, 1997)
- “In a world where money, people and technology move freely from one jurisdiction to another, Calgary's unique culture enables companies to compete successfully in world markets against jurisdictions often with low input costs. Calgary's culture is rooted in our farming and ranching heritage, shaped and modeled by the many fine people who have moved here from the USA and overseas.” (Croft, 1997, 7)
- A government document on BC's investment climate promotes the province's natural environment, climate, and social amenities (education, health, transportation, personal security, housing, and cultural amenities (BC Ministry of Employment and Investment, 1996, 33-5).

***Quality of life
attracts and
reinforces
high-tech clusters.***

Atlantic Canada

Recently, Atlantic Canada has been actively seeking high-tech investment. New Brunswick has offered incentives to lure industry (eg, the UPS call centre has moved from Vancouver to Fredericton), Newfoundland has been installing fibre optic cables, and Dalhousie University in Halifax has developed a high-tech program that is graduating people with appropriate skills.

***Atlantic Canada
promotes
clustering with
quality of life
reasons.***

The Atlantic Canada Opportunities Agency (ACOA) has undertaken some studies to assess the region's potential for developing knowledge-based clusters (Abrams, pp. 2-3). One set of analyses rated the region's competitiveness against American states and other countries using some internationally recognized benchmarking standards (the UN's Human Development Index, the Swiss-based World Economic Forum's World Competitiveness Report methodology, and the Washington, DC-based Corporation for Enterprise Development's "Development Report Card for the States" approach). The results indicated that Atlantic Canada has some competitive strengths, including high quality of life, strong health and social systems, good transportation and communications infrastructure, and (not surprisingly in view of the incentives) improving tax and fiscal measures.

Another ACOA study specifically looked at location-related costs for seven clustering-type industries (frozen foods, medical devices, software, telecommunications, plastics, manufacturing, metal fabrication, and electronics and instrumentation) in 16 Atlantic Canadian and 12 United States sites. The results showed that Atlantic Canada has a location advantage based on lower investment costs, cheaper construction and labour costs, quality of life considerations, and other factors (p. 3). Most recently, ACOA used a cluster modelling framework to identify what industry and government need to do to encourage regional economic development.

The high-tech sector in British Columbia

B.C.'s high-technology industry has since 1992 grown twice as fast as the provincial economy as a whole. In 1995, more than 41,000 people were employed in more than 5,000 firms which earned \$5.1 billion in sales revenue in 1995 (BC Stats, 1997a, 1).

***High tech is
growing rapidly in
British Columbia.***

Service industries (engineering, computer and related, and scientific and technical services) dominate the sector, accounting for roughly three-quarters of the companies, employment, GDP, and revenue. Key manufacturing industries are communication and other electronic equipment, and office, store, and business machines (ibid, 2).

Most of BC's high-tech firms are small businesses. The largest 50 companies each have over 100 people. But the average information technology firm is homegrown, privately-owned, and composed of 10 employees or less (BC Ministry of Employment and Investment web site).

Geographically, two-thirds of high-tech establishments are located in the Mainland/Southwest Development Region. Most of these are in the GVRD - in cities such as Burnaby, Richmond, and North Vancouver. Smaller, more scattered clusters are also developing on Vancouver Island (eg, near Sidney) and other locations around the province. In most cases, firms have started up and grown with the help of nearby university and research facilities, government R&D support, proximity to markets, and servicing of (and spin-offs from) resource-based industries.

Like other high-tech industries around the world, B.C.'s sector is export-oriented, although domestic demand (in British Columbia and the rest of Canada), is growing. Just under half of provincial high-tech manufactured exports were exported, for a value of \$563 million in 1995. About two-thirds of these exports went to the United States, and just under one-fifth to other Pacific Rim countries.

British Columbia remains a net importer of high-technology products (overall trade deficit of \$2.3 million in 1995); however, many of those products are components or substances used in the production of high-tech goods here at home. An input/output analysis of the sector found that about half of such "intermediate inputs" required by provincial high-tech industry are imported, compared to one-third for non-high-tech industries (BC Stats, 1996, 13). This indicates a potential for import substitution (reducing the leakages), as provincial clusters grow.

Global markets, local economic development

Like primary resource industries in British Columbia, the knowledge-based sector relies heavily on global markets for its development and survival. At the same time, high-tech clusters create a strong local network of interconnected suppliers of products and services. Therefore, they can make an important contribution to sustainable community development, for both urban and rural centres – in contrast to the economic instability often created by export-oriented resource industries.

Emerging clusters are popping up in some unexpected places – in areas with less expensive land, labour, and utility rates. The development of many of these new clusters is being accelerated by community-based efforts to attract companies of a specific type. There is a need for regionally-sensitive and unique approaches to meet the special challenges of low-density locations, and a need to network with clusters in other places.

Knowledge-based industries create strong local networks.

The Conference Board study found that more mature high-tech clusters in North America and Europe sell and compete globally, but draw most of their supplies from the local market. Executives were confident that the local economic base will support their future growth (Zieminski and Warda, 1997, 19).

This suggests that a community strategy might be to both attract skills and promote local expansion, with emphasis increasingly on the latter. The support of local leaders is important to cluster success. Champions can be either individuals or groups such as Chambers of Commerce or Economic Development Groups (Voyer, 1997a).

High tech and the environment

In a recent study, KPMG Ottawa conducted interviews with community leaders representing 13 high-tech clusters in North America and Europe (including Ottawa, Montreal, Kitchener-Waterloo, and Calgary). The interviews were supplemented by an extensive literature and Internet search. The objective of the study was to gather success factors, as well as key challenges, from a community development perspective (Sears, 1997, 3-4).

The study found some common features of successful high-tech clusters, including cooperation between local government and industry to attract new business, cooperative ventures across communities, and a high quality of life. But the researchers also found that high-tech growth creates its own problems – notably rising land and housing prices, traffic congestion, and environmental concerns. Problems such as these are highlighted in the case studies below.

They mean that strategies for growth management and land use planning are likely to be just as pressing with high-tech clustering as with other forms of growth. Communities need to set baselines for their economic and social conditions and measure progress – e.g., through benchmarking (ibid, 31-3).

Silicon Valley – never rest on your laurels

As the granddaddy of knowledge-based clusters, Silicon Valley has 11 per cent of U.S. high-tech jobs (more than 1 million people in over 6,000 firms), annual sales of more than \$200 billion, and 20 per cent of the industry's largest firms worldwide. The region is dominated by microelectronics and biotechnology. It has benefited from an active entrepreneurial culture (rapid labour mobility, spin-offs or “cloning” of firms), strong research institutions (eg Stanford and Berkeley), and extensive venture capital (\$2.2 billion in 1996).

Silicon Valley faced its first crisis in the early 1980s, when a shift to mass production methods led to greater secrecy and loss of entrepreneurial culture. When Japanese computer chip manufacturers began taking over the semiconductor market, jobs disappeared (1 out of 5 local semiconductor workers) and business left the region. But Silicon Valley fought back and refocused its markets into new customized chips and other products (personal computers, peripheral equipment, and software).

More recently, the region has continued to face problems of high land and housing costs, a shortage of skilled workers, lack of housing, long commutes, rising school drop-out rates, and other economic and quality of life difficulties. After another downturn in the early 1990s, a regional strategy was developed that includes improvements to the public education system, encouragement of the use of public transit, and a proposal for expanded investment tax credits. (Currently, the only tax incentives allowed are in redevelopment areas – a lack of incentives is part of the reason why the semiconductor business left.)

Since 1992, a high-profile business-government consortium, the Joint Venture Silicon Valley Network, has measured the region's progress towards renewal using a system of internal benchmarks (JVSVN web site). The annual Index of the Silicon Valley tracks 31 indicators for different aspects of economic and social sustainability, such as quantity and quality of employment, business vitality, education and workforce, and community health. The index is being used to identify where specific actions and initiatives are needed for revitalization.

- **Silicon Valley's JVSVN: a Model for Regional Renewal:** Launched in 1992, the Joint Venture Silicon Valley Network (JVSVN) is a unique partnership of business,

Even high-tech growth can bring environmental problems.

government, education, and the community “to identify and to act on regional issues affecting economic vitality and quality of life.” The not-for-profit organization is working to retain, expand, and attract industry in a region encompassing some 2.2 million people. Its vision to create a sustainable community includes rejuvenating the K-12 education system, improving community health, and developing local environmentally beneficial industry. Examples of ongoing activities are:

Healthy Community-Healthy Economy, a program providing K-8 health education, family intervention services, worksite safety information, etc.;

Environmental Partnership, an initiative to develop an environmental business cluster, promote performance-based environmental standards for industry, offer environmental education, etc.; and

SmartValley, Inc., a separate not-for-profit group that delivers computers to young students, networks schools, provides telecommuting services, etc.

Silicon Valley now strives to maintain quality of life.

Greater Seattle: great potential, but of two minds

The Seattle region’s growing high-tech industry is dominated by the aircraft industry, software development, and biotechnology. In 1994, Boeing employed 88,600 people and Microsoft 20,560. Another 1,600 software companies accounted for 18,000 jobs in the region.

Key factors in its success have included the influence of a major employer (Boeing), strong research universities, and the region’s geography and high quality of life. With a healthy industrial mix, Seattle’s high-tech sector is now booming, with recent infusions of venture capital.

The region’s principal challenge is to reconcile this economic boom with a strong environmental protection movement in the state. Besides the usual concerns about adequate local skilled labour and training institutions, there are problems of lack of space, skyrocketing housing prices, and traffic congestion. There is also a growing sentiment against development.

Seattle has studied the Silicon Valley experience and is pursuing a high-tech strategy based on lessons learned. A “Technology Alliance” developed with industry is focusing on telecommunications, land use, tax policy, and education.

Economic booms threaten urban environments.

Is Seattle the next Silicon Valley? No city has a better shot at replicating the potent mix of techies, dollars and drive that made Silicon Valley great. Seattle views the transformation with ambivalence. Business Week, Aug. 18-25, 1997

Cambridge, UK — protecting a way of life

As an example of a “smaller” cluster, Cambridge has more than 400 high-tech companies providing over 19,000 jobs. Major employers include Ionica and Scientific Generics, with Microsoft having recently announced a research lab.

The region benefits from a good educational system and a highly-educated workforce, as well as the quality of its environment and good geographic location.

However, Cambridge is confronted by limited land availability, high costs of land and housing, and transport congestion. It is also subject to environmental planning constraints – the city is contained by a Green Belt, and there is a community goal to protect surrounding rural villages.

Local government and the high-tech sector plan to collaborate on addressing these growth-induced problems.

Conclusion

Communities of every size, in planning economic development, should take advantage of the tendencies of firms to cluster by considering eco-industrial parks and by facilitating various forms of business combinations and interconnections. In smaller communities, clusters can be a growth opportunity. In larger cities, they can be a way to revitalize abandoned “brownfield” sites and rundown areas.

The knowledge-based industries represent a potential growth opportunity in many localities. Advanced services and high-tech firms, whose workers place a great value on quality of life, often prefer to move to communities offering exceptional environmental amenities. These firms represent a strongly growing economic sector that also has a very small environmental “footprint.” Planners can take advantage of the strong networking and clustering tendencies of this industry in designing and promoting facilities.

4. Business and the Environment

Business and regulation

There is a widespread view that businesses that are forced by regulation to protect the environment can't be competitive. In this view, ecology is opposed to economy.

Even some commentators with real environmental concerns and commitments occasionally talk this way, pointing out how regulations can bring government and business into collision:

*We reject the argument that all progress must stop in order to achieve some unrealistic environmental goal. Instead, we believe that a balance must be struck between the environmental impact of an activity and the economic and social benefits . . . Knee-jerk reactions by regulators to threats that are only perceived and not established can lead to huge wastes of expenditure and, in the end, unnecessary human suffering. (Doug Horswill, Cominco, quoted in Cominco publication *Orbit*, Summer, 1993)*

A net environmental benefit is what you're trying to achieve. So is it wise to spend so many resources on some problems to the exclusion of problems that you know are really severe? You might spend \$5 million to extract five kilos of a bad chemical, and sure, it's bad, but what about all those automobiles out there? (Tom Finnbogason, EnviroChem. Interview)

*Companies cannot be sustainable in the present economic climate. There is widespread agreement that the costs of sustainability-related adjustments will be considerable and to ask any company to act entirely as a philanthropist and/or avoid pursuit of traditional business opportunities is quite unrealistic. (UNCTAD, *Incentives*)*

But there are signs that the traditional business opposition to environmental regulations is softening. More and more business leaders are emphasizing the entrepreneurial ability of business to find innovative solutions when under pressure to protect the environment. This pressure can come from competitors, from customers, from stakeholders, or from regulators. As this chapter shows, the sheer volume and variety of business commitments to environmental goals has become impressive.

Some observers liken the gradual acceptance of environmental regulation by business to the gradual acceptance of the quality revolution of the 1980s:

Today we have little trouble grasping the idea that innovation can improve quality while actually lowering cost. But as little as 15 years ago, managers believed there was a fixed trade-off. Improving quality was expensive because of the inevitable defects that came off the line. What lay behind the old view was the assumption that both product

Vociferous objections to environmental regulation can still be heard.

More and more firms are getting into environmental management.

design and production processes were fixed. As managers rethought the quality issue, however, they have abandoned the old mind-set. Viewing defects as a sign of inefficient product and process design — not as an inevitable by-product of manufacturing — was a breakthrough. Companies now strive to build quality into the entire process. The new mind-set unleashed the power of innovation to relax or eliminate what companies had previously accepted as fixed trade-offs. (Porter and Linde, 1995, 122)

In the same way, environmental regulation is increasingly being seen as a source of innovation. Concepts such as sustainability and eco-efficiency are regarded as quality goals for the next business generation.

Growing numbers of businesses have incorporated environmental criteria and sustainability perspectives into their strategic planning, and have found that environmental initiatives make good business sense as part of modernization. Government regulation has become less and less an external imposition and increasingly an element of competition between and among leading businesses. Lagging firms are the ones that feel direct regulatory pressure.

Business advantages

Pollution no longer means profits in advanced economies.

If environmental protection were “bad” for business, few firms would do more than the minimum legal requirement, environment-friendly firms would be suffering or in decline, and the leading firms would be finding new ways to do as little as possible. Big pollution and big profits would go together. There may be parts of the world where this is true. But they are not the developed parts.

Why would a firm voluntarily do more, environmentally speaking, than regulations require? Since environmental measures can be costly, why would the company not do as little as possible, just enough to avoid enforcement penalties – or even incur the penalties because they turn out to be cheaper than cleaning up one’s act? Of course, some firms do just that. But they become an industry’s black sheep.

Strategic advantages

Business is concerned, runs a cliché, with “the bottom line.” But that is not business’s only concern. In fact, it is rarely even the top priority. Business schools commonly distinguish between financial imperatives and the actual strategic goals that drive a business:

Financial considerations are constraints on general management decision-making rather than its determinants. In every case, once a course of action is deemed strategically necessary or desirable, financial considerations determine the pace and approach, and they are the ultimate measures of performance. But the decisions about whether to set out on or to continue the course of action are shaped by strategic considerations. For any major potential investment, the driving question is: Given that we are committed to this area of business, what steps must we take to stay ahead? rather than: Given that we must achieve a certain rate of return from our investments, is this a wise investment? (Morone, 1993, 217, quoted in Fussler, 1996, 2)

In business, strategy precedes the bottom line.

Leading firms increasingly undertake environmental initiatives for reasons that show an awareness of the wider context in which business operates:

- British Petroleum CEO John Browne, speaking at Stanford University in May 1997, disagreed with environmentalists who want to abandon the use of oil and gas: but that “doesn’t mean that we can ignore the mounting evidence about climate change and the growing concern. As businessmen, when our customers are concerned, we’d better take notice ... The time to consider the policy dimensions is not when the link between greenhouse gases and climate change is conclusively proven, but when the possibility cannot be discounted and is taken seriously by the society of which we are a part. We in BP have reached that point. We must now focus on what can and what should be done, not because we can be certain climate change is happening, but because the possibility can’t be ignored. It falls to us to begin to take precautionary action now.” Therefore, BP will control its emissions, fund research, take part in joint implementation initiatives and develop alternative fuels. For example, BP’s first solar manufacturing operation would be opened in 1997 in Fairfield, Calif. BP is committed to making solar power technology competitive in supplying peak electricity demand within 10 or 15 years. BATE, June 97, 9 (full text: www.BP.com/speech_051997.html).
- Jonathan Rhone heads the Excel Partnership, comprising the environmental vice-presidents from 11 large Canadian resource companies committed to environmental leadership. Unwilling to be locked into positions taken by industry associations, the members of the Partnership have become an informal sounding board for governments in policy development, Rhone reports. The members are also striving to push environmental leadership down into their own sectors “because they don’t want to be leaders in sectors that have a bad reputation.” Rhone calls simplistic the argument that being green is good for business. Environmentally-friendly operations do have economic value, but it’s more indirect and long-term, as “public consent to operate.” As budgetary restraints that force cutbacks in enforcement and compliance make governments less relevant, public opinion and communities are dictating whether projects will go ahead. A good environmental record will gain companies community support, which in turn speeds up approval processes and avoids delays that can cost companies tens of millions of dollars a month, Rhone says. (Interview)
- James P. Cooney, Director of International and Public Affairs, Placer Dome Corp, said in an address to a mining convention in Dec 1995 that the mining industry will have to pay more attention to ethical issues, community interests, and sustainable development. “Key elements of sustainable development for mining companies include public consultation with populations affected by mine development, equitable wealth distribution from mining to local communities, and effective management of the environmental and socioeconomic impacts of mining during operations and after mine closure.” “The global mining industry is gradually coming to terms with the sustainable development agenda. Ultimately it will be judged by the quality of its performance not only technically and

***British Petroleum
thinks strategically.***

***Placer Dome is
ready to be judged
environmentally,
socially, and
ethically.***

economically but environmentally, socially, and ethically as well.” BATE, May 96, 8 (James Cooney, Placer Dome, PO Box 49330, Bentall Station, Vancouver V7X 1P1; tel 604 682-7082)

- Placer Dome has set up a Sustainable Development Group, and its vice-president, Doug Fraser, says: “Ultimately, sustainable development is our best strategy for a long-term growth and we intend to be the industry leader.” Like Jonathan Rhone, Fraser emphasizes indirect business advantages: “A mining company seeking approval for a new mine has to recognize and address all factors in an integrated way ... We need to conduct our business in a way that address their [stakeholders’] concerns that we leave a positive legacy behind us long after mining operations cease. In this way I believe we will be welcomed into communities where we wish to develop new mines – our future growth.” (quoted in Placer Dome Inc “Prospect,” September, 1997, p. 11-12)
- Dennis Macauley of Union Carbide Corp says the main drivers of business development in the next decade or more, will be (in addition to increasing global competition and advances in science and technology): empowered stakeholders, consensus on environmental, health, and safety standards, and regulatory reform. BATE, June 96, 2 (Dennis Macauley, Union Carbide Corp, 39 Old Ridgebury Road, Danbury, CT 06817-0001; tel 203 794-2289)
- DuPont, said former CEO Edgar Woolard in 1996, “is reversing the traditional view of environmental compliance as a cost or a burden and beginning to look at environmental innovation as fuel for the engine of growth ... 1995 was both a record year for earnings and the year in which our wastes and emissions have been the lowest.” BATE Aug 96, 5. DuPont’s current CEO, John Krol, says environmental protection will be “the major business opportunity” at the end of the millennium. DuPont, once one of the world’s worst polluters, cleaned up its act in the 1980s. It has reduced toxic releases by 74 per cent since 1987, halved its landfill waste, and cut its \$1 billion waste treatment bill by \$200 million. “About three to four years ago,” says Krol, “our people began to see the benefits – that it went directly to the bottom line.” (quoted in *Business Week*, Nov. 10, 1997)
- A major packaging company, Sonoco Products, uses recycled materials for more than two-thirds of its raw-material needs, and its earnings and sales are at record levels. “We feel a general responsibility to do the right thing,” says Sonoco CEO Charles Cocker, “but we’re also finding some good economic and competitive advantage.” (quoted in *Business Week*, Nov. 10, 1997)
- Alcan Aluminium CEO Jacques Bougie stresses his company’s commitment to environmental management. Aluminum’s unique recyclability and its high strength-to-weight ratio, corrosion resistance, and formability make it ideal for energy conservation and design challenges. “Environmental management is no longer viewed as a cost of doing business, it is becoming our way of doing business,” he said in December 1995. (Alcan, 1995)

DuPont’s highest earnings coincided with its lowest wastes and emissions.

- As part of its new strategy to think of the environment in terms of opportunities rather than liabilities, DuPont has established a business opportunities group “to make the company’s 19 business units aware of new opportunities with an environmental angle.” “Dupont believes excellence in safety, health, and environment will be a critical core value in business winners of the next century.” Dupont expects environmental matters to be less and less a matter of NGOs and government and increasingly a matter of customers and markets. BATE, May 96, 4 (Dawn Rittenhouse, DuPont SHE Excellence Centre, The DuPont Company, 1007 Market St, N2519-2, Wilmington, Delaware 19898; tel 302 774-8588)

But difficulties arise if government regulation does not move ahead in support of leaders and best practices. This is a complaint of many in the environmental industry who are developing the technology that is revolutionizing traditional methods of pollution control and abatement (this industry is discussed later):

Innovating companies often want tighter regulations.

- Blair McCarry of Keen Engineering in North Vancouver, who has been involved in environmentally focused construction projects using recycled materials and new, highly efficient technologies, is critical of the federal government’s lack of leadership in environmental protection despite its posture at the Kyoto Summit. The 1995 National Energy Code isn’t in effect anywhere in Canada, and the federal government isn’t pushing provinces to adopt it, McCarry says. He praises Vancouver City for adopting its own energy bylaw enforcing ASHRAE 90.1 standards, but argues enforcement of the national Code would result in “economic payback in energy rates and create a level playing field” in Canada. As it is, McCarry says, British Columbia lags way behind in energy efficiency. He cites B.C.’s supply of cheap energy as an environmental disincentive because it reduces the payback from using new highly-efficient energy technologies that carry a high capital cost. (Interview)
- With the phase-out of ozone-destroying CFCs following the Montreal Protocol in 1992, an exception was made for propellants in metered dose inhalers (MDIs) for asthma sufferers. Since then, 3M Corp has developed a CFC-free inhaler, which could replace over half the CFC-propelled MDIs worldwide. It costs no more, and sometimes less, than conventional inhalers. However, Washington lobbyists succeeded in getting a CFC tax repealed (through a rider in unrelated legislation), thus making CFCs much cheaper. Other barriers to use of the new inhaler technology are noted, eg need for special trials in every country. Critics observe that such inconsistencies in environmental policy discourage innovation. So environmental leaders often have battles on their hands to get government to shift to supporting newer technologies. 3M continues to develop its products while working with stakeholders and environmental groups to pressure govt. BATE, Oct 96, 2-5 (Mark DuVal, 3m Pharmaceuticals, Office of General Counsel, 3M Center, Bldg. 220-11E-03, PO Box 33428, St. Paul, MN 55133-3428, USA)

Image, reputation

A company's environmental performance has become a key factor in attracting investors and customers or clients. Capital markets are showing more and more concern about the financial risks presented by pollution: short-term risks, such as those caused by toxic spills or fines for illegal emissions; medium-term risks, such as those presented by lost shares in "green" markets, contaminated and therefore devalued land; and long-term risks, such as the possibility that lenders or investors might have to share liability for environmental damage.

Investors increasingly consider environmental image.

- VanCity credit union is a member of CERES, an association of investors and environmental groups that, following the Valdez oil spill in Alaska in 1990, set out a series of principles for corporate social and environmental responsibility. The credit union has set up environmental guidelines for suppliers, and a subsidiary, Citizens Bank, has environmental criteria for investment. (Interview)
- The Council on Economic Priorities, of New York, evaluates companies worldwide for demonstrating aspects of "corporate conscience," including environmental stewardship, and awards companies it has selected as leaders in each category every year. The 1997 winners of the award for environmental stewardship were Novo Nordisk (Denmark), J. Sainsbury (U.K.), and Wilkhahn Wilkening (Germany). It sells its evaluations to prospective investors or clients and publishes a guide entitled "Shopping in a Better World." The Council plans a new rating this year focusing on environmental impact, environmental management systems, reporting, and product stewardship. (Materials provided)
- Michael Jantzi Research Associates and EthicsScan Canada, both of Toronto, conduct similar evaluations of Canadian companies. EthicsScan, "a clearing house for consumer and corporate ethics," assesses the environmental commitment of companies according to codes of conduct, compliance with regulations, recycling practices, corporate environmental structures, and employees with designated environmental responsibilities. It publishes a guide entitled "Shopping with a Conscience." (Materials provided)
- Insurance companies have suffered substantial losses from pollution clean-up and asbestos-related claims and the insurance industry is becoming increasingly concerned about severe and unpredictable weather patterns caused by global warming. Munich Reinsurance Company estimates that bad weather cost the industry \$200 billion U.S. between 1991 and 1997. (Knight, 1997, 15)
- In 1996 Storebrand, a large Norwegian-based insurer, in partnership with the U.S. investment house Scudder, Stevens & Clark, started an investment fund favouring companies that are making progress towards "eco-efficiency." (Knight, 1997, 17)
- By early 1997, 88 banks (mainly in Europe and North America) and 60 insurers (mainly OECD) had signed charters committing themselves to "ensure that our policies and business actions promote sustainable development." (Knight, 1997, 16)

Insurance companies have a special interest in environmental liabilities.

Financial advantages

Leading firms readily cite financial advantages attributable to environment-related decisions. These advantages are not the chief reason they adopted those measures. But the measures they have implemented, in addition to other merits they may have, usually more than pay for themselves. They have turned out to be not a cost but an investment in new processes and methods.

- “Swedish appliance manufacturer Electrolux believes that the ‘aggressive environmental strategy’ it has pursued since 1992 has strengthened the group’s market position, led to improved profitability, and provided greater value for its shareholders.” Investment in completely new technologies has reduced environmental impact of products and improved their performance without raising costs. BATE, July 97, 12 (AB Electrolux, Group Environmental Affairs, Luxbacken 1, Lilla Essingen, S-105 45 Stockholm, Sweden; tel 46 8 738-6000)
- “Portfolios invested in ‘environmentally responsible’ companies generally return one to three more percentage points annually than portfolios of environmentally irresponsible companies, according to a new study from researchers at Duke University. The study compared the performances in terms of total equity ... within the S&P 500 Index.” The study, which covered 1-, 5-, 10-, and 15-year periods ending 30 June 1996, “indicates that selecting for environmentally proactive companies serves as an effective screen to identify companies with superior financial performance. Environmental initiatives lead to product and process improvements, which then manifest themselves in increased efficiency and a healthier bottom line.” BATE, July 1997, 14 (Barbara Thorpe, Winslow Management Company, 24 Federal Street, Boston, MA 02110, USA tel 617 695-1863)
- Alcan reports it has found that to shred, melt, and reprocess recovered aluminum costs only 5 to 10 per cent as much as to produce the metal in the first place. The energy used to produce primary aluminum is actually “embedded” in the metal and can be used over and over again. (Alcan, 1995)
- Switzerland’s Sustainable Performance Group (SPG), managed by Sustainable Asset Management (SAM) and supported by Swiss Reinsurance and Volkart Brothers Holding, is to invest exclusively in “sustainability leaders” and “sustainability pioneers” that show evidence of pioneering (the ability to anticipate future developments and exploit market opportunities at an early stage), prevention (the ability to anticipate risks and opportunities arising from social, technical, and regulatory conditions), productivity (eco-efficiency), and performance. SPG commissioned an analysis of a 1996 study by the Hamburg Environmental Institute of the world’s top 50 chemical and pharmaceutical companies. It found the leading eco-efficient companies outperformed others financially by 27.5 per cent on a global level. In the U.S. business leaders outperformed “laggards” by 33.5 per cent over a three-year period. BATE, Aug 97, 7 (Reto Ringger, Sustainable Asset Management, Singaustasse 1, 8008 Zurich,

Environmental and financial performances are increasingly linked.

Switzerland. Sustainable Performance Group, Birrenstrasse 11, CH-8835 Feusisberg, Switzerland.)

- The World Business Council for Sustainable Development in May 1997 released a report *Environmental Performance and Shareholder Value*. The report presents 15 case studies of WBCSD member companies who have demonstrated that environmental investments and measures improve the bottom line. BATE, June 97, 6 (WBCSD, 160 route de Florissant, CH-1231 Conches-Geneva, Switzerland. Tel. 41 22 839-3100)
- ICF Kaiser International's Environmental Consulting Group released a study in January which examined more than 300 of the largest public companies in the U.S., measuring the relationship between environmental management improvements, their results, and the relative risk the investment community assigns to a company. The study found that when public companies improve their corporate environmental practices, they are able to increase shareholder wealth by up to 5 per cent. "Our results suggest that adopting a more environmentally proactive posture has, in addition to any direct environmental and cost-reduction benefits, a significant and favorable impact on the firm's perceived riskiness to investors and, accordingly, its cost of equity capital and value in the marketplace." BATE, April 97, 5 (text of study: http://www.icfkaiser.com/kaiserweb/F_Conslt/F1_envir.htm)
- A new report by Robert Repetto, *Has environmental protection really reduced productivity growth? We need unbiased measures* (World Resources Institute), "concludes that productivity gains in US private industry over the past two decades have been understated by a full one-third – and the source of these gains is environmental regulation. Basing its conclusions on case studies of the electric utilities, pulp and paper, and agricultural industries, the WRI study argues that US government statistics on productivity ignore the fact that factories have cleaned up and become more efficient in response to regulation." BATE, Dec 96, 3 (Daryl Ditz, World Resources Institute, 1709 New York Ave NW, Washington DC 20006; tel 202 638-6300)
- A study of waste reduction at 29 U.S. chemical plants found: of 181 activities, only one had a net cost increase; of 70 activities with data on product yield, 68 showed increases; average productivity increase for 20 activities documented was 7 per cent; of 48 initiatives with capital cost documented, 12 needed no capital investment at all; of 38 with payback documented, nearly two-thirds recouped the initial investment in six months or less; in 27 source reduction activities, the average annual savings per dollar spent was \$3.27. (Porter and van der Linde, 1995, 125)
- From 1990 to 1996, S.C. Johnson & Co realized over \$20 million in annual cost savings and reductions by cutting manufacturing waste in half, reducing virgin packaging use by 25 per cent and volatile organic carbon use by 16 per cent, while production grew by over 50 per cent. (Schmidheiny et al)

Productivity improves with environmental management.

Effects on jobs and work force

Environmentally friendly strategies create new companies and jobs and benefit and diversify local economies. They improve not only the productivity of employees but also their well-being on the job and at home.

- A recent OECD report says environment policy is a “net creator of jobs.” It destroys some, but creates more. “While the environment cannot be said to afford powerful leverage in terms of job creation, it is by no means a threat to employment. . . . Environmental policies do not destroy jobs but have a slightly positive net effect . . . The part that environmental policy may play in job losses is minute compared with the powerful structural and cyclical factors behind today’s underemployment.” Employment related to the environment in Europe is 1-3 per cent of work force in OECD countries, 2.4 per cent in Germany (or 956,000 jobs), 3 per cent in the U.S. (or 4 million jobs). Eco-industries on their own produce a turnover of \$250 billion US a year, growing by 5 per cent a year. Overall, the OECD estimates the net effect of environmental policies on employment as being very small and slightly positive over the long term. BATE, June 97, 16 (“Environmental Policies and Employment” available for \$20 US from OECD, 2 rue Andre-Pascal, 75775 Paris Cedex, France. Web site: www.oecd.org).
- Stephen Meyer, Professor in Political Science, MIT, published a study in 1992 which showed clearly that rigorous environmental management helps, rather than hurts, economic growth and development. The fifty US states were ranked and categorized according to the breadth and depth of their environmental programs. Then their economic performance was analysed in terms of growth rates in gross state product, total non-farm employment, construction employment, manufacturing labour, and overall labour productivity. The study found that the US record of the 1970s and 1980s “clearly and unambiguously” reveals that “states with stronger environmental policies consistently outperformed the weaker environmental states on all the economic variables . . . and showed the greatest inter-decade improvement in economic performance.” The study concludes that environmental regulation “is probably one of the least influential factors affecting the pace of economic growth and development among the states.” (Meyer, 1992)
- E.B. Goodstein, professor of economics and author of a standard economics text, published a study in 1994 which reviews two decades of research on the question of jobs and the environment in the United States. The study finds that “at the level of the economy, there simply is no tradeoff between employment and environmental protection. Moreover, actual layoffs from regulation have been startlingly small.” “The net effect of environmental regulation on the rate of growth of productivity . . . has been small and indeed may have been positive.” In fact, “environmental regulation provides jobs disproportionately weighted to blue collar sectors and away from government and private-sector services. While only 22 per cent of all non-farm jobs [in the United States] were in manufacturing, transportation, communications, and utilities, in 1991, 57 per cent of jobs generated by environmental spending fell into these categories.” (Goodstein, no date)

Environmental policy is a net creator of jobs.

Strong growth is linked with strong environmental protection.

Environmental regulation increases the blue-collar share of employment.

- “Historically at Alcan,” says CEO Jacques Bougie, “managing the environment has started at home. Over the years, our operating units have dramatically reduced internal emissions and implemented safeguards to ensure the health and well-being of employees.” (Alcan, 1995)

Environmental commitments

Leading businesses do much more than regulations require.

Around the world, leading businesses are engaging in voluntary environmental protection that goes beyond regulatory requirements. These commitments take many forms: from site-based environmental management and reporting systems, to industry-association programs, joint research projects with environmental organizations, stakeholder consultations and undertakings, and even negotiated agreements. Here are some examples:

Environmental management systems, standards, and reporting:

Mission statement, executive support

Support is growing at the highest corporate levels for environmental commitments:

- “According to Riva Krut, president of Benchmark Environmental Consulting, 38 of the largest 100 companies in the world have environmental policies and/or environmental reports ... Preliminary research on the ‘Global 100’ also reveals that removing the 34 financial service firms from the list raises to 56 per cent the percentage of nonfinancial sector firms that have environmental policies or reports. Krut observes the ‘voluntary corporate environmental management is not a constraint on competitiveness and is consistent with economic leadership ... US-based firms lead the Global 100 with nearly 67 per cent with environmental policies or reports ... Chemical companies have the highest levels of environmental policies and reporting (76.9 per cent) followed by the automotive, heavy manufacturing, electronics, and retail sectors.” BATE, Sept 97, 3 (Riva Krut, Benchmark Environmental Consulting, 350 Main St, White Plains, NY 10601; tel 914 422-2655)
- “Commenting on the sixth year of its annual awards to identify and reward innovative examples of corporate environmental reporting, the Association of Chartered Certified Accountants panel of judges noted: ‘On the evidence of the 55 reports submitted this year, it seems that the core areas of environmental management systems, evidence of top management commitment, description of significant environmental impacts, and disclosures of actual emissions and performance targets are now all receiving significant degrees of attention.’” BATE, May 97, 6
- As of mid-1997, 99 financial institutions from more than 25 countries had signed the United Nations Environmental Program’s “Statement by Financial Institutions on the Environment and Sustainable Development,” expressing commitment to sustainable development, environmental management by financial institutions, and public awareness and communications. A similar “Statement of

Environmental Commitment for the Insurance Industry” had been signed by 68 insurance companies in more than 20 countries. BATE, June 97, 5-6 (Deborah Vorhies, UNEP, Economics, Trade and Environment Unit, 15 chemin des Anemones, Ch-1212 Chatelaine, Geneva, Switzerland. Tel 41 22 979-9288)

- ABB Asea Brown Boveri, a \$30 billion Swiss-Swedish electrical engineering group, has set as a goal “the full-scale, groupwide implementation of site-specific environmental management systems at all ABB sites and for all product lines before the year 2000.” This will involve 200,000 employees in 638 facilities, manufacturing plants, and service workshops in 50 countries. The firm has a three-person internal environmental organization reporting directly to the CEO, supported by 43 country-level environmental controllers and 550 local environmental officers. Pilot projects showed that waste disposal volumes and costs were slashed and work with suppliers reduced packaging impacts. For example, a new lubrication system reduced solvent emissions by 90 per cent. BATE, Oct 96, 7-9 (Jan Stromlad, ABB Environmental Affairs, Vastra Esplanaden 9A, Vaxjo, Sweden; tel 46 470 22006)
- Candymaker Mars Inc is turning its chocolate plant near Las Vegas into a zero-discharge showcase, featuring biotechnology for waste treatment. A spokesman says: “everywhere there’s a Mars factory, we do our best to be a good neighbour – providing jobs, not harming the environment, and being sensitive to the environment around us.” BATE Oct 96, 10 (Mike Seago, Ethel M. Chocolates Inc, P.O. Box 98505, Las Vegas NV 89193 USA Tel 702 435-2623)
- Dupont has a zero goal for wastes and emissions, said former CEO Edgar Woolard. “This requires our research people and engineers to think about environmental consequences from the start. If you invent a product, then you’d better think of a way to make it without a lot of waste. Waste is raw material we paid for that didn’t make it into a product we can sell.” BATE Aug 96, 5
- A KPMG survey in 1995 of the 1000 largest companies in Canada, 400 companies with sales under \$28 million, as well as hospitals, municipalities, universities, and school boards, had a 27 per cent response rate and found that about 2/3 of respondents had an EMS in place. Bate Apr 96, 9 (Ann Davis, KPMG Environmental Services, PO Box 31, Station Commerce Court, Toronto M5L 1B2; 416 777-3010)
- Westcoast Energy’s Sustainable Development Council has been operating at the corporate level since 1994 and includes a senior representative from each of Westcoast’s major operating companies and subsidiaries across Canada. “It is essential that we continue to develop our commitment to such principles as integrated planning and management, product stewardship and energy conservation, while ensuring that we remain strongly competitive in the continental and international marketplaces,” said CEO Arthur Willms in announcing establishment of the council. Westcoast has emphasized energy conservation through cogeneration, converting vehicles to natural gas, and energy-efficient office and home programs. Its subsidiary Foothills Pipe Lines Ltd.

*Executive-level
support of
sustainability is
broad and growing.*

has developed a method for capturing energy by decompressing gas as it enters a gas stripping plant, saving an estimated 25 megawatts of power a day. (Westcoast Energy, 1995)

Product stewardship: reduce, reuse, recycle. Takeback. Design for reuse.

Businesses are looking beyond the point of sale.

Some in the business sector believe that, through the use of cleaner technologies and a real business commitment, it will eventually be possible to eradicate waste altogether. It is being recognized that waste disposal and end-of-pipe pollution control is becoming more expensive as regulations get tougher, that money saved on disposal makes room for more effective use of raw materials and energy, and that the buying public is demanding products that allow them to manage their own wastes. What's more, there is a trend toward designing products for easy disassembly, re-use, and recycling. Many manufacturers are committed to "lifecycle" design.

- In 1987, Mother Parker's Foods, a Canadian-owned and -operated coffee supply company, launched a comprehensive waste reduction program. By 1993, the company had reduced its landfilled waste by 85 per cent, and a further initiative for foil-based waste should make this 95 per cent. Hundreds of tons per year of metal, wood, paper, and food by-products are diverted from the waste stream by re-use and recycling. The program entailed no financial costs, merely some changes in internal organization and job assignments. But savings are now about \$50,000 annually. (Hawkes, and Williams, 1993, 14)
- In Switzerland, retailers, manufacturers, and importers of electronic equipment will be required beginning in 1998 to take back used products. This requirement would apply to office information technology equipment, household appliances and consumer electronics, and some home improvement equipment. Industry can impose a surcharge to cover recovery costs, but consumers would be exempt if they bought a replacement product after returning the old one. BATE, May 97, 14 (Mathias Tellenbach, Swiss Federal Environment Office, Industrial Waste Department, Hallwylstrasse 4, 3003 Bern, Switzerland; tel 41 31 322-9310)
- The new U.S.-based Remanufacturing Industries Council International has members from a variety of industries, including automotive, office furniture, electrical equipment, and imaging products. The group has adopted the slogan "remanufacturing is the ultimate form of recycling." It aims to unite the industry and promote the concept of remanufacturing to the general public, legislators, and others. It estimates that in the United States, remanufacturing is a \$35 billion a year industry. Issues include design for disassembly and legal and patent questions. Technical research will take place at the Rochester Institute of Technology. BATE, Sept 97, 7 (Scott Parker, Remanufacturing Industries Council International, 4401 Fair Lakes Court, Suite 210, Fairfax VA 22033-3848; tel 703 968-2995)
- "The question of whether office equipment containing some reprocessed components can rightly be sold as 'new' is under discussion by an international

Waste is material you've paid for but haven't been able to use or sell.

working group looking to standardize terminology for new and remanufactured products. Representatives from Brazil, Germany, Japan, Sweden, and the U.S. are comparing national policies and regulations, regional and national standards, and company standards. The working group was formed in April 1997 under the authority of ... a cooperative body involving the International Organization for Standardization and the International Electrotechnical Commission.” BATE, Sept 97, 7 (Robert Lund, Boston University, Manufacturing Engineering Dept, 15 St Mary’s Street, Boston, MA 02215, USA; tel 617 353-9401)

Recycling blurs the distinction between new and used.

- Industry-funded stewardship programs for household hazardous waste in British Columbia began in 1992 with industry-funded-and-operated program for collection and safe disposal of leftover oil. In 1994, BC introduced North America’s first industry-funded program to collect leftover paint. Now there are more than 100 permanent paint-collection depots in BC. In Nov 1996, the BC pharmaceuticals industry launched the voluntary, industry-funded EnviR_x program in which consumers can return potentially hazardous pharmaceuticals to a network of 600 pharmacies for safe disposal. In 1995, the BC government began working with the pesticide, solvent, and fuels industries on a stewardship program. The industries ran a successful pilot at an upgraded bottle depot in Abbotsford. As a result, a new regulation directs the pesticides, gasoline, and solvents industries to set up and fund a program for household hazardous waste. The BC Environment Minister said: “The regulation was requested by all of the industries involved to ensure that all manufacturers do their part to manage the collection of household hazardous waste.” BATE, June 1997, 2 (Jim Marr, BC Ministry of Environment, 777 Broughton St, Victoria BC V8V 1X4. Tel 250 387-8120)
- Alberta has a nonprofit organization for recycling used oil, filters, and containers. The government will join the Alberta Plastics Recycling Association as a funding partner on post-consumer plastic recycling strategy. An industry-appointed board will take over from government the responsibility for overseeing beverage container recycling. Environmental Protection Minister Ty Lund says this is “another example of how industry is stepping forward to assume responsibility for managing the wastes their products create.” BATE, June 97, 3 (Parker Hogan, Communications Division, Alberta Environmental Protection, 108 Street, #9915, Petroleum Plaza South Tower, 9th Floor, Edmonton, Alta. T5K 2G8)
- “The German eco-cycle law, which came into force in October 1996 despite protests from industry about the timetable, assigns extended product responsibility to all companies that develop, manufacture, process, or market products in Germany. The new law aims to ensure that producers will play an active part in implementing a ‘circular economy’ that promotes closed material cycles. Now, companies are wrestling with how to implement product takeback ... Even before the eco-cycle law came into force, firms in some industry sectors assumed responsibility for their products by setting up takeback systems. Especially in sectors such as the electrical engineering, electronics, and automobile industries – which have been facing the threat of legislation – manufacturers have reacted in advance by setting up appropriate systems.” BATE, Feb 97, 5

(“Strategies for the Implementation of Closed Loop Value Chains: An Empirical Study of German Manufacturers,” by Heribert Meffert and Manfred Kirchgeorg of the Marketing Institute at the University of Munster, Universitätsstrasse 14016, 48143, Munster, Germany, presented at the Greening of Industry Network’s annual conference in November, 1996, in Heidelberg)

Stewardship means that a sale involves only temporary use.

- Dell Computer Corp announced in November 1996 that it has converted its “Optiplex” personal computer line to a recyclable chassis that will help cut down on the waste created by the millions of PCs thrown away every year by businesses. The new chassis is made of plastic and steel materials that are completely recyclable. It is also designed to simplify upgrades and maintenance, which should help extend the life of the product. Dell says that these design changes have actually simplified the manufacturing process. For corporate customers, Dell now offers an asset recovery program, which accepts Dell and non-Dell products, and uses resale and recycling companies to make sure unwanted products are properly disposed of, through resale, use of machines for spare parts, or recycling and disposal. BATE, Dec 96, 10 (Dell Computer Corp, 2214 West Bracker Lane, Bldg 3, Austin, TX 78758; tel 512 338-4400)
- EarthShell Container Corp has developed an alternative to conventional paper and polystyrene packaging made from common low-cost materials, including potato starch, water, calcium carbonate, and cellulose. The EarthShell is stronger and sturdier than current packaging and has excellent insulation qualities. McDonalds Corp is doing a full-scale market test of the new packaging. BATE, Dec 96, 11 (Graham Phillips, EarthShell Container Corp, 800 Miramonte Drive, Santa Barbara, CA 93109-1419; tel 805 897-2294)
- Alcan, with a product uniquely suited to recycling, says it can recover more than 97 per cent of the metal in used beverage containers. It has incorporated recyclability into the design stage: even the tab closure is designed to be recycled. The company reported recycling more than 800,000 tonnes of aluminum products in 1995, or about 32 per cent of its combined primary and secondary production capacities. (Alcan, 1995)
- Westcoast Energy’s Centra Gas in B.C. and Alberta is turning recycled plastic from scrap pipe into construction equipment such as plastic barriers and markers. Scrap polyethylene is recycled as “plastic wood” in B.C. In Ontario, Centra/Union Gas are converting scrap pipe into truck mud flaps, plastic paddles, and children’s toys. (Westcoast Energy, 1995)
- The Tokyo-based United Nations University program ZERI (Zero Emissions Research Initiative) has a pilot project in Fiji to divert solid and liquid waste from breweries to make compost for food production, to recycle water, recover heat, and reduce carbon dioxide emissions. A related project is growing fish in brewery waste water. (Knight, 1997, 29)

Third-party certification: ISO 14000 / EMAS / BS 7750, product ecolabelling, stock ratings for investors

New forms of independent confirmation of manufacturing claims to environmental sensitivity are being developed. To some extent these are explicitly alternatives to government regulation.

- A Forest Products Buyers Group has been formed in the United States, including eg Home Depot hardware stores. This voluntary initiative brings together institutional consumers and retailers committed to environmentally responsible buying practices, citing “a fairly strong trend for companies to move toward third-party certified wood.” FPBG is a voluntary business initiative with programs funded by members, whereas the European model is to have buyers’ groups run and funded by environmental NGOs. BATE, July 97, 11 (David Ford, President, Forest Products Buyers Group, 14780 SW Osprey Drive, Ste 285, Beaverton Oregon 97007; tel 503 590-6600)
- Here in Canada, Canfor Corp.’s coastal and interior pulp and paper mills were pursuing ISO 14001 certification in 1997, and CEO A.S. Nielszen announced several of the company’s woodlands would seek certification under the National Standards of Canada for sustainable forest management. Independent audits were conducted at Canfor’s pulp and paper operations in 1997. (Canfor Corp. Environmental Report, 1996)
- A study by General Motors and the Business for Social Responsibility (BSR) Education Fund surveyed 20 leading companies with sales over \$100 million sourcing products from US and international suppliers. It found three different models of “supply chain management,” all with significant environmental criteria. BATE, July 97, 11 (Rebecca Calahan Klein, BSR Education Fund, 1683 Folsom St, San Francisco CA 94103-3722; tel 415 865-2500)
- Germany’s “Blue Angel” ecolabel scheme for computer printers: “To qualify for the label, printers must be designed for recycling; producers must give a three-year guarantee, stock parts for up to five years after a model is discontinued, and offer end-of-life takeback.” Also, energy consumption limits and noise emission maximums are specified. BATE, Sept 96, 16 (Petra Greiner, Federal Environment Office, Bismarckplatz 1, 14193 Berlin, Germany; tel 49 30 231-45-866)
- Bristol-Myers Squibb is considering certification options, according to Clinton Allen, an EH&S consultant to the company: “We have signed the International Chamber of Commerce Business Charter for Sustainable Development, put it into operation through codes of practice, and structured our EH&S system according to the charter’s 16 principles ... We feel that ISO 14001 is an incremental extra – icing on the cake of things we’ve been doing for a while.” BATE, April 96, 5 (Clinton Allen, Bristol-Myers Squibb, P.O. Box 182, East Syracuse, NY 13057; tel 315 432-2615)

***The need to
authenticate
environmental
claims is growing.***

Participant in association environmental program

Industry associations are predictably concerned with environmental issues that might affect the sustainability of their firms. Many have launched special programs.

- The Alberta Forest Products Association launched in 1993 the “Forest Care” program, a voluntary initiative to “improve performance and protect the environment, forest-based communities, and Alberta’s forest resource.” AFPA member companies in the program must complete annual self-assessments, audit their performance every three years, and take corrective action to remedy unsatisfactory performance. In 1996, 64 out of 71 AFPA members were in the program. The first full year of independent audits has shown some challenges in millsite and woodlands operations, and members are addressing these weaknesses with detailed action plans. BATE, Sept 97, 8 (Larry Skory, AFPA, Public Affairs, 11738 Kingsway Ave, Ste 200, Edmonton T5G 0X5; tel 403 452-2841)
- The Pulp and Paper Research Institute of Canada (Paprican) in March 1994 signed a memorandum of understanding with the federal government to develop advanced environmental technologies for mills that would move the industry toward a zero-discharge goal. In October 1996, Paprican announced a \$88 million research program (jointly with industry, government, and industry suppliers) to develop next-generation closed-cycle technologies that can be commercialized at Canadian mills and later exported, thus enhancing the industry’s global competitiveness. The industry has just completed a seven-year \$5 billion investment in new pollution-reducing technologies. “The industry believes that closed-cycle mills will result in lower energy and raw material costs, lower water consumption, and reduced effluent treatment expenditures.” BATE, Nov 96, 8-9 (Esther Szynekarsky, CPPA, 1155 rue Metcalfe, Montreal H3B 4T6; tel 514 866-6621)
- The Mining Association of Canada has released an “Environmental Management Framework” developed by member companies to help companies integrate environmental management strategies into existing management systems. It has four components – leadership and commitment (have an environmental policy, maintain a system for accountability and responsibility, respond to stakeholders); planning (risks, regulations); implementation (procedures, training); and monitoring, assessment, and improvement (audits). MAC’s 31 member companies have reduced their emissions of 12 major substances by 68 per cent since 1988 (close to the 71 per cent target for the year 2000) and are expected to make further reductions of 19 per cent by the year 2000. BATE Feb 97, 10-11 (Dr. C. George Miller, Mining Association of Canada, 350 Sparks Street, Suite 1105, Ottawa, Ont., K1R 7S8).
- The Canadian Restaurant and Foodservices Association, representing owners of the 108,000 food service outlets in Canada, has launched a waste-reduction program, involving work with the federal government on implementation of the National Packaging Protocol, membership awareness (including a 40-page guidebook on waste reduction strategies for food service operators), research on

**Industry
associations
promote
environmental
codes and
guidelines.**

waste in the fast food sector, and environmental policies. (Hawkes and Williams, 1993,16)

- The Canadian Gas Association has a Sustainable Development Policy and Environmental Code of Practice. (Westcoast Energy, 1995)
- Ramada International, with 122 hotels in 40 different countries, in 1990 adopted the goal of becoming the “hotelier of environmental integrity.” Highlights of the program include support of the Nature Conservancy, environment-friendly lines of in-room guest amenities and cleaning products, employee involvement and environmental education programs, and tests of new technology such as ozone air-cleaning systems. (Hawkes and Williams, 1993, 20)

Joint projects for environmental purposes

Individual firms are joining in consortiums or with environmental groups and agencies to pursue co-operative environmental research and implementation projects.

- In Canada, the Greenhouse Emissions Management Consortium (GEMCo) was formed in 1996 to manage emission offsets for its participant electricity and natural gas utilities. The founding members were: Ontario Hydro, Sask-Power, EPCOR, TransAlta Corp, Westcoast Energy, NOVA Gas Transmission, TransCanada PipeLines, Canadian Utilities Ltd. In 1997 GEMCo bought transborder credits from Northeast Utilities in Connecticut, which has installed a fuel-cell (200 kW) at a landfill to convert methane. One ton methane brings 2.75 tons carbon dioxide; however, since methane’s global warming potential over 100 years is 24.5 times that of carbon dioxide, the conversion results in a reduction of CO₂ equivalent of 21.75 tons for every ton of methane. These create the credits GEMCo has bought. Meanwhile, the carbon dioxide produced goes to a nearby greenhouse to raise tomatoes. (Commercial greenhouses buy bottled CO₂.) GEMCo is promoting the idea of having such a system in northern Canada to use surplus methane from oil and natural gas operations, with fuel cells and commercial greenhouses. Carbon reduction costs are projected to be much less than first thought. BATE, July 96, 10; Sept 97, 10 (Aldyen Donnelly, GEMCo, 1965 West Fourth Ave, Suite 101, Vancouver V6J 1M8; tel 604 731-4666)
- The European Network for Reverse Manufacturing (ENREM) was established in 1994 to initiate and stimulate research, development, and knowledge transfer in the recovery and reuse of discarded products, parts, and materials. BATE, Sept 96, 6 (Ad de Ron, Faculty of Technology Management, Eindhoven University of Technology, PO Box 513, 5600 MB Eindhoven, The Netherlands; tel 31 40 247-2322)
- The US Environmental Defense Fund and Pew Charitable Trusts created the Alliance for Environmental Innovation, which has chosen a partner for its first project. It has created a joint task force with S.C Johnson & Son Inc “to develop a range of new approaches for integrating environmental considerations into the company’s product formulation and packaging design process ... The goal is to

Consortiums are forming for environmental projects.

Environmental organizations and businesses are joining forces.

develop tools, practices, and policies that lead to new products and product improvements that significantly reduce environmental impacts.” BATE, Sept 96, 7-8 (Jackie Roberts, Alliance for Environmental Innovation, 6 North Market Bldg, Faneuil Hall Marketplace, Boston MA 02109; tel 617 723-2996)

- In the United States, the National Audubon Society has signed a memorandum of understanding with International Paper for a three-year research project on ways to improve wildlife habitat on private industrial lands while still meeting society’s needs for forest products. Research will be conducted on a 30,000-acre forest owned by IP. Other partners include: National Council of the Paper Industry for Air and Stream Improvement, US Forest Service Center for Forested Wetlands, Savannah River Ecology Lab, National Fish and Wildlife Foundation, Clemson University, North Carolina State University. BATE, Sept 96, 8
- In July 1997, “Starbucks Coffee Company and the Alliance for International Innovation announced a partnership that will include in-store tests of several environmentally preferable disposable coffee cups and promote increased use of reusable cups by customers. Starbucks conducted market tests of three new disposable cup designs this summer in Boston, Chicago, and Seattle ... In setting criteria for the new cup, partners started from a neutral point on materials and considered everything from styrofoam to the biodegradable ‘Earth Shell’ ... The partners have developed standards for reusability and are using the pilots to track labor costs and incremental increases in dishwashing ... In early 1998, the task force will publish a report summarizing the environmental, economic, and other advantages of the new cups.” BATE, Sept 97, 8 (Ralph Earle, Alliance for Environmental Innovation, 6 North Market Bldg, Faneuil Hall Marketplace, Boston MA 02109; tel 617 723-2996)
- The US Environmental Protection Agency has joined with the American Chemical Society and the Council for Chemical Research to present “Green Chemistry Challenge Awards” to promote pollution prevention and industrial ecology. In 1996, five awards were selected from more than 70 entries. BATE, Aug 96, 12 (Paul Anastas, US EPA, Washington DS; tel 202 260-2659)
- The Environmental Defense Fund, founded in 1967 to fight DDT spraying on Long Island, NY, has worked with McDonalds hamburger chain to phase out CFC-blown foam packaging, and with General Motors on greener cars. (Knight, 1997, 4)
- Greenpeace is working with industry to promote alternative refrigeration technologies, financing the development of hydrocarbon “Greenfreeze” gases to replace CFCs and other ozone-depleting gases. (Knight, 1997, 4)
- The Natural Resources Defense Council in the U.S. is working with Dow Chemical to help the company reach its pollution reduction targets around its plant in Midland, Mich., using an independent auditor to evaluate progress. (Knight, 1997, 4)

- The World Wide Fund for Nature, the largest environmental group in the world, is working with companies such as Assi Domain of Sweden and the Anglo-Dutch multinational Unilever to promote sustainable use of forest and fishery resources. (Knight, 1997, 4)

Consultation with, commitments to, stakeholders

Companies find that environmental initiatives often involve stakeholders, who insist on commitments and become monitors of company performance:

- “Canada’s move to voluntary environmental initiatives has bogged down ... Unlike the US and Europe, where voluntary programs are used to augment and go beyond regulations, the Canadian voluntary initiatives are being used *instead of* regulation.” Study shows that the Achilles heel of these voluntary programs (eg Accelerated Reduction/Elimination of Toxics, ARET) is “the absence of credible verification mechanisms ... A workplan is important in terms of enabling shareholders to convince their constituency that a particular project is worth participating in. If it is not in the stakeholder’s interest to negotiate, it will not be possible to reach a deal and the (voluntary) process will have no dynamic.” BATE, Sept 96, 14 (Gary Gallon, Canadian Institute for Business and the Environment, 510 Victoria Ave, Montreal Que H3Y 2R5; tel 514 369-0230)
- Placer Dome has emphasized the need for environmental accountability to all stakeholders, and has given non-governmental organizations a formal role in overseeing and monitoring the company’s performance at the Porgera Mine in Papua New Guinea. CEO John Willson has criticized industry leaders for not promoting multinational environmental agreements. “We believe we must work collaboratively, and often proactively, with host governments, foreign aid agencies, and non-governmental organizations to plan for and work towards integrated social, economic and environmental progress in developing countries where we are operating or intend to invest.” Even locally-represented NGOs, who have been critics of the industry, need to be strengthened. “Such local institutions, with their developmental or environmental competence, have the potential to outlast our mines and to continue the social and economic progress which those mines stimulate.” (John Willson. Speech to the Canadian Club, Vancouver, Oct. 3, 1997.)

***Voluntary initiatives
nevertheless
represent
commitments to
stakeholders.***

The environmental services industry

For one industry, environmental protection is not only no threat but the very source of its business. “Envirotech” firms develop and supply technology which will help manufacturers and others to become more resource- and energy-efficient, reduce waste, and eliminate toxic emissions. A large part of their market consists of industrial firms that are driven to seek their services by environmental protection regulations. The envirotech industry is therefore especially sensitive to regulatory standards and enforcement, which create much of their market and substantially affect their sales and prosperity.

British Columbia has a thriving envirotech industry, creating local jobs and helping clients around the world deal with their waste byproducts. Here are some of these businesses:

***British Columbia
has a thriving
environmental
services industry.***

- **Bennett Environmental** of Vancouver, in business for more than 25 years, has developed the Thermal Oxidizer technology for incinerating municipal waste and industrial waste such as oil sludges and for remediating soils contaminated with hydrocarbons, and can also facilitate energy recovery. Bennett has sold its technology to industry in Alaska, Alberta and the Caribbean and has approval for a plant at St. Ambroise, Que. It is also exploring facilities in Maine, the Czech Republic, and Thailand.
- **Consolidated Envirowaste Industries** of Abbotsford is an organic waste management company established in 1989. It designs, owns, and operates composting plants to process organic waste that might otherwise be dumped in landfills and produces soil products sold in bags at retail outlets and in bulk to landscapers, architects, and nurseries. Envirowaste also operates in Florida and Winnipeg.
- **Dynamotive Technologies**, based in Vancouver since 1991, has developed and patented DynaPower, an electrolytic process that eliminates the need for acid in cleaning or descaling steel. The process is cost effective because of its speed and leaves no dissolved heavy metals or lubricants that have to be neutralized and dumped. It is being used, mainly in steel wire mills, in France, Korea, Sweden, the U.S., and Ontario and will be shortly in Japan.
- **Ecofluid Systems** of Vancouver manufactures and supplies activated sludge biological wastewater treatment plants with proprietary technology for subdivisions and residences where septic systems are impossible, and at a cost comparable to or lower than septic systems. It can also process animal manure as a fertilizer.
- **EnviroChem** of North Vancouver, established in 1984, has developed software that is used by forest product companies for environmental management such as pollution monitoring, spill response, and tracking post-audit actions. It has also provided software to the Greater Vancouver Regional District to monitor permits and track compliance and to Vancouver International Airport to collate, review, and interpret data from monitoring stations throughout the airport.
- **MEC Systems**, which moved to Chilliwack from California in 1988, manufactures a high-pressure fogging system used in sawmills, dry kilns, shops, foundries, factories, wastewater plants, landfills, rendering plants, and restaurants for cooling, humidification, dust control, odor control, and exhaust gas scrubbing. MEC's line of MISTER products are distributed in Japan, Korea, Thailand, India, Saudi Arabia, Kuwait, throughout Europe and are moving into South America. The company also provides solutions to U.S. companies in violation of anti-pollution standards, and is working on a food waste drying installation in Ontario.

- **Microsep International** of Burnaby uses technology that originated in Australia but has been refined and commercialized in B.C. for wastewater control, potable water treatment and industrial and mineral processing. Its clarification process, a high-rate system for separating liquids and solids, requires less than half the installation area of traditional treatment devices, with resultant cost savings. It has installations in Australia, Thailand, Taiwan and Nebraska. The Pemberton treatment plant is its first in Canada; its biggest is at British Airways' facilities in Heathrow Airport where it is used to treat aircraft washdown fluids that contain heavy metals.
- **NTBC Research Corporation** has developed its Biosulphide Process for treating effluent contaminated with metals such as acid mine drainage, electroplating waste solutions, metal-laden process streams and groundwater as a cheaper and more effective alternative to standard lime treatment. The process was proven in a year-long pilot run at the Britannia Mine near Squamish. NTBC also maintains a laboratory and small-scale pilot facility in Richmond, analysing and treating samples for mining companies.
- **Point Four Systems** of Port Moody, formed in 1987, manufactures a range of micro-bubble diffusers and specialized oxygen and carbon dioxide injection and degassing devices used primarily in fish-farming and aquaculture operations, and for wastewater treatment monitoring in municipalities such as Kelowna and Armstrong. Its technology is in use in the U.S., Scandinavia, Scotland, Chile, Australia and New Zealand.
- **UV Systems Technology** of Burnaby has developed its Ultra Guard sewage effluent, wastewater and drinking water disinfectant systems based on ultraviolet light technology as an alternative to chlorine treatment. Its clientele in Canada, the U.S., United Kingdom, Germany, New Zealand, Australia, and Japan includes municipalities and factories where reuse of water is necessary.

These and other B.C. envirotech firms are uniquely positioned to observe the effects of environmental regulation on industry practice. If regulatory standards and enforcement are tightened, companies that must make changes become potential clients for their technologies and services. If standards are lower than they could be, or if enforcement is lax, envirotech firms are acutely aware of the loss of clients. Not surprisingly, the envirotech industry champions environmental regulation.

Envirotech spokesmen emphasize how reluctant waste-generators are to innovate:

- Smaller companies in particular are often unaware of new techniques and processes.
- Not many companies are willing to take a chance on the latest technology. There is a conservative insistence on technology that is installed and working successfully somewhere else. This is particularly true in the United States, where failure of a system could land the operator in court facing a lawsuit for not using "proven technology."

Envirotech firms closely monitor environmental regulations.

- If a new technology won't pay for itself in three to five years and then start generating a return, few companies are interested.
- Because of the speed with which technology is moving, many companies prefer to wait for something better to arrive, or for the cost to drop. Sometimes, during that waiting period, companies turn to other strategies for dealing with pollution.

The company practices described by these close (and admittedly interested) observers, characterized by a reluctant following of legislative prodding on environmental issues, is at the other end of the spectrum from the innovative environmental management of industry leaders.

Conclusion

The importance of environmental management is rapidly climbing among corporate priorities. With strong executive support, more and more leading firms are taking the initiative in developing environmental management systems, in espousing environmental codes, principles, and standards, and in making voluntary performance commitments with stakeholders. Environmental issues and regulations are now a field of private-sector opportunity and competition. High environmental performance is closely correlated with high financial performance, a connection being noticed by investors. Customers and other stakeholders have increasing expectations of environmental awareness on the part of firms and products.

Planners should therefore encourage, and expect, businesses to be actively involved with municipalities and other stakeholders in environmental management issues. Action plans and voluntary commitments with monitoring are now standard practice among leading corporations.

5. SUSTAINABLE COMMUNITIES

Urban planning and environmental opportunities

Planning approaches

Urban planning has entered a new phase of diversification (Tomalty et al, 1994, Chap 3). Traditional planning has been trend-oriented; the newer approaches tend to be goal-oriented. Where planning used to involve adaptation to economic and social trends and growing demands, the new focus is long-term on setting and achieving community goals. The newer approaches tend also to involve more stakeholder co-operation and to consider a wider range of values, information, and possible solutions (ibid, 23). Here are some examples (based on ibid):

- **Ecosystem planning:** uses natural rather than political units; emphasizes biophysical sustainability, natural systems, recycling, demand management, interjurisdictional decision-making.
- **Sustainable urban and regional development:** like ecosystem planning, but giving more emphasis to the human dimension (social equity, personal empowerment, meeting basic human needs) than the biophysical.
- **Green Cities:** less concerned with municipal operations and urban policy and planning than with bottom-up initiatives, citizen-based activism, alternative technologies, urban ecological restoration, urban wilderness, community gardens, etc.
- **Healthy Communities:** launched by the World Health Organization in 1986, sees health as connected holistically with ecology and community, and emphasizes the fostering of social relations of mutual aid and community action.
- **Bioregionalism:** advocates the organization of human activity by natural rather than political units; it supports a land ethic and an identification with place, emphasizing local and regional cultures, economies, and environments.
- **Eco-cities, eco-towns, eco-villages:** emphasizes comprehensive site planning and urban design to reduce resource use and minimize impacts; accepts a multidisciplinary, “green” planning process involving scientists, architects, homebuilders, engineers, service providers, etc.
- **Round Tables:** emphasizes stakeholder consensus-building, ongoing deliberation rather than one-off task forces, and combining diverse values into long-term visions.
- **State of the Environment Reporting:** assembles data on selected indicators to give an overview and show trends; a national system is integrating vast quantities of scientific data.

Planning is moving to a new generation of goal-oriented approaches.

- **Environmental assessment:** identifies impacts comprehensively, examines alternatives and tradeoffs in an integrated way, encourages mitigation; is extending its ability to use socio-economic and cultural values and information.

Urban planning is clearly moving in many ways to address environmental issues and sustainability perspectives

Planning and environment

Canadian urban planners are trying to address environmental issues and sustainability in many ways. As a recent Canadian study reports:

Municipal planning has good environmental intentions

Municipalities are becoming increasingly conscious of the need for more and better information pertaining to the environment [They recognize] that tools such as regular environmental audits and state of the environment reports can provide important and needed feedback information that enhances the effectiveness of the planning system.

In policy development and in day-to-day planning practice, the major municipalities are beginning to grapple with sustainable development and its implications for introducing new norms and practices.

The sustainable development movement, together with government initiatives in this area are bringing environmental considerations and ecology into sharper focus [in urban planning] The system of planning and development is moving toward a family of practices – planning, environment, and sustainability. (Perks et al., 1996, 91-5)

However, these new trends are coming up against some significant traditional obstacles:

but faces some traditional obstacles.

Municipal planning is a highly institutionalized professional practice. Its positioning in municipal administration was aggressively developed over 75 years. By contrast, environmental assessment has no comparable history, public recognition, or position of authority and power in the municipal system. Environmental practices are not positioned in the municipal corporation with authority or resources comparable to those of engineering, transportation, legal services, property management, or planning. For the most part environmental assessment practices rely on private consultants who are not the front-line day-to-day managers and decision-makers in the planning-development delivery system. (Ibid, 60-1)

Municipal organizations lack appropriate knowledge and experience relevant to environmental impact assessments and the biophysical environment generally. Information systems, specification of indicators, and training and professional development of staff are all underdeveloped.

Downloading [of responsibilities, but not funding, from provinces to municipalities] puts cross-pressures on municipal corporations, who will be hard-pressed to meet rising expectations in environmental management.

[Municipal corporate culture also] discourages creative and innovative approaches, interdisciplinary solutions to planning and environmental issues, and the establishment of

common goals and integrative, ecological perspectives on environmental management
The real difficulty stems from the fact that municipal organizations are not yet learning
organizations. (Ibid, 91-5)

The conflicts in society at large seem to be mirrored in city planning departments.

Indicators and stakeholders

The use of “indicators” has become central to many planning processes. So widespread is it that one can almost speak of an “indicator movement.” That is because indicators are a way of representing many points of view and multiple aspects of a complex situation in a way that encourages understanding and discussion.

An indicator provides a concise representation of something larger than itself, usually something that is happening through time, such as a natural or social trend, in order to create evidence for discussion and analysis. Indicators are also used to make comparisons among regions and countries. To a great extent, public consideration of issues, development of policy and programs, and scientific investigations revolve around the interpretation of data made available by indicators. (IndEco, 1996, 6)

Indicators are bridges linking stakeholder concerns with data.

The especially useful thing about indicators in stakeholder consultations is that the stakeholders must work out what they should be. It is through suggesting possible indicators, discussing contradictions and overlaps, encountering data difficulties in recording them, and so on that people teach themselves about a topic or an issue. To work towards a set of indicators that represents the various concerns of group members turns out to be an excellent way of learning to bond and work together.

There are longstanding social barriers that need to be dismantled if citizens are to effectively participate in urban policy formulation and implementation. A systematic approach to bridge the gap between professionals, policy-makers, and citizens would use indicators to identify specific issues of concern to particular target groups in precise localities using effective communications media and materials. (OECD, 1997, 91)

First, indicators reduce the number of components and measurements which are required to give an in-depth account of a condition or situation. Second, indicators simplify the communication process by which information is conveyed to diverse groups of users. (Ibid, 15)

Here are two examples of successful indicators projects in the area of sustainability:

Sustainable Seattle: a volunteer citizens’ network which establishes and maintains indicators for measuring progress towards sustainability (Hardi and Zdan, 1997, 117-128).

The 250 citizens in the group researched and selected 40 cultural, economic, environmental, and social indicators. Support was provided by grants from the US Environmental Protection Agency, the New Road Map Foundation, and Boeing Corp. The array of indicators gives “a whole system or whole city snapshot of

movement towards or away from sustainability.” Data availability then forced some changes in indicator identity. (Eg “homelessness” was changed to “housing affordability” because a more reliable source of data would better indicate the conditions that breed homelessness.) A later assessment of the project concluded:

1. *People can become passionate about sustainability and about indicators.*
2. *The very broad and initially intimidating subject of sustainability can be effectively addressed and described on a local basis by residents.*
3. *People from diverse backgrounds representing all sectors of the community work well together in the context of sustainability.*
4. *The process of creative and active public participation combined with advice and information provided by experts generates cohesive and logical indicators that reflect real community values and practical experience.*
5. *Effective and patient facilitation develops a sense of trust among a diverse group allowing the creation of a substantial and respected product.*
6. *When developed outside of established authorities, but not exclusive of them, and by a diverse group, indicators can exemplify the process of democratic governance. The process and product demonstrate the idea of people taking charge of their own measurements of progress. It may be a far-reaching innovation that can bring about a new sense of civic engagement. (Ibid)*

Stakeholders educate themselves by grappling with indicators.

European Sustainability Index project: to develop a set of urban sustainability indicators with participants from about 50 European cities. The indicators were as follows:

- **Healthy environment:** number of days per year that the locally applied standards of air quality are not exceeded.
- **Green space:** proportion of citizens with access to green space within a certain distance of their domicile.
- **Efficient use of resources:** total consumption of energy and water, and generation of waste for disposal, per capita per year. Also ratio of renewable to non-renewable resources.
- **Quality of the built environment:** ratio of open space compared with the surface area used by motor vehicles.
- **Accessibility:** kilometres per year travelled by mode of transport (car, bicycle, public transport, etc.)
- **Green economy:** proportion of companies that have joined Eco-management and Audit schemes (EMAS) or similar initiatives.
- **Vitality:** the number of public, social, and cultural activities.

- Community involvement: number of voluntary organizations and groups per thousand residents, and an estimate of the number of members.
- Social justice: percentage of people living below the poverty line.
- Well-being: survey of citizens' satisfaction with their livelihood. (OECD, 1997, 68)

These examples show how an indicator links a concept with potential data sources. Often enough, one such indicator will have its own set of internal indicators consisting of quantitative or (sometimes) qualitative data.

Green building design and community development

Interested groups of planners, designers, architects, and developers are applying sustainability principles in building designs and community proposals across North America and Europe. Internationally known examples of “green” buildings in Vancouver include:

- 2211 West Fourth in Kitsilano, a mixed-use infill development with locally owned retail shops on the first floor, professional offices on the second floor, and apartments above that.
- The C.K. Choi Building for the Institute of Asian Research at the University of British Columbia, incorporating flexible spaces, advanced circuitry, recycling, composting, and energy efficiency.
- Building No 8 of the Bentall Crestwood Corporate Centre in Richmond, with greatly improved energy efficiency and more healthful indoor air quality.

B.C. has leading exponents of environmentally sensitive design.

At the community level, an advanced example of sustainability planning is the Surrey urban design charrette (Condon, 1996). At the request of the City of Surrey, four teams of urban designers, using intensive workshops with stakeholders, developed plans for a sustainable community on a 400-acre underdeveloped site. The result is four variations on the theme of fusing nature and city in a modern way.

A recent analysis of such examples around the world emphasizes the importance of the guiding influence of the vision of the completed whole, and of whole-systems thinking throughout planning and design. Green design and development means the opposite of imposing some prior concept regardless of site and situation. It means a highly focused planning effort to make the most of what is available in the site and situation – in view of the latest technologies and the pioneering discoveries of others doing the same in their location (Rocky Mountain Institute, 1998, *passim*).

Here are just a few examples from around the world of green community development:

Bremen, Germany: housing without cars (ICLEI, 1995, 10)

- City planners trying to reduce motorized traffic have developed a car-free housing development of 210 housing units. Community car-sharing will reduce parking from about 200 spaces to about 30, freeing 20 per cent of the estate for other uses,

including terraced units. One car is sufficient for 15 to 20 users; residents book cars by phone 24 hours a day and can select from a wide range of vehicles.

Chicago, USA: community groups improve public gardens and landscapes (ibid, 22)

- City and University of Illinois work with over 100 community groups across the city giving resources, workshops, and technical assistance in developing greening projects. A Green Corps of short-term staff helps, while learning horticulture, community outreach, job retention, and management skills.

Erlangen, Germany: “Germany’s foremost Eco-city”

- For 20 years, this city’s policy has focused on environmentally compatible transportation (traffic limitations, pedestrian networks, bicycle lanes, excellent public transit) and “greening” of public areas (removing concrete and asphalt, planting trees and shrubs, tending neglected spaces, pedestrianizing squares). Despite the North American-style grid layout of streets, the results now attract visitors and planners from around the world. (Lennard and Lennard, 1995)

Sustainability is an emerging theme in cities around the world.

Freiburg, Germany: urban forest management (ICLEI, 1995, 34)

- Municipal forests are managed ecologically to emphasize increased natural regeneration, less damage by visitors, and avoidance of pesticides. Trail systems, public information displays, selective tree harvesting and hunting methods, and silviculture research are also involved.

Heidelberg, Germany: urban noise reduction (ibid, 52)

- Heavy trucks produce more noise than 10 to 15 cars, but new technology can reduce this to about the same as a car. The city vehicle fleet is being converted to low-noise. Industrial areas located next to residential areas are closed to trucks not equipped with low-noise technology, except mornings from 7-11 am. So successful is this measure that all residential districts with a 30 km speed limit are being designated for noise protection.

Kamakura, Japan: conservation trusts (ibid, 58)

- When municipalities can’t protect historic, cultural, or environmentally significant lands from development, they can work with concerned citizens and the private sector to establish conservation trusts. The Kamakura Foundation, gathering donations from citizens and companies, and with a city subsidy, purchased a heritage property to keep it from a developer.

Kitchener, Canada: city planning to promote sustainability (ibid, 68)

- An environmentally significant area within the city limits provided an opportunity to make environmental preservation the primary factor to be considered in zoning and development. Now adjacent developments must contribute to the sustainability of the protected area. The city, in partnership with private organizations, citizens, landowners, and educational and environmental organizations will develop environmental education and demonstration programs.

Northumberland County, U.K.: sustainable agriculture demonstration project (ibid, 104)

- At a 200 acre farm surrounded by five former mining communities, local residents will demonstrate eco-efficient and sustainable agriculture practices. Decision-making will be shared in the communities, and farm buildings will be available for community activities. Local educational institutions are involved, and early spin-offs include a seven-member bakery cooperative.

Olympia, USA: municipal sustainability education program (ibid, 110)

- To support its Sustainability Mission and Program, the city of Olympia, Washington, has conducted an Employee Sustainability Survey, to assess municipal employees' understanding of and attitudes to sustainability and to develop training and education strategies. It also conducted an Indicators Project to develop sustainability data.

Portland, USA: energy conservation in multifamily housing (ibid, 118)

- This program provides apartment owners and managers with technical and financial assistance with weatherization measures, recycling containers, energy efficient lighting, water-saving devices, high-efficiency water heaters; and operations and maintenance. The program is supported by partnerships with apartment owner associations, property management companies, and weatherization contractors.

Tucson, USA: Civano, a sustainable community within a city (Brochure)

- A sustainable community sponsored by state and regional energy authorities and a consortium of public and private sector partners. A participatory planning process has created a prototype of an energy-efficient, environmentally sensitive, economically viable, and social relevant community. When fully developed to a 5000 population, two-thirds of the jobs will be within a five-minute walk of the town centre.

Growth management

Urban sprawl

Many of the problems in modern cities are associated with urban sprawl: the tendency for urban edges to blur into a low-density semi-urban fringe. Sprawl increases urban impacts on agriculture and the environment as well as transportation costs and impacts.

Urban sprawl is of special concern to Greater Vancouver. The core municipalities (eg City of Vancouver, Burnaby, New Westminster, and North Vancouver) grew about 10 per cent from 1986 to 1991. But Fraser Valley municipalities (eg Coquitlam, Maple Ridge, Langley, and Surrey) grew 20 to 40 per cent in the same period. If current trends continue, by 2021 the region's population will increase by two-thirds to almost 3 million people, but only one-quarter of the increase will be in the core municipalities. Half the growth will occur up the Fraser Valley (eg North Surrey,

Low-density urban fringes are contagious and harmful.

Langley, Matsqui) and one-quarter in nearer suburbs (eg Richmond, Delta and South Surrey) (Tomalty, 1997, 29-30).

Furthermore, population densities in Vancouver's outlying areas (no lower than 185 people per square kilometre) are higher than in other Canadian cities, such as Toronto (33 people per square kilometre). However, the city core is less dense – 4,172 people per kilometre, compared to 6,540 in Toronto. This sprawling urban pattern is closely associated with Vancouver's growth-related problems – air pollution, deteriorating water quality, congestion, cost of services (tax burden), increasing land prices, affordable housing, etc. (Tomalty, 1997, 30-4)

More compact forms

Vancouver's situation is by no means unusual. Consequently, "the vision of a more compact urban form has become the dominant paradigm in the Canadian and international planning literature ... [There is an] emerging consensus that cities must pursue new patterns of development that will result in more compact urban forms ... Advocates of compact urban development claim that ... agricultural land can be preserved, the impact of urbanization on the environment can be reduced, more socially inclusive and vibrant communities can be created, and the fiscal costs associated with growth can be minimized." (Tomalty, 1997, v, 1)

More compact development forms essentially have higher residential densities, achieved by "intensification." There are many site-level methods of increasing density, such as conversion to multiple-family dwellings, infilling of vacant lots, and redevelopment of underutilized sites. But achieving this site-level intensification requires community-level policies to influence population growth, limit development in non-urban areas or in the urban fringe, guide infrastructure development (eg transit, services) to support growth in certain areas. These community-level intensification strategies are the outcome of "growth management."

As a process, growth management shares features with sustainability approaches:

Growth management plans offer a guidance system to implement the vision that a community has of its desired growth. Land use planning is only one of the components in a growth management approach. Growth management goes beyond more traditional planning processes, by articulating a community-defined, iterative process which includes in its decision guide policy statements, capital budgets, and improvement programs. Action instruments to support its programs encompass public investment strategies, land use regulations, and fiscal incentives or disincentives. There are two important features which distinguish growth management from more established planning approaches. First, it is a dynamic approach which is negotiated through consensus among stakeholders to suit the particular character and needs of a community and second it incorporates the implementation mechanisms necessary to achieve the desired goal. (Gill and Williams, 1994, 214)

In this light, growth management begins to look like a larger, urban-scale version of community economic development, as described in Chapter 2.

Growth management tools

Tools for growth management include design strategies and management methods. Well known design strategies include the following:

- **Land reserves:** eg the Province’s Agricultural Land Reserve created in 1973.
- **Regional transit routes:** SkyTrain has helped to link regional centres and encouraged “nodal development”
- **Urban growth boundaries:** eg Oregon’s boundaries.
- **Greenbelts:** eg GVRD’s Green Zone.
- **Greenways:** corridors connecting natural areas and providing wildlife habitat and recreational opportunities.
- **Joint corridor planning:** for transportation and utility services, as recommended by the B.C. Energy Council in its Energy Strategy.
- **Site-based techniques:** infilling, conversion, etc. to revitalize abandoned sites and rundown areas.

These design strategies can be supported by management methods such as the following:

- **Economic instruments:** user charges, environmental levies, full-cost prices, and other methods of inserting economic signals into environmental choices.
- **Regional environmental assessment reviews:** to evaluate proposals, performance.
- **Community-based issue analysis:** to help stakeholders develop a detailed, shared understanding of the key issues related to their community vision.
- **Action planning:** development of consensus-based goals and specific steps to reach them.
- **Indicator monitoring:** development of performance measures and systematic review of progress with further action as needed.
- **Population and jobs-to-population targets:** to encourage compact development with employment opportunities close to where people live.

These approaches and techniques are just a few of the many new management tools that planners can use to promote sustainable community development.

The prototype for growth management – Oregon’s urban boundaries

Oregon pioneered growth management in the 1970s, when it enacted legislation to set effective urban growth boundaries around cities and towns. The legislation required that every 20 years the boundaries be adjusted to allow for anticipated growth for another 20-year forecast cycle. Never intended to be anti-growth, the boundaries were established to protect Oregon’s rich farm and forest lands from

***Growth
management
strategies fight
urban sprawl.***

fragmentation by urban sprawl (Mazza, 1995, p. 2). The idea was to give real estate developers and infrastructure providers some guidance on how to contain their development over the long term.

Portland has pioneered in planning for controlled growth.

However, the growth boundaries did little to combat urban sprawl within them. By the early 1990s, it was clear that the growing Portland region would spill over its growth boundary in a decade or so, unless decisive action on intensification was taken. In response, Portland Metro launched “Region 2040,” a regional planning process to change the pattern of urban development. The plan calls for increasing Portland’s population density by 75 per cent over the next 45 years, through initiatives such as higher-density housing (eg townhouses, apartments, and houses built on smaller lots), mixed land use and pedestrian-friendly development, and expansion of the region’s light-rail transit. Even with these measures, it will be challenging to accommodate a 55 per cent higher population within just 8 per cent more land (Hall, 1995, 10).

Much-admired around the world, Oregon’s land use planning has also earned support from local conservationists, developers, and agricultural interests – in large part because of the greater certainty that growth limits have engendered. Despite periodic pressure from businesses to relax them, the boundaries have endured several ballot initiatives (Tomalty et al., 1994, 104). But not everyone is sold on the Oregon experience. Despite mandatory public involvement in the planning process, Oregonians remain fragmented in their views on suburban design, public transportation, and other key issues. Some groups have been heavily critical of Region 2040, arguing, for example, that higher densities will increase traffic congestion and impose excessive tax burdens for public transit (Thoreau Institute web site, Turning Portland Into Los Angeles).

Despite the divergence of opinion, Oregon’s example in adopting growth planning laws, has been followed by some ten other states, including Florida, Georgia, Maine, Vermont, and Washington. In addition, numerous growth management efforts are underway at the local level in the United States.

We are in dire need of a state land-use policy, new subdivision laws, and new standards for planning and zoning by cities and counties. The interests of Oregon for today and in the future must be protected from grasping wastrels of the land. We must respect another truism: That unlimited and unregulated growth leads inexorably to a lowered quality of life. (Governor Tom McCall, Opening Address to the 1973 Legislative Assembly, Portland, Oregon, January 6, 1973)

Greater Vancouver’s Livable Region Strategic Plan

The Greater Vancouver Regional District (GVRD) has recognized the need to manage population and economic growth for more than 20 years, with the release of its first Livable Region Plan in 1975. In the late 1980s, the region embarked on an extensive consultation process with municipalities and the public to produce its third plan, culminating in 1993’s *Livable Region Strategy: Proposals*.

The strategy contained in these proposals was unique in several respects. First, environmental values were given top priority, over the pressures for urban development. Second, unprecedented for Greater Vancouver, regional land use and transportation were being planned together, with the involvement of all implementing authorities. Third, the plan covered the whole Lower Mainland, stretching from the City of Vancouver in the West to Chilliwack in the East. And, fourth, planning and implementation were to be done through partnership with municipalities, rather than a hierarchy of plans or regulation (GVRD, Livable Region Strategy: Proposals, p. 5).

Greater Vancouver started more than 20 years ago.

The Livable Region Strategic Plan was approved in principle in late 1994. Central to the plan are the concepts of “complete communities,” “regional town centres,” and a “Green Zone” to protect land from urban development. Complete communities are meant to bring urban benefits to the suburbs – more local jobs, a diversity of services and facilities, and proximity to them via pedestrian and public transportation. Besides diversity, communities are to become more compact through higher densities supported by public transit, walking and cycling, and reduced car use. To fight continuing sprawl, the plan calls for concentrating growth in eight suburban Regional Town Centres, in addition to the downtown core. The Green Zone includes the regional watershed, parks, farmland, and ecological habitat, representing about half of undeveloped lowlands.

The GVRD estimates that its plan will reduce air emissions by one-third, save \$2.2 billion in transportation capital spending, and protect from development land equal in size to the City of Vancouver (through green zones) (GVRD web site, Strategic Planning: Frequently Asked Questions).

[The] natural environment is important to our quality of life and our sense of place. It is an irreplaceable treasure for Greater Vancouver residents. During the Creating Our Future process of 1990, and subsequent consultations, the public consistently said they wanted the region's natural heritage protected from urban sprawl. (GVRD, 1993)

Municipal responses to the regional plan

The Livable Region Strategy is voluntary. The municipalities that compose the GVRD are not bound to follow population growth, Green Zone targets, etc. in their Official Community Plans (OCPs) (see Tomalty, 1997, 57).

The City of Vancouver (see below) and some other suburban municipalities, such as Richmond and Delta, have been supportive of regional growth management goals, because they are conscious of having to bear many of the environmental and other costs of sprawl. Some municipalities have made efforts to “intensity” – eg Burnaby’s Metrotown, North Vancouver’s Lonsdale Quay, North Vancouver’s sanctioning of suites in single-family dwellings.

Suburban municipalities vary in their support for intensification.

But in other municipalities, such as Surrey and Burnaby, there is strong opposition to local intensification and scepticism about the idealized notion of town centres as

pedestrian-friendly, cultural centres (eg Metrotown has, for many, become just another big shopping centre) (Tomalty, 1997, 48-58).

Vancouver's CityPlan: meeting the challenge

The City of Vancouver has had a strong history of growth management (eg Kitsilano development in 1980s, SkyTrain, 1995 Industrial Lands Strategy to preserve/revitalize industrial areas in downtown core). The City was active in the Livable Strategic Plan process and its current OCP, the 1995 CityPlan, is the most supportive municipal response. The plan endorses the GVRD's population growth targets for the downtown core, although not the employment targets (because would lead to more commuting and congestion) (Tomalty, pp. 54-5; also *CityPlan: Directions for Vancouver*, off the Internet, pp. 27-8)

Georgia Basin and Fraser Basin – management for ecosystems

Planning and action explicitly based on sustainability principles is exemplified in the Georgia Basin Initiative, based internationally on a bioregion, and the Fraser Basin Management Program, based intermunicipally on a watershed. Both have identified rapid population growth and urban sprawl as the main threats to sustainability in their study areas.

These initiatives reflect the three distinctive characteristics of the sustainability movement:

- Proactive: Planning as innovative management rather than simple constraint.
- Holistic: A combining of social, ecological, and economic objectives.
- Inclusive: A respect for diverse values and participatory decision-making.

The Fraser Basin Management Board is one of the few institutions in North America that is based on ecological boundaries and has an explicit sustainability orientation encompassing social, ecological, and economic dimensions. The board, created in the summer of 1992, consists of a unique range of stakeholders: three members each from federal, provincial, municipal, and First Nations bodies, and six members from non-governmental organizations or the public at large. (Tomalty, Compact, 60)

Transportation

Transportation poses a serious environmental problem. Motor vehicles alone account for two-thirds of local air pollution in the Lower Mainland (MELP, *Clean Vehicles and Fuels*). The transportation sector as a whole contributes one-third of BC's greenhouse gas emissions (British Columbia, 1997, 25)

The problem is getting worse. Between 1985 and 1992, the number of commuting automobiles in the Greater Vancouver region grew almost twice as fast as population – over the same period, public transit's share of morning rush hour travel fell from 11 to 10 per cent of trips (GVRD, 1993, 30).

The Georgia and Fraser Basin initiatives promote sustainability.

Transportation is a central environmental problem in the Lower Mainland.

The opportunity is large. Managing transportation is a good example of a “win-win” strategy for environment and economy – reducing local air pollution and greenhouse gas emissions, as well as reducing accidents, traffic congestion, road construction and maintenance costs, and parking headaches (Victoria Transport Policy Institute, *Win-Win*, 1).

Sustainability planning strategies

From a sustainability standpoint, transportation is linked to land use. The reliance on the automobile is both cause and consequence of urban sprawl. Encouraging more compact residential/work patterns will therefore help make transportation manageable, while transportation management methods can be tools to discourage sprawl and encourage higher density living.

The GVRD and the City of Kamloops have been innovators in the province in terms of linking transportation planning to land use planning.

Transport 2021 is the GVRD’s current transportation plan developed as part of the Livable Region Strategic Plan. It includes such measures as expansion of public transit (light rail, SkyTrain, and buses), high occupancy vehicle lanes, and transportation demand management strategies (GVRD, *Transport 2021*). Though polls have shown some commuter resistance to certain measures, such as bridge tolls and fuel taxes, they have also shown strong support for increased public transit (Tomalty, Compact, 63) In October 1997, the Province and the GVRD announced the creation of a new transportation authority in Greater Vancouver – unique in North America – purpose to develop and finance regional transportation, coordinate public transit, develop new transportation demand management programs (see below), etc. (GVRD web site, News Release and Backgrounder)

***GVRD and
Kamloops have
taken the wheel.***

Kamloops’ TravelSmart Project represents a true integration of land use and transportation planning. The city is geographically constrained by rivers, hills, and valleys, which require effective land use planning. The conventional planning approach was to wait for the Official Community Plan to be done and then plan transportation to meet that growth. More recently, Kamloops integrated the two: they looked at a number of land use planning scenarios (representing different levels of intensification) and chose the one that minimized impacts on the transportation network (Dave Dean, City of Kamloops, personal communication) The resulting plan cuts transportation costs by nearly nine-tenths, from \$120 to \$15 million, and reduces local air pollution and greenhouse gases (by 6% and 3%, respectively). This plan was then used to develop a transportation demand management program (City of Kamloops, TravelSmart Project)

Transportation demand management

In traditional economic terms, the growth of consumer demand is taken as given and supply is expected to grow to meet it. In sustainability terms, demand is not a given; people’s behaviour can be changed and managed. Sustainability advocates are not the only ones to think this way, of course; the advertising industry does too.

***Public attitudes
and behaviour can,
and must, change.***

Transportation demand management (TDM) refers to measures aimed at reducing the demand for vehicle trips, such as public transit, walking and cycling, and carpooling. In 1993, the GVRD estimated that a comprehensive trip reduction program could cut growth in peak commuting requirements by up to one-half for the Lower Mainland. (*Transport 2021*) Both the GVRD and the City of Kamloops have developed TDM plans. Other regions of the province have not, preferring to focus their funding support on roadway construction (Victoria Transport Policy Institute, *Win-Win*, 2).

Kamloops TravelSmart program puts emphasis on changing attitudes to car use and alternative transportation modes. Its main tools are public awareness and education, ridesharing, bike paths, enhanced transit service, etc. (City of Kamloops TravelSmart Project, last page). The traffic situation in Kamloops is quite different from that in the Lower Mainland (cheaper parking, less congestion). Surveys on travel preferences find that residents of Kamloops like the convenience of cars. For example, one survey-based study, which attempted to compare travel times by car and bus, estimated that even if transit was free it wouldn't make much difference – the value of people's time was so much higher than the \$1.25 bus fare. (Dave Dean, City of Kamloops, personal communication)

Bellevue, Washington has a successful trip reduction program. A 1993 survey showed that nearly half (47 per cent) of employee trips used an alternative transportation mode (ICLEI web site, Case Studies). Hunting Beach, California, gives alternative mode commuters credits that can be exchanged for time off or converted to gift certificates (ICLEI web site, Case Studies).

Parking policies

Free or low-cost parking is a major contributor to automobile use in North America. The World Resources Institute estimates that free parking in the United States amounts to an implicit subsidy to car users of \$85 billion a year. This is less of a problem in Canadian cities, which are comparable to Europe in having fewer free spaces (Pucher and Lefevre, 1996, 28).

Parking “cash out” is a strategy in which an employer offering free parking to employees must offer the cash value of the parking to employees using other transportation modes. This strategy typically reduces car travel by 10-30% and is more equitable to non-driving employees (Victoria Transport Policy Institute, *Win-Win*, 2).

Municipalities can provide incentives for businesses with TDM programs or reward “location-efficient” housing (Victoria Policy Institute, *Win-Win*, p. 2). Alternatively, they can impose parking charges to discourage automobile use. San Francisco has a 25 per cent parking tax on fees charged by private garages and lots, the proceeds of which go to fund its public transit system. Since the imposition of the tax, transit ridership has gone up and congestion is down (ICLEI, *Economic*, 22)

Alternative fuel vehicles

New technologies such as electric and hydrogen-powered vehicles are promising. The market for electric vehicles are being pushed by California's mandatory requirement for 10 per cent of new vehicles sold by 2003. The main problem with alternative fuel vehicles is that they don't address the critical issue of vehicle miles traveled (Todd Litman, Victoria Transport Policy Institute, personal communication)

New technologies and strategies are being tested.

Recently, GM tested its Impact electric cars in a pilot program involving B.C. Hydro employees. Vancouver was the only Canadian city selected for testing.

Municipal fleets

Municipalities can reduce their number of vehicles and vehicle trips, providing cost and environmental savings. Yet a larger value tends to be in leadership shown to the private sector.

Vancouver is one of the Canadian cities participating in "Green Fleets," a program of the Toronto-based International Council for Local Environmental Initiatives (ICLEI) – includes Transportation Demand Management and land use planning measures (Ontario Round Table on Environment and Economy and National Round Table on the Environment and Economy, *A Strategy for Sustainable Transportation in Ontario*, No. 22). Denver's Green Fleets Program has been successful, and is expected to reduce greenhouse gas emissions by 22% by 2005 (ICLEI web site, Case Studies)

Other measures

Other measures for promoting sustainable transportation choices:

Siting and design: traffic calming, interconnected streets, bicycle lanes and greenways, convenient parking for carpools and vanpools (B.C. Energy Aware Committee, 1997, 7-8).

Telecommuting: Los Angeles County has one of the largest telecommuting systems with more than 2,600 employees participating.

Road pricing: fees for the use of roads or highways to recover environmental costs (Stockholm study, ICLEI, case studies, 19).

Congestion pricing, where fees are charged for travelling at congested times, is generally not popular with commuters. However, Resources for the Future conducted a survey in Southern California in 1996, which found support for congestion fees, especially if they were tied to other incentives ("Paying to Drive Freely," 1997).

- **The Problem of Transportation "Underpricing":** The Victoria Transport Policy Institute estimates that the biggest share of transportation costs is made up by "external" environmental and social costs that vehicle owners do not have to pay. On average, each dollar spent on vehicle operating costs imposes about \$2.70 in costs to society. This underpricing increases urban sprawl, congestion, pollution,

municipal costs, etc. The estimate is based on an analysis of the average cost of roadway travel for 11 different transportation modes ranging from the average car to telecommuting under different travel conditions – urban peak, urban off-peak, and rural (Victoria Transport Policy Institute, *Win-Win*, v-vi).

Energy efficiency

The hidden costs of wasting energy

Savings from energy efficiency go far beyond simply spending less on energy itself (BC Energy Aware Committee, 1997, Part One):

Our environments suffer from a terrible waste of energy.

- **Land values:** Much of the land area in B.C.'s cities and towns is devoted to transportation. Parking lots, roadways, service stations, and used car lots are low-value, compared to buildings and commercial services. Lower property values and forgone property taxes are the result.
- **Non-financial land values:** Agricultural land, wetlands, forests, and wildlife areas are being threatened by encroaching urban development and by transportation and electricity transmission corridors.
- **Infrastructure costs:** Urban sprawl increases the extent of linear infrastructure (roads, sewer and water lines, phone cables, energy utility lines and wires). More compact development reduces both up-front and maintenance costs.
- **Noise and barriers:** Wide, high-speed roads are hard to cross and unpleasant to walk along due to noise, dust, and smog. They increase the travel time, discomfort, and danger to non-motorized travellers. They pose physical barriers to the elderly, children, the disabled, and non-drivers. They impose social barriers across and through communities.
- **Climate change:** Fossil fuel combustion is implicated, through rising greenhouse gas levels, in increased storm severity, coastal flooding, wildlife habitat loss, agriculture productivity losses, species extinctions, increased forest fires, and the spread of insect-borne diseases.
- **Local pollution:** Energy-related impacts, such as air emissions and contamination of rivers and groundwater from fuel and oil leaks and waste, degrade the environment in ways that discourage tourists and businesses.

Energy and jobs

The jobs and benefits in the energy field are now in conservation.

Many studies have shown that energy efficiency does more for the local economy than energy supply:

- Most expenditures on fuels and electricity leave the community. Keeping the money saved in the community stimulates the local economy and creates local jobs.

- Improving energy efficiency in buildings not only reduces energy costs for residents and businesses but also improves the environment and reduces the cost of maintenance and facilities.
- Large-scale energy projects create fewer jobs than almost any other kind of investment. The average about 3 to 4 jobs per million dollars of investment. (A proposed dam on the Columbia would cost \$26 million per permanent job.) In comparison, a typical mix of consumer goods and services produce about 12 jobs per million dollars invested.
- Energy supply jobs tend to require technical skills and occupations where there is little underemployment. They tend to be temporary (construction-related) and localized at the site. Efficiency-related jobs use a wider range of skills of the kind available in many communities and are spread out in both time and location.

Community energy planning

Community energy planning involves (BC Energy Aware Committee, 1997, Part One):

- Land use planning and transportation: to reduce reliance on the single-occupant vehicle.
- Site planning and building design: to improve energy efficiency of buildings and facilities.
- Infrastructure efficiency: to use more energy-efficient technologies in services.
- Alternative energy supply: to increase use of cleaner, more local, higher-efficiency energy sources.

***Community
energy planning
brings benefits on
all sides.***

A number of municipalities in both Europe and North America have achieved outstanding success in reducing their energy use and profiting from energy efficiency, and can provide valuable lessons for other municipalities to follow (ICLEI, 1994):

- City of Leicester, U.K.: committed to energy efficiency since the 1970s, has reduced energy use in municipal buildings by 16 per cent in the last decade, mainly financed by previous energy savings, and has adopted an even more ambitious program for the next 25 years.
- City of Phoenix, Arizona: Seeking energy efficiency since the 1970s, Phoenix by 1986 had annual energy savings over \$1million, and now diverts half these savings to a fund to finance further steps.
- City of Toronto, Ontario: During the 1990s, Toronto has been vigorously retrofitting its buildings, creating savings with an average payback of just under 4 years.
- City of Saarbrucken, Germany: Though the centre of the largest coal-producing region in Germany, Saarbrucken has since 1980 had a strategy of replacing fossil fuel energy by more efficient use of waste heat, conservation programs, fostering of renewable energy sources, district heating systems, etc. (ICLEI, Case Studies)

Tourism

Urban tourism

Until the mid-1980s, tourism researchers and analysts regarded cities as sources of tourists and rural areas as destinations. But in terms of volume, cities are the major tourist destinations in the world. There has been a tendency to overlook the resort function that exists in all cities (Hinch, 1996, 96-7).

In cities, the built environment and the cultural environment are as important as the natural environment. Because urban visitors will more frequently find themselves on their own than visitors to smaller communities, general public attitudes are also important. "Visitors need to feel welcome at a destination. Destinations that fail to provide this genuine hospitality are at a disadvantage to those that can. Hospitality ... while it is relatively intangible, it plays a significant role in the sustainability of urban tourism" (ibid, 99).

In urban environments, tourism planning is inseparable from urban planning: "Given the myriad of other forces acting within the urban environment ... sustainable tourism has to be integrated far more thoroughly into other forms of urban development" (ibid, 107). And the interest in tourism planning has grown with the interest in urban planning:

In recent years, the laissez faire approach to tourism development has been challenged by a more proactive role of governments to establish directions for development, develop strategies to enhance growth, remove impediments to growth, and to monitor the performance of the industry. In its best forms, governments have developed a partnership approach with industry and the community. The development of strategic plans, development control plans, preferred patterns of development, and the like, have rested on the belief that there is a common good and public interest which must be addressed in achieving sustainable tourism. (Craik, 1995, 93)

But whereas in smaller communities, tourism planning may focus on development and promotion balanced with some mitigation of effects, in cities the emphasis is on tourism as part of a growth management process.

Industry sustainability

As mentioned in Chapter 2, the tourism industry in British Columbia, led by Tourism BC and the Council of Tourism Associations of British Columbia, has launched a growth management initiative. An industry Task Force, with the help of sectoral focus groups, has produced an overview report (*Tourism Industry Product Overview*, 1996), which gives the following general picture:

The BC tourism industry, with estimated annual revenues over \$7 billion, is both huge and diverse. Sectors usually identified (with estimated approximate percentage of revenue in 1997) are: urban 29, business and convention 19, touring 19, outdoor 13, skiing 9, sport fishing 9, golf 2. (A tourist, or visitor, is defined as a person who travels 80 km for business or pleasure.)

Urban tourism depends on the built and cultural environments.

Growth management is part of tourism industry planning.

Vancouver and Victoria are the main beneficiaries. They receive almost all of the first two categories and a good deal of the third. Accordingly, more than half of all BC tourism occurs in the two urban areas, and (since the expenditures per visitor per day are highest in those categories) an even higher proportion of total receipts. While BC's urban areas are thriving from the standpoint of tourism, the regions outside the Lower Mainland and Victoria are experiencing dislocations, controversy, and uncertainty.

The industry experiences increasing capacity constraints and resource conflicts and has called for a comprehensive tourism strategy. Participants in the industry self-study leading to the overview report set forth key issues for managing future growth. Receiving by far the most votes (one-third more than any other) is "maximize sustainability of the resource," while tied for second place is "maximize quality of experience seen by visitors." Thus the industry itself, taking a long-term view, places the highest priority on environmental issues.

Sustainability concerns are of two kinds: impacts of tourism on resources, and impacts of other resource uses on tourism. The leading tourism impacts identified include high visitor volumes both in cities and in smaller communities; traffic congestion, and conflicts between motorized and unmotorized activities; effects on sensitive wildlife areas; waste management issues in remote locations; and (for golf and skiing) alteration of landscapes.

The leading impacts on tourism by other resource uses include loss of scenic values outside urban areas; reduced access to lands for development of ski resorts, golf courses, and lodges; loss of wildlife and fish habitat; and conflicts with other industries in certain places. They call for policies to protect the high quality natural setting for outdoor and touring experiences, which is being compromised by other resource sectors, such as visible logging and mine development.

Industry participants believe the promotion of the "Super, Natural" image has been very successful, but express concern about the quality of the visitor experience in spite of the province's extraordinary natural assets. They observe that competition with other destinations is increasing, and that greater emphasis is being placed on quality of facilities and services. For example, a greater diversity of things for visitors to do, higher quality attractions, and upgraded interpretive experiences will be important to stay competitive.

Conclusion

Cities have to combat urban sprawl by encouraging more compact residential patterns. This means, for example, making downtown areas more attractive by encouraging "small-town elements" such as neighbourhoods, regional centres, and greenways. Developments must be shaped to fit into and contribute to a whole community. Like smaller communities, cities and regions will increasingly try to attract people who can choose where to live and work.

***Sustainability
requires
improvements in
the quality of
facilities and
services.***

Community involvement in planning will, if anything, increase as people recognize the importance of community relations and environments to their well-being and health. Planners will need to become familiar with and use many of the new methods of building consensus and eliciting choice among diverse value systems which have been developed in the environmental and community economic development movements. Examples include issue analysis, action planning, and indicator development.

As recognition grows of the interactions among land use, transportation, energy, landscapes, and communities, there is increasing emphasis on integrated planning of municipal infrastructure. Municipalities can encourage sustainable forms of development with many management tools which are becoming available, such as economic instruments, environmental assessments, performance reviews, and with design techniques such as greenways, nodal development, and site-improvement strategies.

CONCLUSION

Changes in attitudes

In the decade since the Brundtland Report, the wall of mutual opposition and distrust that for a long time separated the environmental movement from businessmen and resource industries has been crumbling. It hasn't entirely disappeared yet. The old idea that economic well-being requires environmental sacrifices, and vice versa, is difficult to dispel, but this report has looked at many places where the wall no longer exists, and at some where it never did.

Both sides are working at a new accommodation. As we have seen, many leading corporations in North America and Europe have accepted the need for environmental management and now regard it as a competitive tool. Following the precedent of the "quality movement" of the 1980s, industry leaders see that waste and pollution are not inevitable but rather defects of production, the elimination of which yields economic benefits. And the environmental movement, where it has sensed this change in attitude, has become less confrontational. Some of the world's leading environmental groups are now encouraging and co-operating with business and industrial groups in projects that implement principles of environmental management.

An important facilitating role is played by the concept of "sustainability," popularized by the Brundtland Report. Previously, the emphasis had been on "environmental protection," essentially a reactive approach in which economic development causes environmental "impacts" and the environmental function is to identify them, predict them, warn of them, address them, or prevent them. The concept of "sustainability," however, moves development into a positive light – as the way to solve problems. The future lies ahead with new technologies and methods, which will be developed and deployed to meet a combination of economic, social, and environmental goals. Sustainability therefore invites alliances between environmentalists and businessmen rather than opposition.

Sustainability also brought a new appreciation of the importance of the local community. For example, the idea of "regional" economic development (as seen in this report) shifts attention from a theoretical or national "top-down" view to what is actually happening locally, as seen locally, from the bottom up. Sustainability has this local emphasis not despite its global concerns but because of them: it is in the local economy that the global economy affects people's lives. And so, sustainable practices must be implemented locally. This link has provided reasons for co-operation between environmentalists and many sorts of planners, designers, facilitators, and activists, as we report.

***Environmentalism
is broadening
and maturing with
sustainability
concepts.***

Across North America, and perhaps in British Columbia more than in many places, people appreciate their environment for its beauty and its opportunities. To a considerable extent, these expectations are carried over to their built environment – the cities and communities and structures in which people live. People want to live and work in attractive locations.

Environment and development are increasingly linked.

As economic development proceeds, businesses become increasingly dependent on the skills and attitudes of their employees. They find themselves drawn to locate where the work force they need chooses to live and work. In this way people seeking desirable environments bring economic development in their wake.

To encourage businesses increasingly means to attract their work force, which in turn means creating an attractive place for living and working. Protecting and enhancing natural and built environments is therefore closely linked to sustaining communities and economies.

The importance of environmental management is also rapidly climbing among corporate priorities. With strong executive support, more and more leading firms are taking the initiative in developing environmental management systems, in espousing environmental codes, principles, and standards, and in making voluntary performance commitments with stakeholders. Customers and other stakeholders have increasing expectations of environmental awareness on the part of firms and products. High environmental performance is closely correlated with high financial performance, a connection being noticed by investors. In short, environmental issues and regulations now constitute a field of private-sector opportunity and competition.

Useful strategies

This report has looked behind the slogans and the headlines. It shows that the perceived conflict between the economy and the environment has become an illusion, and may always have been. It offers evidence to economic and environmental planners and other decision-makers that sustainable development and sustainable communities are not mere academic theories but established principles in business and community planning. And it suggests a variety of methods by which an enlightened environmental awareness can make vital contributions to community development and well-being.

The following are some of the strategies suggested in this report:

- Resource-dependent communities should begin transition planning for a different future and not wait for export industries to shut down. They should focus on diversifying the local economy and building an attractive community offering quality of life and environmental amenities. Building-from-within and environmental maintenance provide the basis for future prosperity and economic development.
- Smaller communities should welcome and seek to attract the growing numbers of people who value the advantages they can provide in quality of life and

Planning should move in new directions.

environment. These include, among others, retired persons and workers in knowledge-based “footloose” industries. People who can choose where to live and work are a growing and increasingly important economic resource for smaller communities. Business increasingly is attracted by the same things people are, because of its growing reliance on skilled labour.

- The “knowledge-based” industries represent a potential growth opportunity in many localities. Advanced services and high-tech firms, whose workers place a great value on quality of life, often prefer to move to communities offering exceptional environmental amenities. These firms represent a strongly growing economic sector that also has a very small environmental “footprint.” Planners can take advantage of the strong networking and clustering tendencies of this industry in designing and promoting facilities.
- Smaller communities should assess their tourism opportunities. Planning is needed both to provide quality experiences, usually involving many sites in an area, and to ensure that tourist traffic itself does not degrade sensitive sites or harm community relations. Strong local support for tourism is also vital because of the importance of resident attitudes to a positive tourist experience.
- Communities of every size, in planning economic development, should take advantage of the tendencies of firms to cluster by considering eco-industrial parks and by facilitating various forms of business combinations and interconnections. In smaller communities, clusters can be a growth opportunity. In larger cities, they can be a way to revitalize abandoned “brownfield” sites and rundown areas.
- Cities have to combat urban sprawl by encouraging more compact residential patterns. This means, for example, making downtown areas more attractive by encouraging “small-town elements” such as neighbourhoods, regional centres, and greenways. Developments must be shaped to fit into and contribute to a whole community. Like smaller communities, cities and regions will increasingly try to attract people who can choose where to live and work.
- Community involvement in planning will, if anything, increase as people recognize the importance of community relations and environments to their well-being and health. Planners will need to become familiar with and use many of the new methods of building consensus and eliciting choice among diverse value systems which have been developed in the environmental and community economic development movements. Examples include issue analysis, action planning, and indicator development.
- As recognition grows of the interactions among land use, transportation, energy, landscapes, and communities, there is increasing emphasis on integrated planning of municipal infrastructure. Municipalities can encourage sustainable forms of development with many management tools which are becoming available, such as economic instruments, environmental assessments, performance reviews, and with design techniques such as greenways, nodal development, and site-improvement strategies.

Sustainability concepts indicate new strategies.

- Planners should encourage, and expect, businesses to be actively involved with municipalities and other stakeholders in environmental management issues. Action plans and voluntary commitments with monitoring are now standard practice among leading corporations. Furthermore, residents are starting to expect municipal governments themselves to make similar environmental commitments.

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