Fraser Basin Council

PHOTO: LISA DE GOES

# A Snapshot on Sustainability

STATE OF THE FRASER BASIN REPORT | JANUARY 2003

## SUSTAINABILITY INDICATORS




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## Report measures health of the Fraser Basin: How's the patient doing?

Achieving a sustainable Fraser River Basin is a critical challenge facing the 2.6 million British Columbians who live, work and play in all regions of the Basin. In 30 years, the population in the Fraser Basin is expected to reach 4 million. Managing this growth in ways that enhance the Basin's social, economic and environmental health and wealth is an important responsibility and urgent priority for us all.

The Fraser Basin Council was established in 1997 with a mandate to ensure that the decisions we make now about the Fraser Basin will protect and advance its economic, environmental and social sustainability into the future.

A vital part of the Council's mandate is to measure progress towards sustainability in the Basin. Over the past two years, the Council has worked in partnership with government, non-government, private sector and community groups to develop a set of "sustainability indicators" that comprise this *State of the Fraser Basin Report: A Snapshot on Sustainability*.

This report provides a kind of medical check-up for the Fraser Basin. The Council has run some basic diagnostics to see how the health of the Basin is doing. While the general health of the patient is pretty good, the report identifies some critical issues and priorities that must be taken to ensure a more sustainable Basin. It provides some insight on where we are making progress and

Mount Robson – where the Fraser River begins

where we need to focus more attention and action. Hopefully it will also lead to greater public awareness and understanding of sustainability issues and actions that we can take to make sustainability a way of life for us all.

The report includes an analysis and discussion of trends for all three components of sustainability – social or community, environmental and economic. Indicators are presented for 16 topic areas that comprise the report, providing a baseline for tracking trends and future reporting on the sustainability of the Basin. o

*(See Page 3 for more information on the scope of the report.)*

*"Sustainability means living and managing our activities in a way that integrates social, economic, environmental and institutional considerations to meet our needs and those of future generations."*

## From the Rockies to Richmond: Fraser River Basin is home to most in BC

British Columbia's Fraser River Basin – it's one of the most beautiful, prosperous and healthy places on earth. If you are reading this, you are probably one of the 2.6 million people who live, work and play in the Basin – but you may not know it.

The Fraser Basin – the area drained by the Fraser River and its many tributaries – is the size of Great Britain and almost as large as the State of California. Stretching 1377 kilometres from the Rockies to Richmond, the Basin covers more than 25% of BC and is home to nearly two out of every three British Columbians.

Prince George, Vanderhoof, Quesnel, Williams Lake, Kamloops, Lillooet, Chilliwack, Abbotsford, Surrey, Delta, Coquitlam, Vancouver, Whistler and many other cities and towns are all located in the Fraser Basin.

For thousands of years, the Basin has been home to aboriginal peoples including the Halquameelem, Hun Qui Min Um, Nlaka'pamux, Secwepmec, Stl'atl'imx, Tsilhqot'in, Carrier and Okanagan speaking First Nations. The sustainability of both Aboriginal and non-Aboriginal communities in the Fraser Basin is critical to the long-term health of the Basin as a whole.

Economic activities in the Basin account for 80% of the province's gross domestic product. Its forests cover nearly three times the area of New Brunswick, and its farms, ranches and orchards comprise half of all BC's agricultural lands. There are eight major producing mines, as well as some of the province's – and the world's – most spectacular natural beauty and recreational opportunities.

Vancouver from False Creek

The Basin also boasts one of the world's most productive salmon river systems, supporting five salmon species and 65 other species of fish, including steelhead and sturgeon. The Fraser and its tributaries comprise BC's most productive waterfowl breeding and overwintering area, and the mouth of the River in particular is recognized as a globally significant estuary. Hundreds of species of birds, reptiles, amphibians and mammals, not to mention trees, plants and insects, form the basis of the Basin's diverse ecosystems.

The Fraser River Basin. It's a very special place and worth taking care of! o

*(See Page 2 and 3 for a snapshot of the Fraser Basin.)*

***Social well-being supported by a vibrant economy and sustained by a healthy environment***

Mount Robson near the headwaters of the mighty Fraser River

# A Snapshot of the Fraser Basin

## Where do you live in the Fraser Basin?

Fraser Basin Council

The Fraser Basin Council was established in the spring of 1997 with a mandate to ensure that the decisions we make now about how we live, work and play in the Fraser Basin will protect and advance its social, economic, and environmental sustainability into the future. Member organizations are signatories to the *Charter for Sustainability* that details the Council's fundamental principles and objectives.

The encounter that crystallized concern over the health of the Fraser River and the Basin it drains took place more than twelve years ago. Gordon Campbell, then Mayor of Vancouver, and John Backhouse, then Mayor of Prince George, challenged each other to "clean up their parts of the (Fraser) River." The joint challenge was itself a recognition that making progress towards sustainability for the whole Fraser River Basin would require a collaborative effort all along the River and across all jurisdictions.

*"Working together to ensure the Fraser Basin is a place where social well-being is supported by a vibrant economy and sustained by a healthy environment – a true reflection of sustainability."*

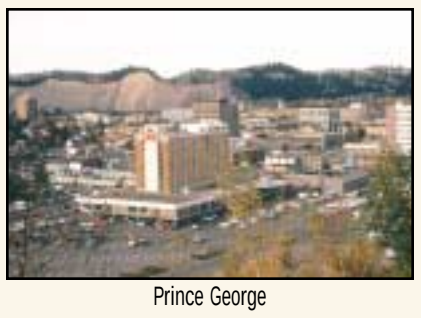
The Council is a unique organization founded on the belief that a more effective, potent and sustainable kind of leadership emerges when diverse interests coalesce around core values, and when consensus and joint action are chosen over confrontation and inaction. In all of its work, the Council remains impartial, transpartisan, independent and non-political in its primary role as advocate for a sustainable Basin.

To achieve its goals, the Council acts as an impartial, trusted facilitator operating under a unique model of collaborative governance. Under this model, the four orders of Canadian government (federal, provincial, local and First Nations), the private sector and civil society work together as equals to overcome conflict, find common ground, make informed and responsible decisions, generate long-term solutions to complex issues and enhance sustainability "on the ground."

To learn more about past accomplishments and future priorities of the Fraser Basin Council, visit our website. http://www.fraserbasin.bc.ca o

Fraser Basin Chair Jack Blaney with former Chair Lt. Gov. Iona Campagnolo and Vice-Chair Roy Mussell.

First Nations Youth in Fort St. James



Prince George

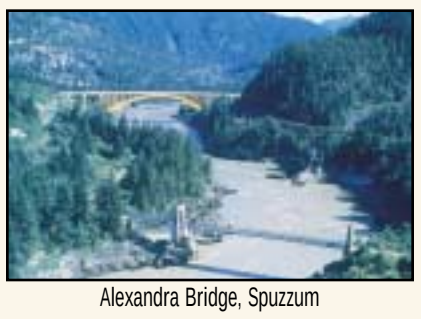
Bird Sanctuary near Valemount


Harrison Lake

New Westminster

Alex Fraser Bridge

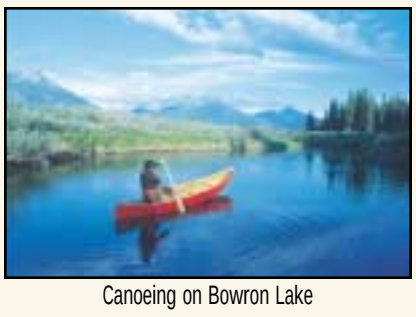
Hell's Gate, Fraser Canyon



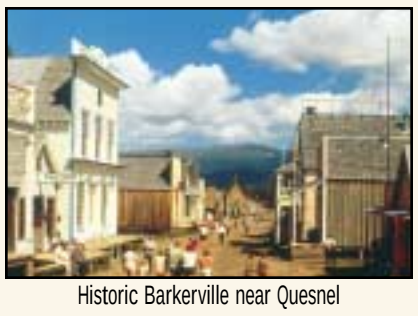
Alexandra Bridge, Spuzzum

Adams River, Photo: Lisa De Goes

Fraser River Estuary near Steveston



Canoeing on Bowron Lake



Historic Barkerville near Quesnel

Ranch near Williams Lake

The Fraser Basin is divided into five regions based on a combination of watersheds and regional districts.

The **Upper Fraser Region** extends from the headwaters of the Fraser River near Mount Robson west to Prince George, and includes the watersheds of major tributaries including the Nechako and Stuart Rivers. Forestry is the most important industry in the region, especially in communities like Burns Lake, Vanderhoof, Fort St. James, Valemount and McBride, while the economy of Prince George is more diversified.

The **Cariboo-Chilcotin Region** is the largest region in the Basin and includes the Blackwater, Chilcotin and Quesnel River watersheds and the vast Cariboo/Chilcotin Plateau. Communities include Quesnel, Williams Lake and 100 Mile House. The economy of the region is diversified and based on forestry, mining, agriculture, ranching and tourism.

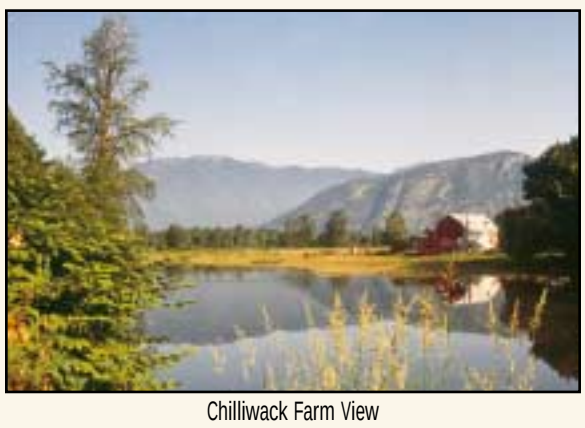
The **Thompson Region** includes the North and South Thompson, Thompson/Nicola and Bridge-Seton River watersheds as well as part of the rugged Fraser Canyon. Communities include Clearwater, Kamloops, Merritt, Ashcroft, Salmon Arm, Enderby, Lumby, Lytton and Lillooet. Kamloops has evolved from a fur trading post to become an urban centre with a diverse local economy. Mining, forestry, agriculture and tourism are the leading industries in the area.

The **Fraser Valley Region** begins at Boston Bar and includes the central Fraser Valley to the US border and the Chilliwack and Harrison River watersheds. Communities include Hope, Chilliwack, Harrison, Kent, Mission and Abbotsford. The Fraser Valley contains some of the most productive agricultural land in Canada. It also provides a transportation and utility corridor for road, rail, river, natural gas and power for major urban centres. Other major sectors include forestry, services industries and manufacturing.

The **Greater Vancouver/Squamish/Pemberton Region** includes the Greater Vancouver and Squamish-Lillooet Regional Districts. The Basin includes Whistler, Pemberton and other communities in the SLRD as the Lillooet River drains into the Fraser via Harrison Lake. The region's economy is the most diversified in the Basin and includes financial, transportation and government services, tourism, forestry-related industries, fishing, and high tech manufacturing. o

Douglas Lake Ranch

Fraser Canyon



Chilliwack Farm View

Vancouver

Kamloops

Houseboating on Shuswap Lake

Chilcotin Mountains

## The State of the Fraser Basin Report: Scope and Limitations of the Indicators

### What are sustainability indicators?

Sustainability indicators are tools that provide some insight on certain trends and help identify areas where progress is being made or where more change is required; they are not decisive measurements or solutions in and of themselves.

The indicators in this report are a first step in an evolving process to track sustainability trends over time. The report has drawn together a selection of some of the best available information about the state of the Fraser Basin. Indicator trends have been assessed for the Fraser Basin as a whole and for the five regions of the Basin where possible.

### What we learned

What we have found is that some things in the Basin appear to be normal and healthy, while others need more attention and improvement. As is the case after any check up, some questions are still unanswered and require follow-up monitoring, tests or the diagnosis of a specialist.

In other cases, we have learned that there is much we do not know. Sustainability trends are difficult to identify, and additional information and analysis is required. In this process, the Fraser Basin Council is the general practitioner, not the specialist, and will facilitate dialogue among multiple interests to ensure that we continue to advance our understanding of areas where our current sustainability knowledge is inconclusive.

While the report is founded on objective analysis of scientific and statistical information, it also endeavours to distil some key messages to make sustainability real for people in their homes, communities, organizations and businesses.

In addition to the objectives outlined on page 1, the report is also intended to inform and/or influence the development of policies or programs to address sustainability issues, including improving knowledge about sustainability over time. The report also includes some examples of sustainability in action in the Fraser Basin.

### Limitations of the Report

Like any tool, indicators have limitations; but if used with care and attention, they can lead to constructive outcomes. Assessments of sustainability are only as good as the information they are based on. In some cases, we don't have all the information we would like to know; sometimes the best available information is not good enough.

There are several challenges in analyzing and reporting on sustainability trends on a regional basis over time due to a number of factors, including evolving knowledge and analytical methods; unavailable data for the Fraser Basin or its regions; changing resources for monitoring and analysis over time; and diverse administrative and physical boundaries for data collection.

However, sustainability cannot wait for perfect knowledge. Let us use these trends as a starting point for informed and broad-based dialogue, identification of key gaps in our knowledge and constructive action. o


SUSTAINABLITY PERFORMANCE INDICATORS

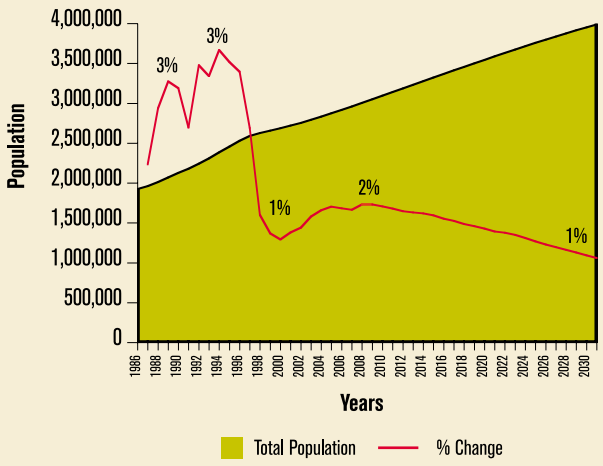
The symbols above are intended to illustrate which key indicators are getting better and which are getting worse. For some trends, there are indications of both improvement and decline. For a few trends, the information collected was insufficient to make a determination (i.e., uncertain).

# Population

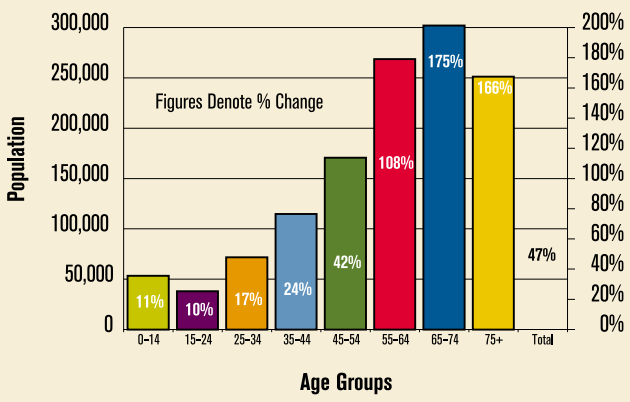
POPULATION


GROWTH MANAGEMENT

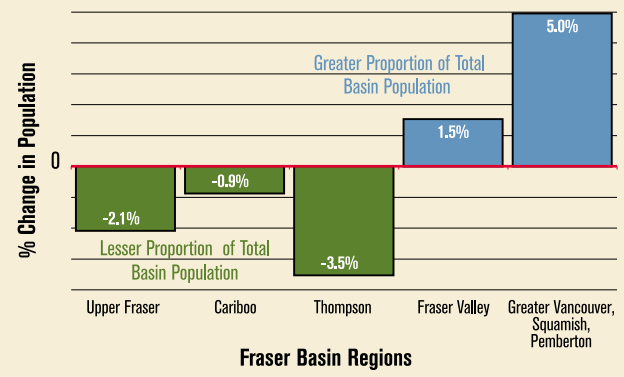

**Fraser Basin's Projected Population Growth (2001–2031)**




**Projected Population Change by Age (2001–2031)**




**% Change in Proportion of Total Population, by Fraser Basin Regions (1981–2001)**




REFERENCES USED


- Statistics Canada, Population Census (1981 – 2001).
- Urban Futures Inc. with BC Statistics, People 27 Run (2002).


FOOTNOTES

[1] Regional Trend Analysis – "Population" reflects the five Fraser Basin Council (FBC) regions as defined by the eight Regional Districts (RDs) located primarily within the Fraser River Basin. These include the Upper Fraser region (Bulkley-Nechako and Fraser-Fort George RDs), the Cariboo region (Cariboo RD), the Thompson region (Thompson-Nicola and Columbia-Shuswap RDs), the Fraser Valley region (Fraser Valley RD) and the Greater Vancouver, Squamish, Pemberton region (Greater Vancouver and Squamish-Lillooet RDs).

[2] The Lower Mainland includes both the Fraser Valley and the Greater Vancouver, Squamish, Pemberton regions (as described above in 1).

[3] Interior and rural regions and communities include the Upper Fraser, Cariboo and Thompson regions (as described above in 1) and/or select communities from these regions.

[4] Northwest Environmental Watch (2002).

## Highlights

- From 1981to 2001, the population in the Fraser Basin grew by 1% a year, from 1.7 to 2.6 million, or two-thirds of the 3.9 million people living in BC[1].
- By the year 2031, the Basin population is expected to grow by 47%, reaching 4 million residents.
- In 2001, 87% of the Basin's population lived in the Lower Mainland[2].
- Some rural regions and interior communities have experienced population loss[3] as people moved to urban centres, other areas outside the Basin and to other provinces.
- An increasing number of people will be in older age classes, particularly 65 years and older.

## Why is this important for sustainability?

- Population impacts all aspects of sustainability. Understanding population trends can help to develop strategies to better manage available resources and balance economic, environmental and social priorities.
- As the population grows and/or migrates throughout the Basin, the demand for housing, goods and a variety of utilities, services, land, infrastructure and resources also increases. Rates of resource consumption and waste generation are directly related to the size and distribution of the population.
- In areas of high growth, communities may face adverse impacts such as traffic congestion, loss of agricultural land and over stretched community services.
- In areas with low growth or decreasing populations, communities may face adverse impacts associated with economic transition (e.g., unemployment, out-migration and loss of services).

## What are the trends and current conditions?

### Population Growth

- The Basin's population grew from 1.7 million to 2.6 million people between 1981and 2001 and is projected to reach 4 million by 2031.
- Following rapid growth between 1986-1996, the growth rate has declined in recent years.
- Of the total population in the Fraser Basin in 2001, 87% lived in the Lower Mainland, 5% in the Thompson region, 5% in the Upper Fraser and 3% in the Cariboo-Chilcotin.
- The population in the Lower Mainland region is expected to grow by 49% over the next 30 years.
- Influences on population levels include births, immigration, emigration and deaths.
- In 1996, Aboriginal people comprised 3.3% of the Basin's population (72,305). 59% lived in the Lower Mainland, 17% lived in the Upper Fraser, 16% in the Thompson and 8% in the Cariboo region.

### Demographic Changes (i.e., Age Classes)

- Seniors older than 65 are expected to experience the highest population growth over the next 30 year, with a projected increase of 171%.
- Currently, 6% of the Basin's population is older than 65 years. By 2031, the elderly may represent 22% of the population. The age groups between 25-34 years and 35-44 years are growing at rates of 17% and 24% respectively.
- As the baby boom generation (aged 33-62 years) retires from the labour force over the next 30 years, the Basin may experience labour shortages and a significant rise in demand for health and social services.

### Growth Management

- Local governments in urban areas are using a variety of regulatory tools to encourage the development of more compact communities and minimize the impacts of urban sprawl.
- Five of the eight regional districts in the Basin are implementing or considering opportunities for growth management. The GVRD and TNRD have adopted regional growth strategies, the FVRD is working on one, and the CRD and CSRD are considering other ways to manage growth.[1]
- Between 1986 and 1996 in Vancouver, high-density neighbourhoods contained 80% of the growth. As a result, 62% of residents lived in compact neighbourhoods.[4]
- Policies and tools to manage growth include Official Community Plans, zoning bylaws, urban containment boundaries (UCBs), density bonusing and secondary suites.

### Rural Transition Challenges

- Population decline is a concern in many rural and interior regions of the Basin where resource dependent communities have experienced economic challenges due to changes in resource sectors.
- There has been a 3.5% decrease in proportion of the Basin's population living in the Thompson region and a 2% decrease in the Upper Fraser region from 1981 to 2001. The Lower Mainland population has had a 5% increase.
- Many communities have been working to develop economic transition plans and/or economic diversification strategies to reduce the negative impacts on their communities.

## Making sustainability happen

### What Can Be Done?

- What personal choices can I make to help support sustainability? Some suggestions: reduce resource consumption; re-use products and minimize and recycle wastes; buy local and buy BC to support businesses and reduce transportation impacts; or volunteer in your community to support local initiatives.
- How can I work with my local government, businesses and community groups to support more compact, livable and economically viable communities? Some examples: support mixed-use zoning, infill development and public transit.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

## What are some future information needs?

- The impacts to communities of urban growth and out-migration from rural and/or interior communities.
- The impacts of demographic change such as health care costs and labour force supply related to the aging population or immigration and emigration.
- The relationships between regional and global sustainability as influenced by population growth, migration and consumption patterns, as well as the importing and exporting of products or waste materials. o

LIFE EXPECTANCY

GETTING BETTER

LEADING CAUSES OF DEATH

GETTING WORSE GETTING BETTER

# Health

## Highlights

- Life expectancy has increased steadily throughout the Basin over the past ten years but there is variation between regions of the Fraser Basin.
- Cancer is the leading cause of death in the Basin, followed by heart and respiratory diseases.
- More than 45% of British Columbians are considered to be overweight. This is double the number in 1985. Child obesity has tripled since 1985. Over 50% of the population over the age of 12 does not maintain even minimal levels of physical activity, resulting in increased risk of heart disease, osteoporosis, stroke and type-2 diabetes.
- In 2001, Basin residents reported themselves as being less healthy than they reported in 1994. There was a 7% decrease in people who reported their health as being either excellent or very good.

## Why is this important for sustainability?

- Human health is vitally linked to personal well-being and quality of life.
- A healthy population is better able to pursue its collective goals and aspirations, and contribute to society.
- The quality of our natural and human-made environment has a significant impact on public health. As a result, there are important linkages between health, air and water quality, solid and liquid waste management, pesticide management and recreational pursuits.
- Health is also a function of the social and economic environment. For example, human health is related to different social and economic opportunities, lifestyle choices and habits.
- The health of the population has economic implications, particularly in relation to the costs associated with demands on the health care system. The diversity in services based on rural and community facilities and the geographic distribution of health care professionals have a significant impact within the Fraser Basin.

## What are the trends and current conditions?

### Life Expectancy

- Although life expectancy has increased slightly in the past ten years, there is some variation throughout the Basin. For example, people living in the Greater Vancouver region can be expected to live until the age of 80.3, while the Cariboo region has an average life expectancy of 77.5 years.
- The greatest gains in life expectancy since the 1970s have been among lower income populations.
- Women have consistently had longer life expectancies than men.
- Disability-free life expectancies – the number of years an average individual can be expected to live free of moderate or severe disability – have also risen gradually over time.

### Leading Causes of Death / Rates of Morbidity

- Cancer is the leading cause of death in the Fraser Basin. With the exception of lung and breast cancer, the number of deaths due to all other cancers has decreased.
- Heart and respiratory diseases are the other main causes of death in the Fraser Basin. Respiratory disease is particularly high in the northern regions of the province and the Basin. For example, the rate of deaths from respiratory disease rose by almost 50% in the Upper Fraser region from 1995 to 1999. This coincides with air quality trends.
- With an aging population, the growing rate of diabetes is also cause for concern. It is estimated that over 325,000 British Columbians (7% of the BC population) will have diabetes by the end of 2010, an increase of 87% in 10 years. The age-standardized prevalence of diabetes for Aboriginal people is at least three times higher than that for the general population.

### Low Birth Weight

- In the Fraser Basin, fewer babies are being born with low birth weights (i.e., less than 2.5 kilograms, or 5.5 pounds). The median rate decreased from 5.2% to 4.6% between 1995 and 1999. In 1999, the median rate of low weight birth in Greater Vancouver was 5.3% – higher than the BC average (4.7%) and lower than the Canadian average (5.5%). The Thompson region had the lowest rate (4.4%)
- The rate of babies born with a low birth weight is a common indicator of both the current and future health of a population. Infants born weighing less than 2.5 kilograms have been found to have a substantially higher rate of post birth illness and death, are more prone to suffer long-term health problems and disabilities, exhibit lower IQ and academic achievement, and have increased hospitalization rates.
- Factors contributing to low-birth-weight infants include the socio-economic status (e.g., health, income) of the parents, and the degree of social support that they receive.

## Making sustainability happen

### What Can Be Done?

- Are there lifestyle changes that you could adopt to improve your health? Some suggestions: get regular exercise, eat a healthy diet, manage stress and avoid environmental pollutants.
- Are there adequate services and programs in your community to promote healthy lifestyles, foster early child development or reduce the pressures on the health care system? Some suggestions: support and participate in recreation centres, sports leagues and early child development programs.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

## What are some future information needs?

- Relationships between human health and sustainability.
- The health and well-being of people with disabilities, mental illness and other health conditions.
- Provision of, and access to, health care including consideration of health provider density and the distribution of primary and secondary health facilities and services. o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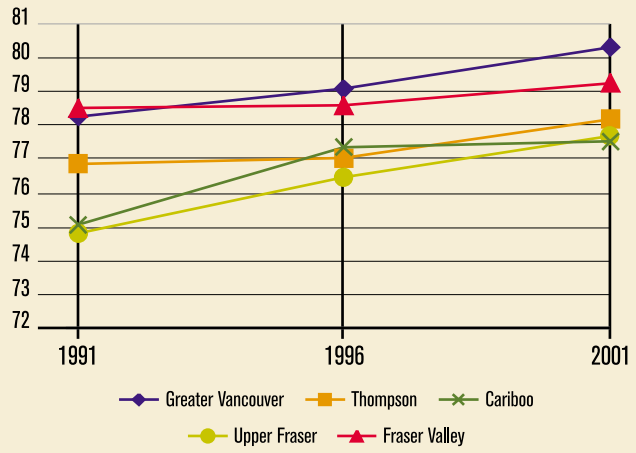
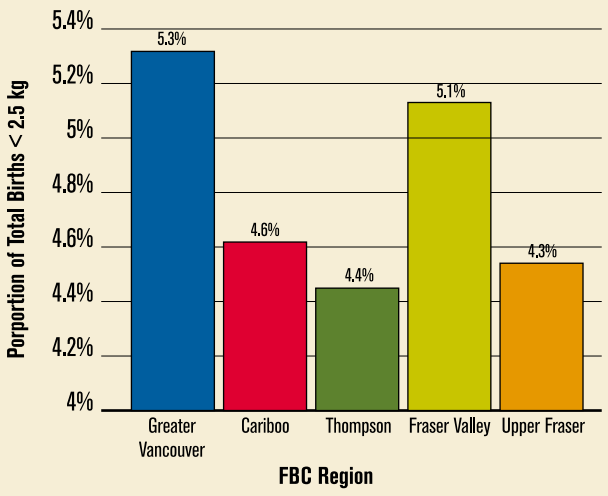
- BC Ministry of Health (October 2002). Responding to Diabetes.
- BC Vital Statistics Agency, Birth-Related and Mortality Statistics 1995-1999, Volume II.
- Canadian Institute for Health Information; Statistics Canada, Vital Statistics, Death Database, Demography Division (population estimates) and the 1996 Census (20% sample).
- Statistics Canada; Trends in mortality by neighbourhood income in urban Canada from 1971 to 1996.

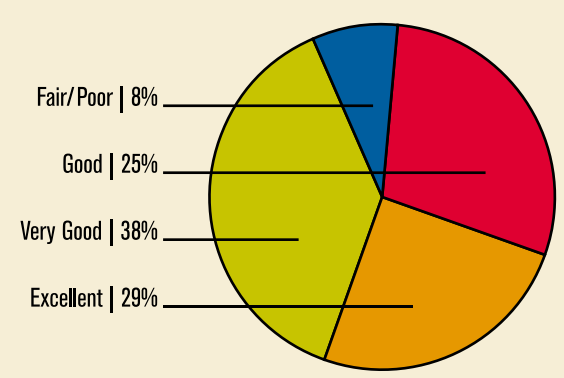

**Life Expectancy at Birth by Region (1999–2001)**



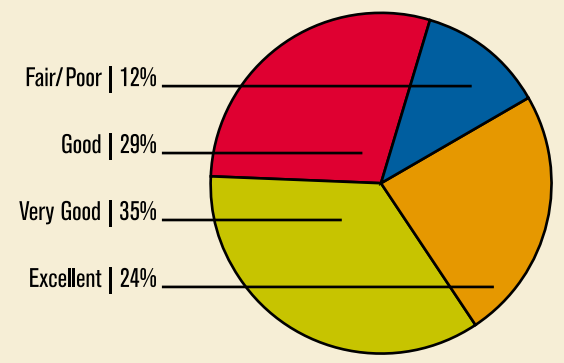

**Rate of Low Weight Births by Region (1999)**




**Self-Rated Health (1994–1995)**



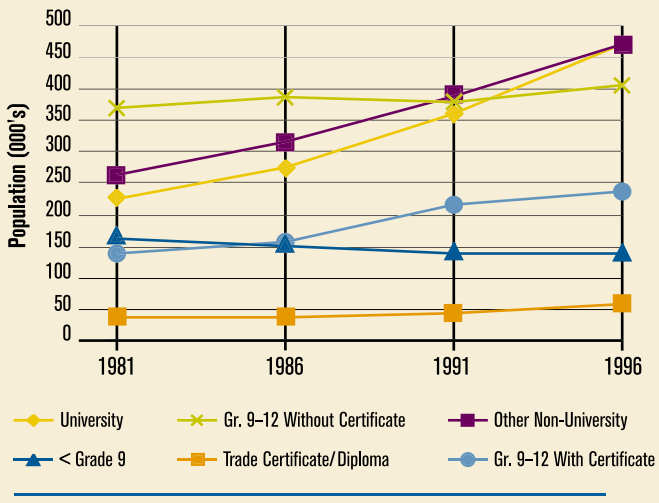

**Self-Rated Health (2000–2001)**



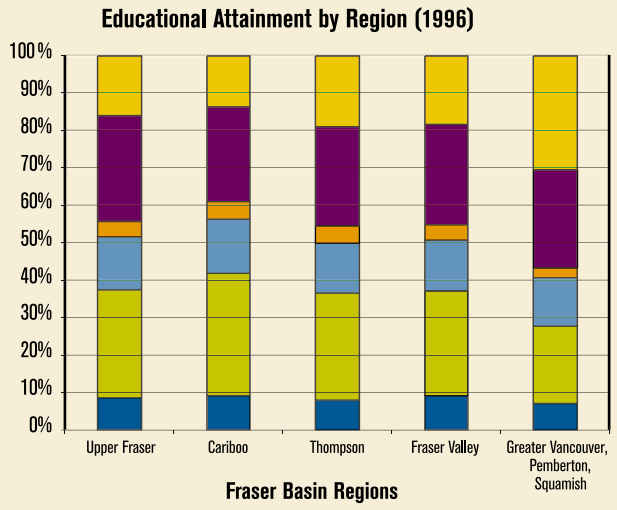
# Education

EDUCATION LEVELS

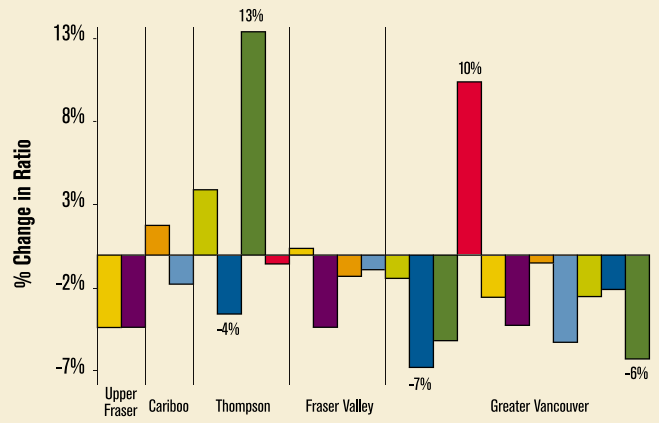

**Basin Population by Level of Educational Attainment (1981–1996)**



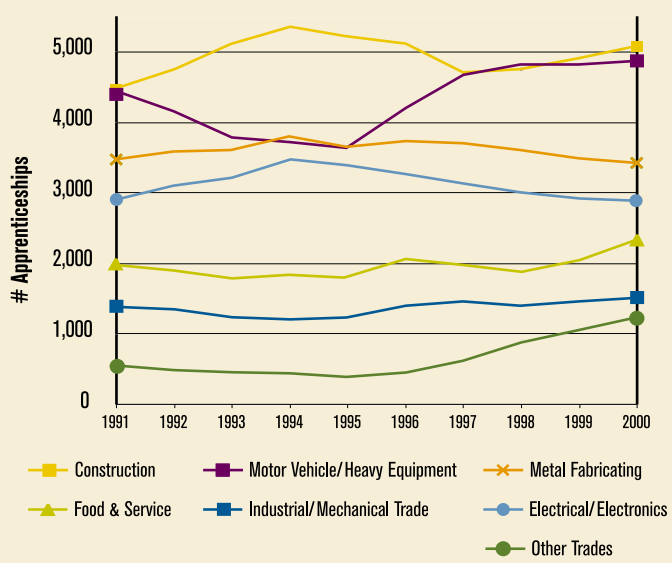

**Educational Attainment by Region (1996)**




**% Change in Teacher-Pupil Ratios by School Districts (1997–2002)**




**Number Registered in Apprenticeships in BC by Sector (1991–2000)**




## Highlights

- Educational levels in the Basin have risen steadily between 1981 and 1996. The proportion of the population in the Basin with some level of post-secondary training rose from 43% to 55% between 1981-1996.
- The largest increase was with the number of people with university degrees, which grew by 73%.
- In recent years there have been more students per teacher in classrooms: 82% of school districts in the Fraser Basin had between 1% and 7% fewer teachers for their student population between 1997 and 2002.

## Why is this important for sustainability?

- Learning and personal development is a continuous, life-long process for all people in the Fraser Basin. It is not limited to those enrolled in formal educational programs.
- Education is an important factor of individual and community strength, helping people to meet their basic needs and achieve their social, economic and environmental goals.
- Early child development has significant implications for well-being. The first six years of a child's life are fundamental for learning, behavioural development and physical health throughout their lives.
- Education, along with life experience and personal values, contributes to a person's involvement in their community and their understanding of sustainability. By contrast, a lack of education, skills and experience may limit opportunities for employment and financial security.

## What are the trends and current conditions?

### Level of Educational Attainment

- The number of people with less than a Grade 9 level of education decreased between 1981 and 1996 and the percentage of people with high school certificates increased by 62%.
- The proportion of the population in the Basin with some level of post-secondary training rose from 43% to 55% between 1981and 1996.
- Education levels are similar in the different regions of the Basin, although there is a higher concentration of people with post-secondary training and university-level education in the Lower Mainland.

### Teacher-Pupil Ratios

- The ratio of teachers to student population in the classroom is not a direct indicator of quantity or quality of education. However, research suggests that the quality of education can be significantly improved through smaller class sizes and a teaching model that allows for attention to individual student needs.
- 19 of 23 school districts in the Fraser Basin had fewer teachers per student population between 1997 and 2002.

### Apprenticeship Training

- Apprenticeship training combines workplace training with technical in-school training.
- Fluctuating levels in skills training through apprenticeships may be largely attributed to changes in the availability and funding of apprenticeship programs and related grants.
- Enrollment in the different types of trades remained relatively constant between 1991 and 2000, with the building and construction and motor vehicle/heavy equipment trades being the most common form of skills training sought, and food service and industrial/mechanical trades being the least common. It is mostly men who participate in apprenticeship programs in BC (about 93% of total enrolment).

### Early Learning

- Human Early Learning Project (HELP) is assessing and mapping different aspects of early child development in BC.
- The first HELP report on Vancouver has revealed a number of insights into early child development and vulnerability as demonstrated by neighbourhood differences in children's school readiness; socio-economic characteristics; neighbourhood climate; early health risks, detection and intervention; childcare, literacy and parenting programs; and school success. The report shows that in the least affluent neighbourhoods, 38% of children are vulnerable on at least one dimension of the Early Development Instrument (EDI), compared with only 6% in the most affluent neighbourhoods.

## Making sustainability happen

### What Can Be Done?

- How can I learn about and participate in the education issues in my community to ensure quality education? Some suggestions: volunteer with the Parent Advisory Council or meet with your children's educators.
- Are there other ways to learn in my community? Some suggestions: join a service club, volunteer with a community group, take advantage of your local public library or browse the Internet.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

## What are some future information needs?

- The Early Development Indicator is currently only available for Vancouver; however, similar information will be developed for other communities in BC in future years.
- Enhance information about apprenticeships, job-transition training and other educational opportunities.
- Consider information about access to education, funding levels, costs, distribution of schools, etc. o


REFERENCES USED

- BC Ministry of Education. Teacher-Pupil Ratios.
- Human Early Learning Partnership, UBC. http://www.earlylearning.ubc.ca/
- Statistics Canada. Census 1981, 1986, 1991, 1996. Educational Attainment; Training and Apprenticeships.

# Housing

CORE HOUSING NEED

GETTING WORSE

## Highlights

- In 1996, 80% of households in BC had met or exceeded their housing needs; however, 20% were in a state of "core housing need.[1]" This represented an increase of 3% between 1991 and 1996.
- Local governments in urban areas of the Basin are using a variety of tools to encourage the development of more compact communities and minimize the impacts of urban sprawl such as urban containment, density bonusing and secondary suites, supporting a more sustainable pattern of urban development.

## Why is this important for sustainability?

- Housing is a basic need for all residents of the Basin and plays an important role in determining quality of life for Basin residents. The adequacy, suitability and affordability of housing influence the health, well-being and economic stability of individuals and families.
- Housing is part of the broader issue of land use planning. Housing may contribute to efficient, compact, multi-use neighbourhoods that are transit- and pedestrian-friendly. Alternatively, urban sprawl can result in a loss of green space and/or agricultural lands, increased traffic congestion and high development costs associated with utility and transportation infrastructure.
- Housing also relates to environmental sustainability in terms of "green building" concepts such as energy efficient housing designs and environmentally friendly building materials.

## What are the trends and current conditions?

### Core Housing Need

- In 1996, 80% of households in BC had met or exceeded their housing needs. 20% of all private households in the province were in a state of "core housing need." Core housing need represents households that cannot access dwellings that are adequate in condition and suitable in size without having to spend 30% or more of total before tax household income on their shelter, which is above the accepted affordability norm.
- Between 1991 and 1996 on a Basin-wide scale, there was a 3% increase in households with core housing needs. Many rural regions experienced larger increases, including the Thompson (8% increase), Fraser Valley (7% increase) and Cariboo (6% increase) regions.
- The greatest housing need is among renting households (36% in 1996) rather than owner-occupied households (10% in 1996).

### Growth Management

- There are many policies and tools available for local governments to manage growth related to housing including density bonusing and secondary suites. Density bonusing allows developers to add density (i.e., more units) to a development in exchange for other community benefits such as green space or social housing units. Secondary suites help to better utilize existing housing units, assist homeowners in paying their mortgages and may offer more affordable rental units.
- Five out of eight regional districts in the Fraser Basin have adopted or are exploring opportunities for growth management, including Regional Growth Strategies
- Between 1986 and 1996 in Vancouver, high-density neighbourhoods contained 80% of the growth. As a result, 62% of residents lived in compact neighbourhoods.[2]

### Rates of Home Ownership versus Rental Housing

- In 1996, 64% of households in the Fraser Basin lived in owner-occupied households, compared to 36% who were living in rental housing. Between 1981 and 1996 in the Fraser Basin, the rate of home ownership has remained about the same.[1] This trend may have changed due to lower interest rates in recent years.
- The housing split varies between urban and rural regions of the Basin. Rates of owner-occupied housing in the Upper Fraser, Cariboo, Thompson and Fraser Valley regions ranged between 73% and 75%. In the Greater Vancouver region, only 61% of households owned their houses while 39% rented.

### Rental Housing Vacancy and Rental Rates

- The majority of communities in the Basin experienced a trend of increasing vacancy rates from the early 1990s that began to drop by 1999.
- With the exception of Prince George (12%), many urban centres in the Basin had below 4% average vacancy rates in 2002. In Vancouver, the 1% vacancy rate was amongst the lowest ever in the city. In rural centres and smaller communities, vacancy rates were considerably higher, ranging from 13% in Vanderhoof to 35% in Williams Lake.
- In 2002 in BC, the average rent for a two-bedroom apartment was $795, ranging from as low as $505 in 100 Mile House to as high as $954 in Vancouver.

### Homelessness

- A recent study of homelessness in the Greater Vancouver region determined that between 1991 and 1996 there was a 65% increase in "at risk" individuals, i.e., those living in situations that do not meet basic health and safety standards, do not have security of tenure and are not affordable. By 1996, more than 131,000 individuals were found to be at risk.
- 40% of the people at risk of homelessness were Aboriginal people (15%), single parents (15%) and persons with a disability (10%).

## Making sustainability happen

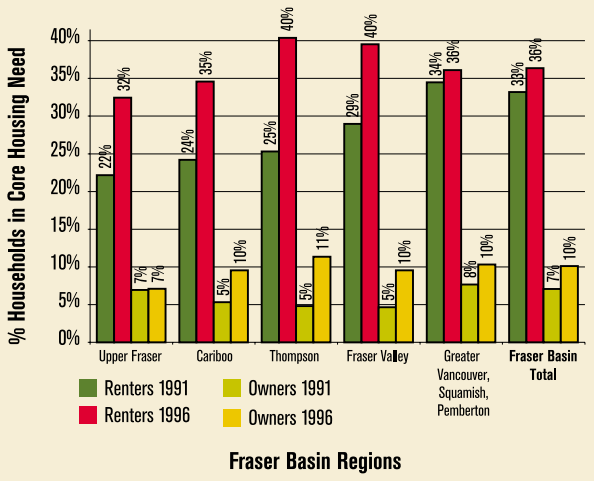
### What Can Be Done?

- How can I influence residential development trends? Some suggestions: Get involved in community rezoning and planning processes, support the development of a mix of housing opportunities and support municipalities in their efforts to simplify the legalization of secondary suites.
- How can I help to incorporate "green building" concepts into my new or existing home? Some suggestions: Retrofit an old home or build a new house using green design and materials such as energy saving improvements, "green roofs" or water conservation technology.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

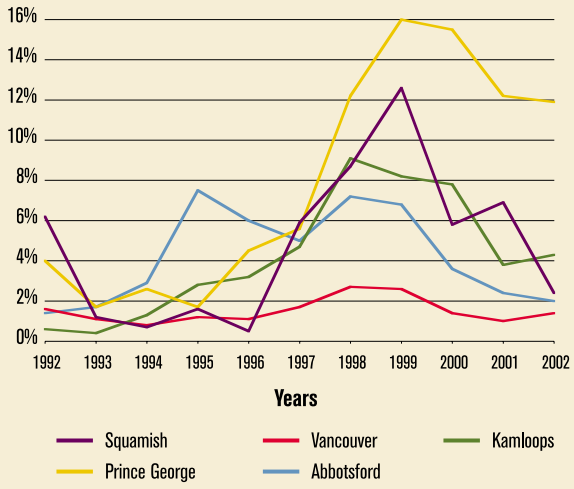
## What are some future information needs?

- Updated information on housing (i.e., 2001 Census Data).
- Analysis of growth management and the links to sustainability.

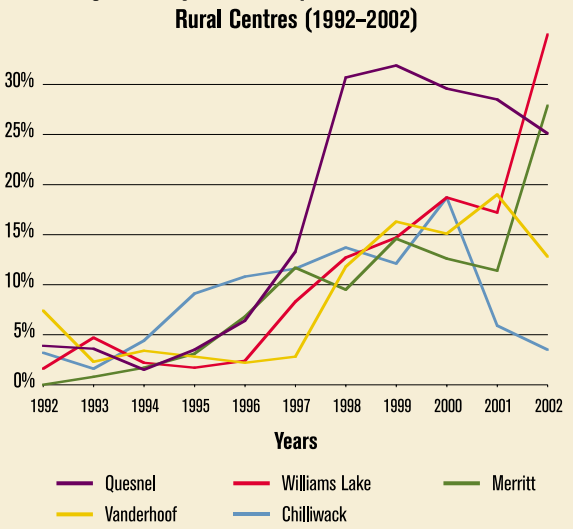
**Households in Core Housing Need By Tenure and Region (1991 & 1996)**




**Average Vacancy Rates for Apartments and Rowhouses, Urban Centres (1992–2002)**




**Average Vacancy Rates for Apartments and Rowhouses, Rural Centres (1992–2002)**





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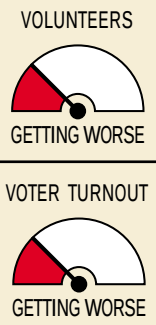
- Canada Mortgage and Housing Corporation, Housing in Canada CD-ROM (2000).
- Canada Mortgage and Housing Corporation, BC Rental Market Housing Reports (1992-2002).
- Statistics Canada, Population Census (1986–1996).
- Greater Vancouver's Research Project on Homelessness in Greater Vancouver (2002).
- Regional Homelessness Plan for Greater Vancouver (2001).

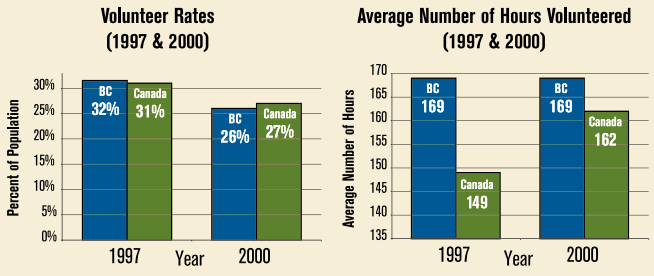

FOOTNOTES

[1] Many of the housing statistics presented were only current as of 1996. 2001 data were not available.

[2] Source: Northwest Environmental Watch (2002).

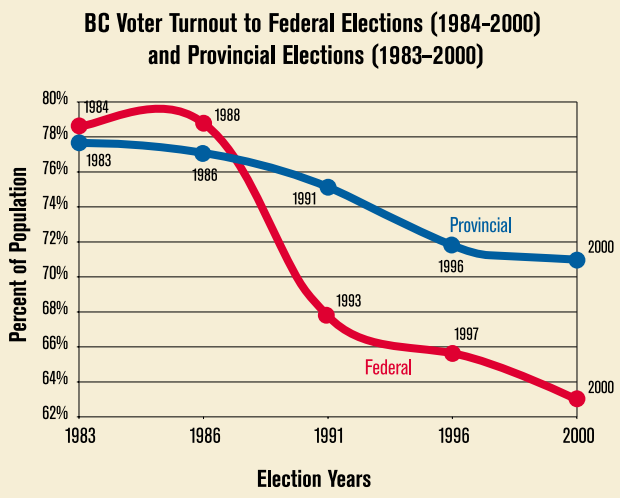
# Community Engagement

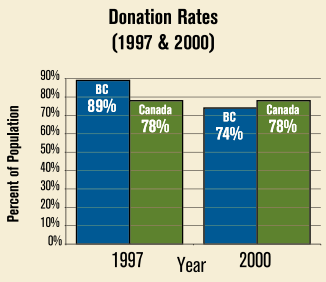


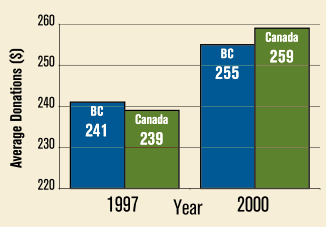



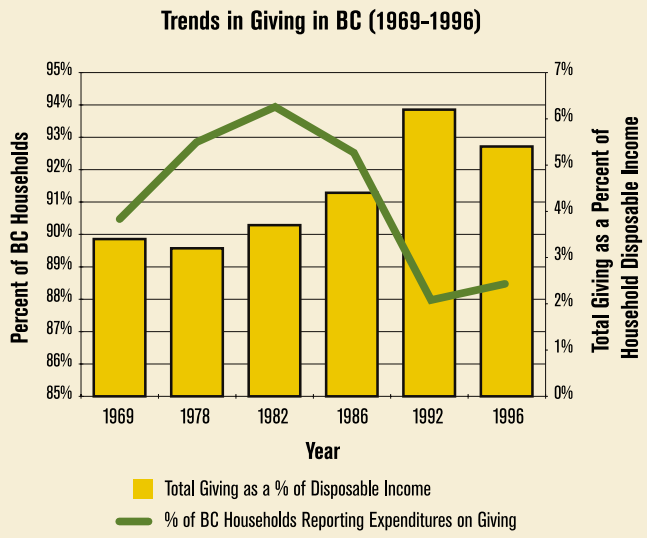







## Highlights

- People in BC communities volunteered less in 2000 than in 1997. The volunteer rate in BC was slightly below the Canadian average in 2000, although the average number of hours put in by each volunteer was considerably higher in BC.
- A large proportion of BC's volunteers is from rural areas of the province (relative to the population).
- In BC, donors to charities and non-profit groups gave more per capita in 2000 than in 1997, but gave less than the Canadian average.
- Fewer people are voting in federal and provincial elections.

## Why is this important for sustainability?

- Community engagement is at the core of community sustainability and includes volunteerism, voting, charitable donations and participation in a variety of community planning and decision-making processes.
- Community engagement is central to a well-functioning, democratic society. The more involved individuals become in their community, the more they are likely to connect with, and value, their community.
- Community engagement is about members of a community participating in the decisions and actions that help to shape their community. This may include assessing, planning and implementing solutions to problems that affect them today and into the future.
- It is vital that communities have the capacity to work together to address the challenges of sustainability and build more robust and healthy communities for all.

## What are the trends and current conditions?

### Volunteerism

- Volunteers play a vital role in social, economic and environmental sustainability. Some examples include participating in a variety of planning and decision-making processes; working with seniors, youth, the disabled and those needing palliative care; assisting food banks; cleaning up streams and parks; protecting and rehabilitating habitat; coaching sports teams; and countless other activities.
- Between 1997 and 2000, there were fewer volunteers in BC. However, those who do volunteer are giving more of their time. In 1997, just over one-third of all volunteer hours were contributed by the 5% of volunteers who each gave 618 hours or more of their time.
- In 2000, volunteer time in BC amounted to 143 million hours (about 77,500 full-time, year-round jobs).
- Total annual volunteer hours in BC remained constant between 1997 and 2000; however, the proportion of the population who volunteered in BC decreased from 32% to 26%, resulting in a greater reliance on fewer volunteers and an increasing risk of burnout.
- In 1997, small and medium size communities (less than 500,000 residents) contributed 18% of the province's total volunteer hours.

### Voter Turnout

- Since the mid-1980s, voter turnout to both provincial and federal elections has dropped.
- Between 1983 and 2000, voter turnout for provincial elections dropped from 78% to 71%.
- Between 1984 and 2000, voter turnout for federal elections dropped from 78% to 63%.
- There is no central information source regarding voter turnout for municipal elections from which to assess trends for BC or the Basin.

### Charitable Donations

- Approximately three-quarters of British Columbians made financial or in-kind donations to charities and non-profit organizations in 2000. This is a decrease from the 89% of the population that donated in 1997 and represents one of the lowest donor rates in Canada.
- Since 1982, there has been a decrease in the number of households reporting expenditures on giving, although total giving as a percentage of disposable income for all households has increased slightly.
- In 2000, the average per capita annual donation from donors in BC was $255, which is up from $241 in 1997, but is below the Canadian average of $259.
- More women donate than men do. Women also spend a larger amount per year on donations.

Participants at a planning workshop

## Making sustainability happen

### What Can Be Done?

- How can you get engaged in your community to support sustainability? Some suggestions: get to know your neighbours, volunteer with local organizations that support your sustainability values and donate to charitable organizations helping to advance sustainability.
- How can you contribute to decisions and actions in your community? Some suggestions: learn about local sustainability issues, participate in local planning and decision-making processes, and elect people to represent you in local, provincial and federal elections.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

## What are some future information needs?

- Information specific for the Fraser Basin.
- Relationships between community engagement and sustainability.
- Polling regarding attitudes and involvement to develop a more accurate picture of community engagement.
- Voter turnout statistics for local elections in the Fraser Basin including comparisons of rural and urban communities. o


REFERENCES USED

- Elections BC.
- Elections Canada.
- Statistics Canada. Family Expenditure Data, Catalogue #s 75F00033MIE (Issue #4), 62-535, 62-536, 62-551, 62-555.
- Statistics Canada, 1997, 2002. National Survey on Giving, Volunteering and Participating.
- Canadian Centre for Philanthropy (1997).

TREATIES, PROTOCOLS AND OTHER AGREEMENTS

UNCERTAIN

# Aboriginal and Non-Aboriginal Relationships

## Highlights

- Constructive relationships between Aboriginal and non-Aboriginal communities are founded on mutual respect, dialogue, and an understanding and recognition of rights, values, history and needs. Building these relationships is one of the most significant challenges and opportunities facing Basin residents today.
- Aboriginal self-determination is a central component of constructive relationships and refers to the ability of Aboriginal people to exercise their rights and implement their vision of a sustainable future.
- Constructive relationships and Aboriginal self-determination can be advanced through a variety of means including community-based initiatives, government policies and programs, legal claims, treaties, protocols and cooperative agreements among communities, governments, businesses and other organizations.
- A comparison of common social and economic indicators illustrates significant disparity between Aboriginal and non-Aboriginal people. Trends for Aboriginal people are beginning to improve in some areas.

## Why is this important for sustainability?

- Building relationships between Aboriginal and non-Aboriginal communities and reconciling issues of Aboriginal self-determination will lead to more certainty, stability and social, economic and environmental sustainability for all Basin residents.
- The history of Aboriginal people and culture, and the historical interaction between Aboriginal and non-Aboriginal communities provides an important context to current efforts to build relationships and advance self-determination.
- The *Constitution Act*, *1982*, of Canada and recent legal decisions such as *Sparrow* (1990), *Delgamuukw* (1997) and *Haida Gwaii* (2002) support the need for constructive relationships and Aboriginal self-determination. Although many issues remain unclear, important considerations include fiduciary responsibility, accommodation, consultation, compensation, infringement and the roles of parties other than the Crown.

## What are the trends and current conditions?

### Aboriginal Populations, Communities and Culture

- Between 1981 and 1996, the Aboriginal population in the Basin more than doubled to 67,000 people. Aboriginal people represent about 3% of the Basin's total population.[1]
- The Provincial Health Officer's *2001 Annual Report on the Health and Well-Being of Aboriginal People in British Columbia* found significant disparities between Aboriginal and non-Aboriginal people. Trends were lower for Aboriginal people, although improvements were noted in life expectancy, mortality, infant mortality, high school graduation, housing quality, community services and drinking water quality.
- Traditional languages and Traditional Ecological Knowledge (TEK) are important components of Aboriginal heritage and convey information about ecosystems and the management of natural resources. Many languages are severely threatened or have already been lost, although communities are working to reverse this trend.

### Treaties, Protocols, Agreements and other Arrangements

- The BC Treaty Commission (BCTC) process is one mechanism to settle issues relating to Aboriginal self-determination. Currently, 53 of the 198 First Nations in BC are involved in the treaty process (~70% of the First Nations population). In 2001, 42 First Nations were at Stage 4 (Agreement-In-Principle) of a six-stage process. In the Fraser Basin, 17 of 91 First Nations are part of the BCTC process; 13 of these have reached Stage 4. Many First Nations in the Basin have chosen not to participate in the BCTC process.
- There is a wide variety of avenues outside the treaty process where relationships are built and Aboriginal self-determination is pursued and implemented. Some examples include: bi-lateral or multi-lateral negotiations; protocol arrangements; co-management agreements; memoranda of understanding; and other protocols and agreements with governments, the private sector and civil society.
- There are many examples of improved relationships and progress on Aboriginal self-determination in the Basin. There are also many examples of strained relations and ongoing conflict.

## Making sustainability happen

### What Can Be Done?

- How can Aboriginal and non-Aboriginal communities improve relations? Some suggestions: governments, businesses, organizations and individuals can engage in dialogue, identify and learn about issues of mutual concern, and work together to develop models for cooperative management and shared decision-making.
- What roles can Aboriginal and non-Aboriginal governments and businesses play in building relations and supporting self-determination? Some suggestions: demonstrate leadership regarding the need to achieve progress on these matters, develop and support policies and programs to address ongoing issues, and support capacity building and cooperative efforts.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

## What are some information needs?

- A more comprehensive inventory of treaties, protocols, agreements and partnership arrangements would be a useful resource and "Lessons Learned" reference to assist in building relationships, reconciling interests and rights, and encouraging further progress. o


### REFERENCES USED

- BC Ministry of Health Planning, Office of the Provincial Health Officer. *The Health and Well-being of Aboriginal People in British Columbia (2001).*
- BC Treaty Commission.
- First Nations Summit.
- Statistics Canada, Population Census (1981–1996).
- Union of BC Municipalities, Interim Report on Community-to-Community Forums.


### FOOTNOTES

[1] Many Aboriginal people live on Indian Reserves and many live off reserve, particularly in urban centres. Over 25% of people living on reserves are not of Aboriginal ancestry.

Fraser Basin salmon have sustained First Nations people for thousands of years.

## Some Examples

- **Community-to-Community Forums** – Between 1997 and 2001, 33 First Nations and 71 local governments participated in Community-to-Community Forums to increase dialogue on issues of common concern.
- **Fraser-Fort George Regional District and the Lheidli T'enneh First Nation Protocol Agreement** - In July 2002, a formal Protocol was signed on cooperation and communication, representing a commitment to work together and share resources. The Regional District and First Nation are currently working to develop service agreements, a regional directory, and joint tourism and action planning initiatives.
- **Nicola Valley Institute of Technology** - NVIT was formed by the Nicola Tribal Association to train First Nations people in business administration, social work, governance, and land and economic development. The Institute offers university transfer credits and has an enrollment of 260 students, 84% of which are First Nations.
- **Nicola Watershed Stewardship and Fisheries Authority** – NWSFA is a partnership-based organization that undertakes stock assessment and enhancement and also helps to build relationships and consensus among a range of groups on regional fisheries issues.
- **Upper St'at'imc Language and Culture Program** – USLCP is working to preserve a traditional language. Currently only 5% of upper St'at'imc people fluently speak their language.

First Nations whitewater training course for stock assessment and management. Photo: Lillooet Fisheries Commission

Face painting at the "Return of the Salmon" Festival in Mount Currie. Photo: Lillooet Fisheries Commission

# Water Quality

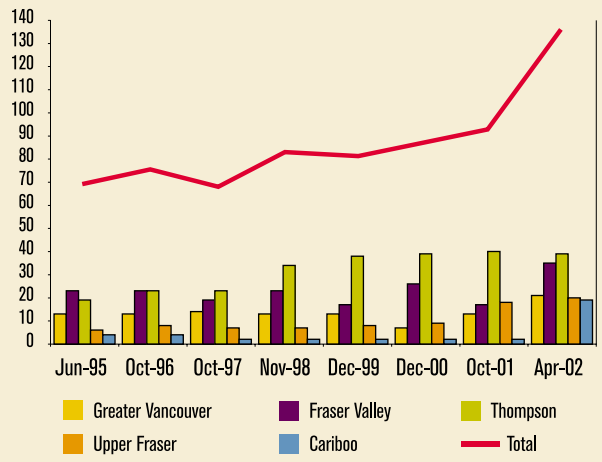
WATER QUALITY TRENDS

GETTING BETTER

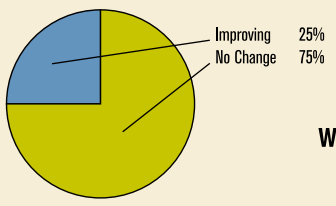
BOIL WATER ADVISORIES

GETTING WORSE

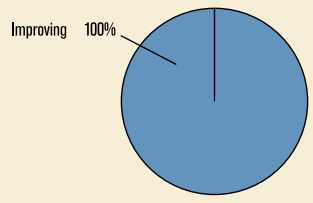
**Number of Boil Water Advisories (1995–2002)**



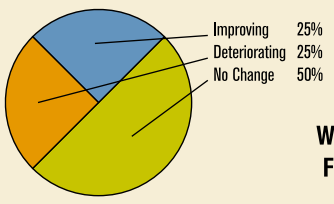

**Water Quality Trends Upper Fraser–2000**
(4 Waterbodies)



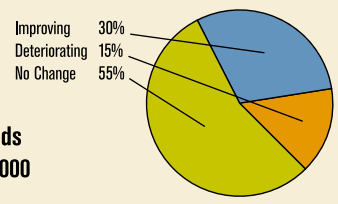

**Water Quality Trends Cariboo–2000**
(1 Waterbody)



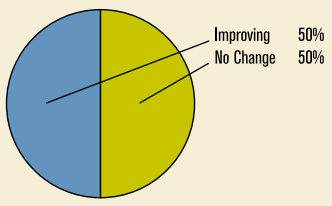

**Water Quality Trends Thompson–2000**
(8 Waterbodies)




**Water Quality Trends Fraser Valley–2000**
(20 Waterbodies)




**Water Quality Trends Greater Vancouver–2000**
(2 Waterbodies)




Technician testing water quality

## Highlights

- Among the 35 water bodies monitored between 1985 and 2000, there was no detectable change in quality at 19 sites (54%), there was an improvement in water quality at 11 sites (31%) and quality was deteriorating at 5 sites (14%).
- The number of "boil water" advisories issued per year in the Basin has more than doubled since 1995. There were 65 advisories by June of 1995 and 134 advisories by April of 2002.
- There have been 4 confirmed and 3 suspected waterborne disease outbreaks in the Fraser Basin since 1990 (25% of the 16 outbreaks in BC).
- Some recent advances in water quality protection in the Fraser Basin include a substantial investment in water and sewage treatment facilities (e.g., GVRD and other local governments) and a 98% reduction of dioxins in the effluent of seven pulp mills in the Basin.

## Why is this important for sustainability?

- Water is a necessity for all life and safe drinking water is vital to human health.
- An adequate supply of clean water is very important to support agriculture, recreation, tourism, industry and a variety of small and medium-sized businesses.
- Water quality is important to maintain healthy ecosystems including fish and wildlife and their habitat.
- Measures of drinking water quality may also reflect the effectiveness of drinking water protection policies, management practices and treatment systems throughout the Basin.
- It is important that the quality and quantity of the Basin's water resources are properly managed.

## What are the trends and current conditions?

### Water Quality Trends

- 35 water bodies were monitored within the Basin between 1985 and 2000. There was no observed change in quality at 19 of these sites (54%).
- Water quality improved at 11of the sites (31%) and deteriorated at five (14%).
- Water uses are threatened or impaired in half of the sites monitored.
- Water quality improvements were most notable in the Greater Vancouver, Squamish, Pemberton region, where four out of five sites observed water quality improvements and one site had no change.

### Boil Water Advisories

- Since 1995 in the Fraser Basin, there has been a steady increase in the number of boil water advisories being issued, more than doubling between 1995 (65 advisories) and 2002 (134).
- The greatest numbers of boil water advisories are issued within the Thompson and Fraser Valley regions, with the fewest issued in the Cariboo.
- A "boil water" advisory is issued when a drinking water source is contaminated or there is a known risk of contamination. Advisories consider source quality, distribution and filtration processes; therefore, the number of boil water advisories issued reflects both the quality of drinking water sources within the Basin and the adequacy of systems in place to provide clean water.[1]

### Waterborne Disease Outbreaks

- The Provincial Health Officer reports that there have been 16 confirmed waterborne disease outbreaks in the province since 1990, 25% of which have been in the Basin[2].
- These outbreaks have been caused mostly by parasites introduced into the water source by wildlife and other animals.
- Contaminated water has resulted in tens of thousands of people suffering from gastrointestinal illness and may have contributed to premature death.

### Groundwater

- While commonly overlooked, groundwater supplies approximately 25% of the total municipal drinking-water demand in British Columbia, excluding Victoria and Vancouver, and is often the only available or economically viable high quality potable water source for domestic use. Groundwater is also of vital economic importance to agricultural and industrial users.
- Currently, 17 (40%) of the 43 aquifers with reported groundwater concerns are in the Basin – 11 in the Lower Mainland and six in the interior regions of the Basin. Concerns include both water quality and quantity.
- The Fraser Basin also contained half (nine out of 18) of the heavily used aquifers highlighted as being at greatest risk in the province.

## Making sustainability happen

### What Can Be Done?

- What can I do to protect water quality? Some suggestions: learn more about local water bodies, drinking water sources and water quality issues; properly install and regularly maintain your septic system; and support community-based initiatives to stabilize stream banks, re-vegetate stream corridors and mark storm drains to reduce dumping of wastes into storm sewers.
- What can my community do to protect water quality? Some suggestions: invest in water and sewage treatment facilities, develop water or groundwater protection bylaws, and conduct regular water monitoring.
- What can industry do? Some suggestions: adopt best management practices to protect water quality and reduce the amount and toxicity of industrial discharges into water bodies.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

## What are some future information needs?

- More comprehensive monitoring and assessment of water quality trends in the Basin. In recent years, there has been a reduction in water quality monitoring.
- Better understanding and assessment of the pressures and impacts from a variety of land, resource and water uses on water quality in the Basin, such as urban development, mining, forestry, farming, recreation and other resource uses.
- An analysis of local and regional threats to and opportunities for clean water for a variety of uses.
- An analysis of the supply or quantity of water in the Fraser Basin, including both river and stream flows as well as rates of water use. Consideration should be given to the links between water quality, quantity and use. o


REFERENCES USED

- BC Ministry of Health Services, Public Health Protection Branch. Annual Report of the Medical Health Officer of BC (2000).
- BC Ministry of Water, Land and Air Protection, Water Quality Trends (2000).


FOOTNOTES

[1] An increase in the number of boil water advisories may also be attributed in part to improvements in monitoring, such as better monitoring techniques or more frequent or widespread monitoring.

[2] Public Health Protection, BC Ministry of Health Services & Laboratory Services, BC Center for Disease Control.

PARTICULATE MATTER

GETTING BETTER

SMOG AND OTHER AIR POLLUTANTS

GETTING WORSE

# Air Quality

## Highlights

- Average air quality in the Fraser Basin is improving, yet there are still times when air pollution is at a level known to cause human health risks.
- Fine particulate matter (PM) has been identified as the most serious form of air pollution in BC when it comes to direct impacts on people's health.
- Levels of PM have generally improved in the Fraser Basin since 1994.
- In 2000, three of the 15 communities monitored in the Fraser Basin for which data are available were exposed to health risks from particulate matter more than 15% of the time, and seven at least 5% of the time.

## Why is this important for sustainability?

- Each of us breathes over 11,000 litres of air each day, making air quality a critical part of human health.
- There is a wide range of human activities that impact the quality of the air. Direct links exist between air pollution and energy consumption, population growth, transportation and industry.
- Many air pollutants have been associated with increases in a variety of respiratory diseases (e.g., asthma, bronchitis, emphysema and lung cancer) and cardiac diseases (e.g., heart attacks and stroke).
- Particulate matter consists of microscopic particles in the air that can be inhaled deep into our lungs. PM10 refers to particulate matter less than 10 micrometres in size.
- PM is of particular concern for children, the elderly and those with respiratory diseases such as asthma.
- Social and economic systems may also be affected by poor air quality, such as health care costs.

## What are the trends and current conditions?

### Particulate Matter

- Levels of particulate matter have generally improved in the Fraser Basin since 1994. The frequency of high levels of PM10 decreased in all 15 of the locations that were monitored consistently between 1995 and 2000.
- Notwithstanding these improvements, all of the communities monitored in the Cariboo and Upper Fraser regions continue to be exposed to levels of fine particulate matter with known health risks over 10% of the time. These regions have high incidences of respiratory diseases, including lung cancer.
- Levels of particulate matter should also be of concern in the two communities of Greater Vancouver and one community of the Cariboo region that experienced an increase in exposure between 1999 and 2000.
- In the Greater Vancouver and Fraser Valley regions, three of the 10 communities for which data are available were exposed to PM10 levels with known health risks over 5% of the time in 2000.

### Smog and Other Air Pollutants

- In addition to particulate matter, there are many other air pollutants of concern throughout the Fraser Basin. For example, ground-level ozone (GLO), nitrogen oxides, carbon monoxide and volatile organic compounds all influence the quality of air in the Basin. These pollutants make up smog.
- In addition to contributing to negative health and other impacts, smog affects the visual quality of our air.
- Ground-level ozone is the main component of urban smog. GLO results from the reactions of volatile organic compounds and nitrogen oxides in the presence of sunshine. Ground-level ozone is associated with a range of health problems and can also damage vegetation, including agricultural crops and forests.
- GLO is of greatest concern to the Fraser Valley and Greater Vancouver regions where there are high rates of population density and vehicle ownership, and where there is significant commercial transportation. GLO levels have risen slightly over the last ten years in the Fraser Valley and Greater Vancouver regions. Ozone levels that surpassed the one-hour acceptable level were most frequently recorded in the eastern portion of the Fraser Valley. There have also been increasing concentrations of GLO in the Cariboo region and in the Kamloops area.

Industrial pollution contibutes to urban smog.

## Making sustainability happen

### What Can Be Done?

- How can I improve air quality? Some suggestions: make fewer vehicle trips, carpool, ride your bike or walk to work, use a fuel-efficient vehicle or wood stove, and dry your firewood.
- What can my community do to protect clean air? Some suggestions: develop airshed management plans, limit open burning, encourage clean air industries and phase out wood waste “beehive” burners.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

## Some examples

- **Airshed Management** — Prince George, Williams Lake and Quesnel are involved in Airshed Management Planning to protect their air quality by reducing emissions from industry, phasing out wood waste “beehive” burners, reducing road dust and exchanging older wood stoves for cleaner options.
- **Stove Exchange** — This program in the Cariboo in 2002 replaced 76 old wood stoves, reducing particulate emissions by 3800 kg.

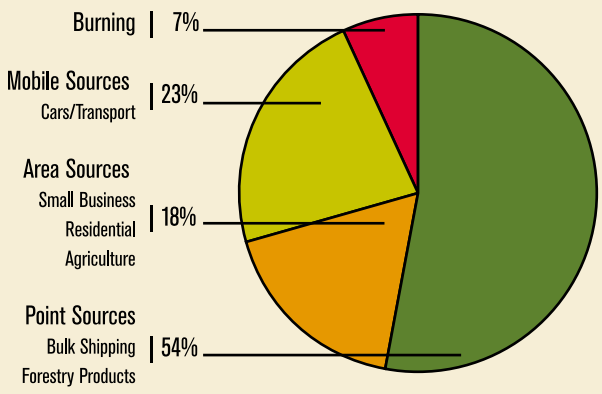
## What are some future information needs?

- Air quality data do not reflect average air quality for all communities, as monitoring stations tend to be located in those communities where air quality is of some concern. Many communities have little or no air quality monitoring. o

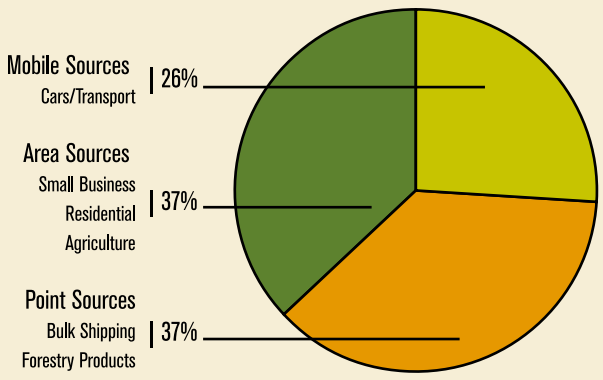

REFERENCES USED

- BC Ministry of Environment, Lands and Parks, Air Resources Branch (2000).
- BC Ministry of Water, Land and Air Protection.
- BC Provincial Health Officer, 2000.

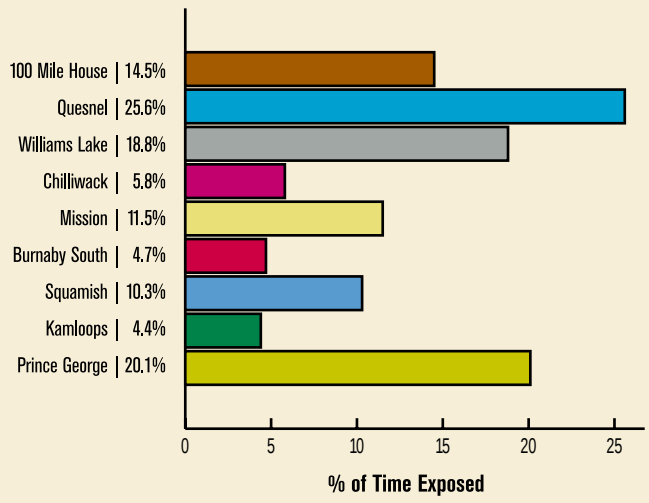

**Sources of Particulates Outside of the Lower Mainland (2000)**



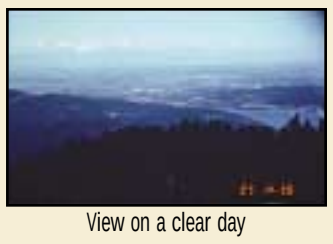

**Sources of Particulates in the Lower Mainland (2000)**




**% of Time Communities are Exposed to PM10 > 25 micrograms/m3 (2000)**




Mount Seymour



View on a clear day

View severely impaired by smog

Automobile exhaust is one of the leading causes of smog.

## POPULATION

POPULATION | UNCERTAIN

GROWTH MANAGEMENT | GETTING BETTER

### Highlights

- Between 1981 and 2001, the Basin population grew from 1.7 to 2.6 million, or two-thirds of the 3.9 million people living in BC.
- By the year 2031, Basin population is expected to grow by 47%, reaching 4 million residents.
- In 2001, 87% of the Basin's population lived in the Lower Mainland.
- Some rural regions and interior communities have experienced low growth or population loss.
- An increasing number of people will be in older age classes, particularly 65 years and older.

### Why is this important for sustainability?

- Population affects all aspects of sustainability. Understanding population trends helps to develop strategies to better manage resources and balance economic, environmental and social priorities.
- As population grows, demand for housing, land, goods, utilities, services and infrastructure increases, as do rates of consumption and waste generation.
- Areas of high growth may face adverse impacts (traffic congestion, loss of agricultural land, over-stretched community services).
- Areas with low growth or decreasing populations may face adverse impacts associated with economic transition.

## HEALTH

LIFE EXPECTANCY | GETTING BETTER

LEADING CAUSES OF DEATH | GETTING WORSE | GETTING BETTER

### Highlights

- Life expectancy increased in the past ten years, with variations between regions of the Basin.
- Cancer is the leading cause of death, followed by heart and respiratory diseases.
- 45% of British Columbians are overweight, double that in 1985. Child obesity has tripled since 1985. 50% of the population over age 12 does not maintain even minimal levels of physical activity.
- Basin residents reported themselves as being less healthy in 2001 than in 1994.

### Why is this important for sustainability?

- Health is linked to personal well-being and quality of life.
- A healthy population is better able to pursue its collective goals and contribute to society.
- Quality of the environment (air and water quality, solid and liquid waste and pesticide management) has a significant impact on public health.
- Health is also a function of the social and economic environment.
- Health has economic implications in relation to health care system costs: There is also a high potential impact on rural and community facilities.

## EDUCATION

EDUCATION LEVELS | GETTING BETTER

### Highlights

- Educational levels rose steadily between 1981 and 1996. The proportion of the population receiving university level education or non-university training during this period grew by 12%.
- The largest increase was in the number of people with university degrees, which grew by 73%.
- In recent years there were more students per teacher in classrooms. Between 1997 and 2002, 82% of school districts had between 1% and 7% fewer teachers for their student population.

### Why is this important for sustainability?

- Learning and personal development is a continuous, life-long process and not limited to formal educational programs.
- Education helps people meet basic needs and achieve social, economic and environmental goals.
- Early child development has significant implications. The first six years are fundamental for learning, behavioural development and physical health.
- Education contributes to a person's involvement in their community and understanding of sustainability; lack of education, skills and experience may limit opportunities for employment and financial security.

## HOUSING

CORE HOUSING NEED | GETTING WORSE

### Highlights

- In 1996, 80% of households met or exceeded their housing needs; however, 20% were in a state of "core housing need", a 3% increase from 1991 and 1996.
- Local governments in urban areas are using a variety of tools, such as urban containment, density bonusing and secondary suites, to encourage the development of more compact communities and minimize the impacts of urban sprawl, supporting a more sustainable pattern of urban development.

### Why is this important for sustainability?

- Housing plays an important role in determining quality of life. The adequacy, suitability and affordability of housing influence the health, well-being and economic stability of individuals and families.
- Housing is a component of land use planning and may contribute to efficient, compact, multi-use neighbourhoods. Urban sprawl can result in a loss of green space and agricultural lands, increased traffic congestion and high development costs.
- Incorporating "green building" concepts into new and retrofitted housing supports environmental sustainability.

## COMMUNITY ENGAGEMENT

VOLUNTEERS | GETTING WORSE

VOTER TURNOUT | GETTING WORSE

### Highlights

- British Columbians volunteered less in 2000 than in 1997, slightly below the Canadian average; however, the average number of hours put in by each volunteer is considerably higher in BC.
- A large proportion of BC's volunteers is from rural areas.
- BC donors to charities gave more per capita in 2000 than in 1997, but less than the Canadian average.
- Fewer people are voting in federal and provincial elections.

### Why is this important for sustainability?

- Community engagement is fundamental to community sustainability and includes volunteerism, voting, charitable donations and participation in community processes.
- It is central to a well-functioning, democratic society. The more involved people are, the more they connect with, and value, their community.
- Community engagement is about participation in actions that help to shape the community, including assessing, planning and implementing solutions to problems.
- People must work together to address sustainability challenges and build more robust and healthy communities.

## ABORIGINAL AND NON-ABORIGINAL RELATIONSHIPS

TREATIES, PROTOCOLS AND OTHER AGREEMENTS | UNCERTAIN

### Highlights

- Constructive relationships are founded on mutual respect, dialogue, understanding and recognition of rights, values, history and needs. Building these relationships is one of the most significant challenges and opportunities in the Basin.
- Aboriginal self-determination is a central component of constructive relationships.
- These can be advanced through community-based initiatives, government policies and programs, legal claims, treaties, protocols and cooperative agreements.
- Social and economic indicators illustrate significant disparity between Aboriginal and non-Aboriginal people; however, some trends are beginning to improve.

### Why is this important for sustainability?

- Building relationships between Aboriginal and non-Aboriginal communities and reconciling issues of Aboriginal self-determination will lead to more certainty, stability and social, economic and environmental sustainability.
- The history of Aboriginal people and interaction with non-Aboriginal communities provide an important context in efforts to build relationships and advance self-determination.
- The *Constitution Act* and recent legal decisions support the need for constructive relationships and Aboriginal self-determination. Considerations include fiduciary responsibility, accommodation, compensation, infringement and the roles of parties other than the Crown.

## WATER QUALITY

WATER QUALITY TRENDS | GETTING BETTER

BOIL WATER ADVISORIES | GETTING WORSE

### Highlights

- Of 35 water bodies monitored (1985-2000), there was no detectable change in quality at 19 sites (54%), an improvement at 11 sites (31%) and quality was deteriorating at 5 sites (14%).
- The number of "boil water" advisories issued per year more than doubled since 1995.
- There have been 4 confirmed and 3 suspected waterborne disease outbreaks since 1990.
- Recent advances: substantial investment in water and sewage treatment and a 98% reduction of dioxins in the effluent of pulp mills.

### Why is this important for sustainability?

- An adequate supply of clean, safe water is important to maintain human health as well as healthy ecosystems.
- Clean water is very important to support agriculture, recreation, tourism, industry and a variety of small and medium-sized businesses.
- Measures of drinking water quality may reflect the effectiveness of drinking water protection policies, management practices and treatment systems.

## AIR QUALITY

PARTICULATE MATTER | GETTING BETTER

SMOG AND OTHER AIR POLLUTANTS | GETTING WORSE

### Highlights

- Average air quality is improving; there are still times when high levels of air pollution increase human health risks.
- Fine particulate matter (PM) is the most serious form of air pollution as it directly impacts people's health.
- Levels of PM have generally improved in the Basin since 1994.
- In 2000, three of the 15 communities monitored were exposed to health risks from PM more than 15% of the time, and seven at least 5%.

### Why is this important for sustainability?

- Air quality is a critical part of human health and is impacted by human activities.
- There are direct links between air pollution and energy consumption, population growth, transportation and industry.
- Air pollutants are associated with increases in respiratory diseases.
- Particulate matter consists of microscopic particles in the air that can be inhaled deep into our lungs. It is of special concern for children, the elderly and those with respiratory diseases.


FRASER RIVER SALMON STOCKS


SPECIES AT RISK

## Highlights

- The number of salmon returning to spawn in the Basin increased in half of the streams assessed and declined in the other half (average of the past decade compared to the historical record).
- About 1 in 10 vertebrate species that live in the Basin is "red-listed", meaning they have exhibited significant declines in population abundance.
- Most of the Basin's Crown land has land use plans in place; protected areas include 13% of the Basin, almost double that in 1991.

# FISH AND WILDLIFE

## Why is this important for sustainability?

- Salmon are valued on many social, environmental and economic levels.
- Salmon abundance is influenced by factors such as the health and productivity of freshwater and ocean environments, harvesting and enhancement.
- Fish and wildlife are key components of ecosystems, and trends in the status and vulnerability of species reflect the health of these ecosystems.
- Land use and protected areas planning help to reduce conflict and uncertainty.


AVERAGE HOUSEHOLD INCOME


PROPORTION OF LOW-INCOME FAMILES

## Highlights

- Average household incomes almost doubled between 1981 and 1996; adjusted for inflation, the increase is only 8.3 %.
- Most income (78%) is derived from employment earnings, with 12% from government transfers (i.e., welfare, pensions) and 10% from other sources.
- There were more financially vulnerable families in 1996 than in 1981.
- The numbers of people employed in all sectors of the economy have increased (apart from mining) and since 1981, the unemployment rate dropped from 12.8% to 9.5%.

# INCOME AND EMPLOYMENT

## Why is this important for sustainability?

- Employment is the primary mechanism by which people derive income and participate in the economy.
- Changes in income and employment levels are linked to the availability of natural resources that must be used at a sustainable rate.
- Income and employment is strongly linked to health and education.
- Many rural regions and communities face employment challenges that are linked to economic trends in various resource sectors, particularly downturns in mining, forestry and fisheries; diversification is key.


DIVERSE EMPLOYMENT DISTRIBUTION

## Highlights

- The Community, Business and Personal Services (CBPS) sector accounts for the highest amount of employment in the Basin, increasing from approximately 30% to almost 40% of total employment between 1981 and 1996.
- Based on measures of employment distribution among sectors, the Basin's economy was less diversified in 1996 compared to 1981. However, it should be noted that some sectors, such as CBPS, may have become more diversified, particularly in technology, innovation and services.

# ECONOMIC DIVERSIFICATION

## Why is this important for sustainability?

- Economic diversification is an important measure of economic health and community stability, resilience and sustainability.
- Diversified economies are based on a variety of sectors, resources and services, and provide a range of social, economic and environmental opportunities.
- A diverse economy is one of the primary means of ensuring that changes in resources and activities can be adjusted to and managed effectively. Diverse economies ensure reduced reliance on and impact from any one resource or service.


CSR - FOREST SECTOR


CSR - OTHER SECTORS

## Highlights

- Most Canadians expect companies to contribute to societal well-being and they support companies that do.
- Many companies are taking steps to become more socially and environmentally responsible. This is referred to as Corporate Social Responsibility (CSR).
- Information about CSR implementation is limited and approaches vary from company to company and across different industry sectors.
- The forest sector has taken a leading role in incorporating CSR principles, in particular to achieve sustainable forest management certification.

# CORPORATE SOCIAL RESPONSIBILITY

## Why is this important for sustainability?

- Business makes an important contribution to social and economic well-being by employing people and generating wealth.
- CSR refers to corporate action in such areas as employee relations, diversity, community development, environment, international relationships, marketplace practices, fiscal responsibility and accountability.
- CSR supports sustainability goals and addresses issues including resource and energy use, generation of wastes, income, employment, health, education and other sustainability challenges.
- Long-term economic prosperity, environmental stewardship and social well-being are mutually supportive, not conflicting, goals.


FOREST COVER


SUSTAINABLE FOREST MANAGEMENT

## Highlights

- 74% of the Basin is covered with a diversity of forests.
- About 51% of Basin forests are between 21 and 140 years old, 37% are older than 140 years and 12% are younger than 21 years.
- About 8 million ha of Basin forests have been certified by SFI or CSA certification standards.
- The Mountain Pine Beetle epidemic poses potentially devastating impacts to the affected forests. Estimated total losses (i.e., areas defoliated) in 2001/2002: 800,000 ha.

# FORESTS AND FORESTRY

## Why is this important for sustainability?

- The Basin's forests provide many social, economic and environmental benefits.
- Many communities and workers are highly dependent on the forest sector.
- Significant job losses have already occurred and more are expected as a result of restructuring in the industry, the softwood lumber dispute with the USA and related mill closures.
- Forest sustainability includes the biodiversity of forest stands, the diversification of forest product development and public involvement in forest management.


AREA IN AGRICULTURAL PRODUCTION


FARM ECONOMIES

## Highlights

- Land in agricultural production increased 15% from 1986 to 1996, including a 41% increase in the Cariboo region; productive farm area in the Lower Fraser decreased 8.7%.
- From 1974 to 1999 there were net decreases in the Agricultural Land Reserve in all regions except the Upper Fraser.
- The Basin represented 78% of BC's total net farm income in 1996, 95% from the Lower Fraser region.
- 53% of farms reporting were fully implementing best management practices.

# AGRICULTURE

## Why is this important for sustainability?

- Agriculture is a highly diversified part of the economy, providing employment and income and a secure food supply.
- Agricultural practices have an important impact on water quality, air quality and fish and wildlife habitat.
- The industry is vulnerable to weather, noxious weeds, urban sprawl, flooding, drought, pests and climate change.
- Transfer of agricultural land to non-farm uses adversely affects our ability to provide food to Basin residents and increases our reliance on food imports.


ENERGY CONSUMPTION


GREENHOUSE GAS EMISSIONS

## Highlights

- BC consumed 1,145 petajoules of energy in 1999, a 28% increase since 1981; two-thirds of the total energy consumed was from petroleum and natural gas.
- Total greenhouse gas (GHG) emissions increased 25% between 1990 and 2000; 80% related to energy production and use, with the transportation sector accounting for approximately half of the increase.
- The growth in population observed between 1990 and 2000 (23%) has had a strong influence on both energy consumption and increases in total GHG emissions (25%).

# ENERGY

## Why is this important for sustainability?

- A safe, reliable, affordable energy supply supports strong communities and vibrant economies.
- Non-renewable energy sources are depleted as they are used; renewable sources provide energy in perpetuity and are more sustainable.
- Sources of energy and the rate of consumption can have a significant impact on the environment.
- The combustion of fossil fuels is a major source of GHG, potentially resulting in changes to the earth's climate, with a variety of adverse impacts.


POPULATION VULNERABLE


FLOOD MANAGEMENT

## Highlights

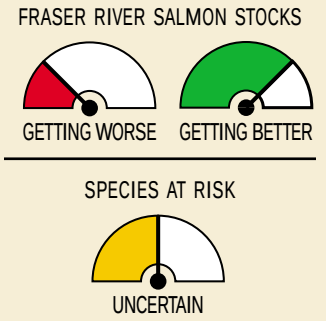
- There is a 1 in 3 chance of a Fraser River "flood of record" in the next 60 years comparable to the devastating floods of 1894 and 1948.
- Communities throughout the Basin are vulnerable to flooding, particularly in the Fraser Valley, Greater Vancouver and Thompson regions.
- In 2001, 327,000 people lived within the floodplain of the lower Fraser, a 168% increase from 1981 to 2000.
- Potential costs from the next great flood could reach $2 billion or more in direct damages.

# FRASER RIVER FLOODING

## Why is this important for sustainability?

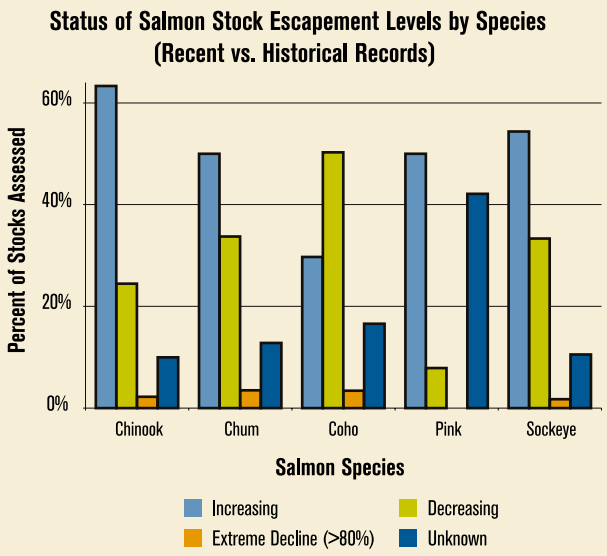
- Flooding impacts all dimensions of sustainability. Risks include: loss of life, injury, damage to property and infrastructure, disruption of business and community services, and disruption or loss of agricultural production.
- There may be significant impacts to the economy resulting from disruption of major utilities, transportation and trade corridors including the Trans Canada highway, railways, ports and the Vancouver International Airport.
- All groundwater wells located within the floodplain are at risk of contamination during a major flood event.

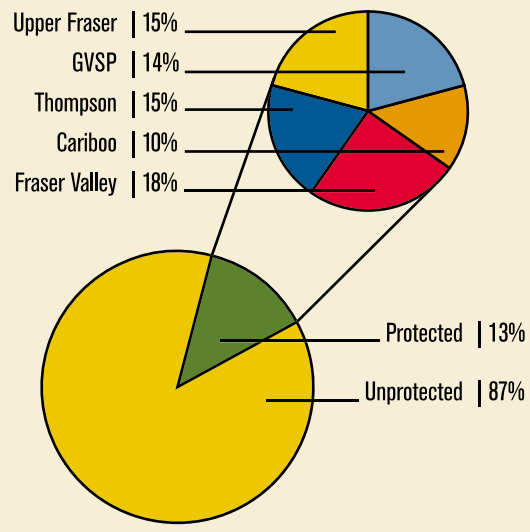
# Fish and Wildlife










Concerted efforts are being made to restore Sturgeon.
Photo: Westslope Fisheries

## Status of Fraser River Salmon Stocks

### Highlights

- The number of salmon returning to spawn in the Basin increased in half of the streams assessed when comparing the average of the past decade to the long-term average.
- Streams in Cariboo-Chilcotin and Upper Fraser watersheds exhibited the greatest improvements while streams in Lower Fraser, Squamish and Thompson watersheds exhibited the greatest declines.
- Among salmon species, coho declined the most and pink declined the least.
- All trends in Fraser River salmon stocks are difficult to confirm due to data limitations.

### Why is this important for sustainability?

- Salmon are one of the most compelling symbols of the Fraser River, and therefore provide an accessible starting point for discussions regarding the Basin's sustainability.
- Salmon play an important role in complex ecosystems. When salmon return to spawn, their carcasses supply nutrients to support the health of both aquatic and terrestrial ecosystems.
- Salmon are valued on many social and economic levels. Commercial and recreational fisheries realize benefits from salmon. Tourism and recreation often involve interactions with salmon and their habitat.
- Salmon make an important contribution to First Nations communities, providing food and supporting cultural and spiritual values.
- Salmon abundance is influenced by many factors such as the health and productivity of freshwater and ocean environments, harvesting and enhancement. Estimates of salmon abundance are also significantly affected by survey methodologies. With limited available data, scientists and managers are therefore cautious about making a direct connection between trends in salmon abundance and ecosystem health or management practices.

### What are the trends and current conditions?

- Trends were compiled from Fisheries and Oceans Canada's Salmon Escapement[1] Database (nuSEDS V1.0). This is the best available information for a broad-scale assessment of the Fraser Basin. However, many streams in the database contain spawner estimates that were obtained using different counting methods over time. It is therefore difficult to determine whether observed trends reflect real change in spawners or are a result of changing survey techniques. This makes it very important to be cautious when interpreting trends.
- The number of salmon spawning in the Basin increased in half the streams assessed when comparing the average of the past decade to the historic records. This was not the case in Lower Fraser (downstream of Hope), Squamish or Thompson area streams where only 39%, 35% and 47% of streams, respectively, increased in average abundance.
- Pink salmon stocks include the highest number of "unknown" status observations.
- This indicator compares average spawner escapement in the recent record (typically 1990-2002) with the long-term record (dating back to the late 1930s in some cases) for each stream for which there is adequate information[2]. This assessment was done for all possible stocks[3] in six areas of the Basin: Lower Fraser, Squamish, Thompson, Mid-Fraser, Cariboo-Chilcotin and Upper Fraser.
- A stock was classified as "Increasing" if the average recent escapement was greater than the long-term average, "Decreasing" if the average recent escapement was less than the long-term average, or "Unknown" if there was insufficient data to determine their status.
- This indicator specifically considers stocks that decreased to the greatest extent. Stocks with an average recent escapement less than 20% of the average long-term escapement (i.e., >80% decline) were considered to be in "Extreme Decline". This extent of decline is defined by Slaney et al. (1996)[4] as representing a "high risk of extinction".
- About 3% of salmon stocks assessed in the Fraser Basin are at high risk of extinction.

Salmon return to the Adams River. Photo: Lisa De Goes

## Species at Risk

### Highlights

- About 1 in 10 vertebrate species[5] that live in the Fraser Basin is "red-listed", meaning they have exhibited significant declines in population abundance. Red-listed species are indigenous species that are "legally designated under the Wildlife Act as extirpated, threatened, endangered or likely to become endangered if limiting factors are not reversed"[6].
- Another 1 in 10 vertebrate species in the Basin are "blue-listed" and although these species are not considered to be immediately threatened, they are designated as "vulnerable or of concern because of characteristics that make them particularly sensitive to human activities or natural events"[2].
- Of the 111 red-listed vertebrate species that live in BC, 47 (42%) are present in the Fraser Basin. These totals include listed sub-species and populations.

### Why is this important for sustainability?

- Fish and wildlife are key components of the ecosystems in which humans also live, and trends in species at risk reflect the health of these ecosystems.
- Diverse and viable populations of fish and wildlife contribute to human economic and social well-being because they support a variety of aesthetic, cultural and spiritual values and also provide the basis for industry, tourism and many recreational pursuits, such as photography, fishing and hunting.
- Diverse ecosystems also confer health benefits and may provide an important buffer against major disturbances such as disease outbreaks and climate change.

# Fish and Wildlife

PROTECTED AREAS
AND RESOURCE MANAGEMENT

GETTING BETTER

- Human activities may often have adverse impacts on fish, wildlife and their habitats, and it is necessary to manage these impacts to protect ecosystem health and ensure that the social, economic and environmental benefits of healthy ecosystems are maintained. Proper management practices for forestry, agriculture, tourism, mining and urban development can all contribute to healthy ecosystems in the Basin.

## What are the trends and current conditions?

- There are many reasons to be cautious when interpreting trends in species at risk. Of particular concern are the following issues: limited years of data, changes in monitoring methods over time, changes in taxonomy over time and a lack of verified inventory for some species.
- About 9% of all vertebrate species living in the Fraser Basin are threatened or endangered (i.e., red-listed). About 11% of mammals, 8% of birds, 12% of freshwater fish and 11% of amphibians in the Basin are red-listed.
- About 20% of all vertebrate species living in the Basin are threatened, endangered or vulnerable (i.e., either red- or blue-listed).

## Protected Areas and Resource Management Planning

### Highlights

- Strategic land use plans have been advanced on a majority of the Crown land in the Fraser Basin.
- Between 1991 and 2002, the total land area with protected area status[7] in the Fraser Basin increased from 7% to 13%, for a total of over 3 million hectares in 2002. There were significant increases in land area protected in each of the five regions of the Basin over this period.
- Several eco-sections[8] are currently under-represented in protected areas[9].

### Why is this important for sustainability?

- There has been significant effort exerted over the past decade to better plan and manage the Basin's land and resources to support both economic development and the conservation of fish, wildlife and habitat.
- Land use and protected area planning help to reduce conflict and uncertainty and provide social, economic and environmental benefits including community development and employment and income from forestry and mining, recreation and tourism.
- Initiatives of note include the Land and Resource Management Planning processes (LRMPs), its precursor the Commission On Resources and the Environment (CORE), the Protected Areas Strategy (PAS), Forest Renewal BC and the Watershed Restoration Program.
- Protected areas help to conserve ecological and cultural heritage. LRMPs direct the management of lands and resources on Crown lands not designated as protected; for example, by identifying wildlife management zones where management practices can be applied to sustain ecological values. Integrated management of both protected and non-protected lands is also important.

### What are the trends and current conditions?

- Strategic land use plans currently cover all Crown land in the Fraser Basin except the Merritt Timber Supply Area (TSA), the Lillooet TSA and portions of the Lower Fraser.
- Between 1991 and 2002, there were significant increases in land area protected in each of the five regions of the Basin. As of 2002, the Fraser Valley, Thompson and Upper Fraser regions contain the highest proportions of land protected. Combined, the Upper Fraser, Cariboo and Thompson regions account for 87% of the 3 million ha of protected area in the Basin in 2002.
- While 13% of the land in the Basin is protected, there are many eco-sections that are only 0-4% protected. Of the 45 eco-sections primarily within the Basin, about one-third (14) have less than 4% designated as protected areas[9].

## Making sustainability happen

### What Can Be Done?

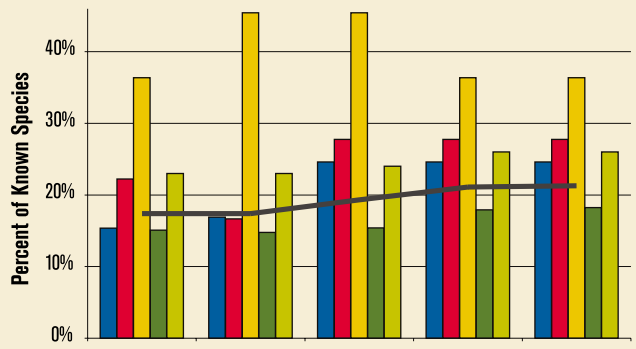
- How can I ensure that my actions don't hurt fish and wildlife? Some suggestions: get involved in local conservation or stewardship groups; recycle if you can and dispose of garbage properly; use goods and services that address environmental values; and be a steward of your property and local area.
- How can communities and businesses protect fish and wildlife in ways that also benefit them? Some suggestions: implement good management practices in your organization - sound stewardship is something that consumers and residents want and will pay for; support local organizations in their work and they will support you back.
- How can agencies, governments and businesses help in a way that also makes their work easier? Some suggestions: support and conduct long-term monitoring of fish and wildlife; collaborate to address information gaps; provide incentives for individuals, communities and businesses to be good stewards; develop good legislation, policies and programs that clarify roles, responsibilities and standards.
- For more information see page 23 in this report or the Fraser Basin Council website www.fraserbasin.bc.ca

Hundreds of species call the Fraser Basin their home.

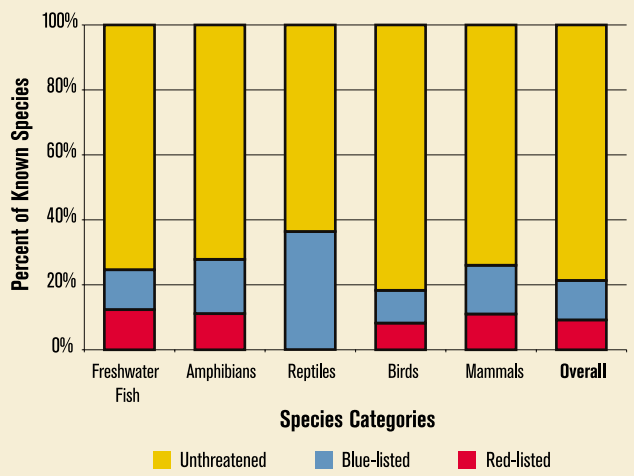
### What are some future information needs?

- Better inventory of red- and blue-listed species at risk, particularly on a regional scale.
- Better inventory of fish and wildlife species that may be declining, but are not yet designated as being vulnerable, threatened or endangered, particularly non-salmonid fish species.
- Information on relative data quality in the nuSEDs database and a review of salmon assessment gaps and needs.
- Better knowledge about the condition and relative influence of different factors such as habitat, fire suppression, resource extraction, ocean conditions, climate change and enhancement on fish and wildlife populations. o

**Red and Blue Listed Species in the Fraser Basin as a Percent of Known Species (1997–2002) (Legend denotes total number of species in the Basin)**




**Red-listed, Blue-listed and Unthreatened Species in the Fraser Basin as a Percent of Known Species (2002)**





REFERENCES USED

- Ministry of Sustainable Resource Management, Conservation Data Centre of BC.
- Fisheries and Oceans Canada (FOC), Salmon Escapement Database (nuSEDS V1.0).
- Ministry of Sustainable Resource Management, Decision Support Services – Protected Areas database.


FOOTNOTES

1 Escapement refers to the number of fish returning to spawn in a given year.
2 Methods will be detailed in a technical appendix.
3 Stock refers to a unique population of fish that spawns in a particular system at a particular time and does not interbreed substantially with other spawning groups. Stocks are the basis for conservation and rehabilitation efforts.
4 Slaney TL, KD Hyatt, TG Northcote and RJ Fielden.1996. The status of anadromous salmon and trout in BC and the Yukon. Fisheries, 21: 20-35.
5 Vertebrate species include mammals, birds, freshwater fish, amphibians and reptiles.
6 Definitions of red- and blue-listed species were obtained from the BC Conservation Data Centre.
7 Protected Areas include national parks, ecological reserves, Class A and C provincial parks, recreation areas and protected areas that fall under the Environment and Land Use Act. This designation does not include wildlife reserves, migratory bird sanctuaries or regional parks.
8 Eco-sections are areas with minor physiographic and macroclimatic or oceanographic variations. There are 114 eco-sections in British Columbia.
9 Eco-sections in the Fraser Basin with less than 4% protected include the Cariboo, Shuswap and Nicola basins; the Nechako, Quesnel and Fraser lowlands; McGregor and Cariboo plateaus; Bowron Valley, Bulkley and Hozameen ranges; Southern Thompson and Guichon uplands; and Northern Okanagan highlands.

# Income and Employment

AVERAGE HOUSEHOLD INCOME

GETTING BETTER

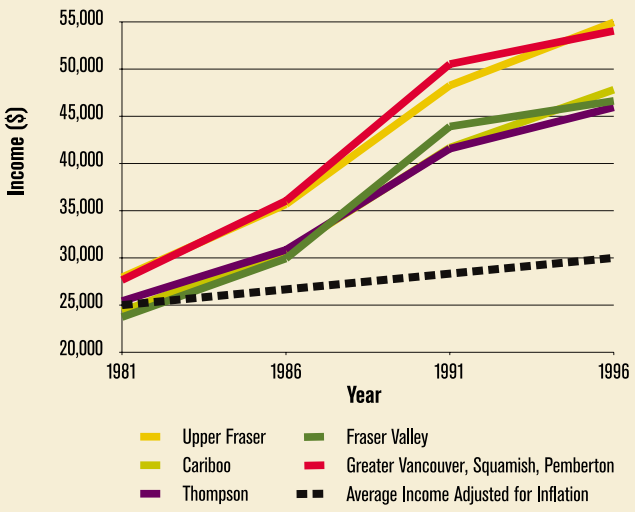
EMPLOYMENT AND UNEMPLOYMENT

GETTING BETTER

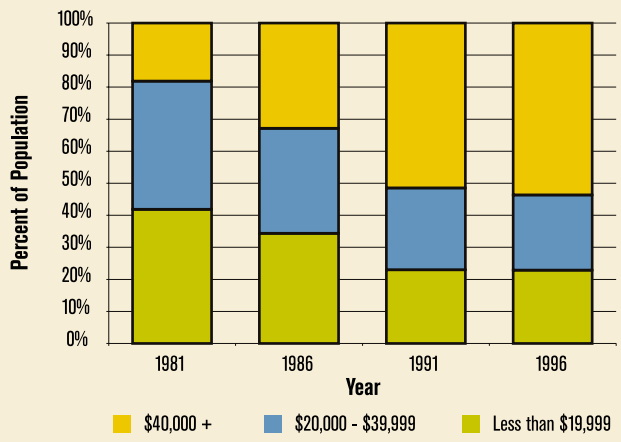
PROPORTION OF LOW-INCOME FAMILIES

GETTING WORSE

**Average Household Income in Dollars (1981–1996)**




**Percent of Population by Family Income (1981–1996)**




Ecotourism, hightech businesses and traditional resource industries all contribute to a diversified economy.

## Highlights

- Average household incomes have increased steadily in the Fraser Basin, almost doubling between 1981 and 1996. However, once adjusted for inflation, the increase is only 8.3%.
- Most income (78%) is derived from employment earnings, with 12% from government transfers (i.e., pensions, welfare, etc.) and 10% from other sources.
- There were more financially vulnerable families (i.e., low-income cut-off)[1] in 1996 than in 1981, particularly in the Greater Vancouver, Squamish, Pemberton region.
- The numbers of people employed in all sectors of the economy have increased (apart from mining) and the unemployment rate since 1981 dropped from 12.8% to 9.5%.
- 2001 census data will be available in 2003 and will assist in understanding the extent and nature of changes in income and employment trends in the Basin since 1996.

## Why is this important for sustainability?

- Sufficient income to meet household needs is critical for individual, family and community well-being. Employment is the primary mechanism by which people derive income and participate in the economy.
- Changes in income and employment levels can also be linked to the availability of natural resources, including steps taken to ensure the sustainability of resources.
- Income and employment trends can be strongly related to other social indicators, including health and education.
- Many rural regions and their communities continue to face employment challenges that are linked to economic trends in various resource sectors, particularly downturns in mining, forestry and fisheries. These communities must continue to work hard to build and diversify their economies.

## What are the trends and current conditions?

### Employment

- Between 1981 and 1996, the numbers of people employed overall increased by 50% and is consistent with population growth.
- The Community, Business and Personal Services sector has experienced the greatest growth in employment and is the largest source of employment in the Basin – providing approximately 40% of total employment in 1996, up significantly from 30% in 1981[2].
- The Wholesale and Retail Sales sector accounts for the second highest proportion of jobs at 17% of employment followed, by Manufacturing industries[3] with 11%. Numbers of people employed in Finance, Insurance and Real Estate grew by 53%, and by 46% in Agriculture and related industries. The only sector to see a decrease in the number of people employed was Mining.

### Unemployment

- The unemployment rate in the Basin fell to 10% by 1996, a 26% decrease since 1981.
- In 1996, the unemployment rate in the Basin ranged from a low of 9% in the Greater Vancouver, Squamish, Pemberton region to a high of 13% in the Cariboo region.
- Efforts to address unemployment must include steps to educate more people to higher levels and encourage life-long learning. In 1998, 75% of Canadians stated that they hoped that their children (aged 6-15) would go to university but only 28% of 18 to 21 year olds actually attended university.[4] Such trends represent a challenge in the context of a labour market that requires more sophisticated skill sets and concerns regarding future labour shortages.

### Income

- Average household incomes in the Fraser Basin almost doubled between 1981 and 1996 (a 94% increase). However, once adjusted for inflation (as measured by the BC Consumer Price Index), the increase is only 8.3%. This compares favourably with an average increase in real provincial GDP per household of 4.3% and indicates that household economic well-being improved at a greater rate than the provincial economy.
- The proportion of families in the $40,000+ income bracket increased by over 192% between 1986 and 1996 and families with incomes of less than $20,000 decreased by 46% (not accounting for inflation).
- The majority of income (78%) comes from employment.
- The proportion of low-income families[1] in the Basin saw a marginal increase between 1986 and 1996 to roughly 22% of economic families. These numbers have decreased in every region except in the Greater Vancouver, Squamish, Pemberton region (23% increase).

## Making sustainability happen

### What Can Be Done?

- What can be done to advance a more sustainable economy? Some suggestions: education and labour force training, business planning, investment and dialogue between a diverse range of interests.
- What can communities do? Some suggestions: continue to provide leadership and develop partnerships with government and business, and diversify local and regional economies.
- What can individuals do? Some suggestions: get education and training; learn about labour market trends, job transition training; employee assistance and other support programs.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

## What are some future information needs?

- Updated information on income and employment trends (i.e., 2001 census data).
- Better understanding of sectors that are anticipated to experience labour shortages and what skills are required by the future workforce in those sectors.
- Identification of rural and resource-dependent communities and that are experiencing success in growing and diversifying their economies, and the key success factors.

### REFERENCES USED


- Canadian Council on Social Development (2002). *The Progress of Canada's Children.*
- Statistics Canada. Census (1981, 1986, 1991, 1996) .


### FOOTNOTES

1 As defined by Statistics Canada, low-income cutoffs are income thresholds, determined by analyzing family expenditure data, below which families will likely devote a larger share of income to the necessities of food, shelter and clothing than the average family would.

2 Community, Business and Personal Services sector represents the amalgamation of business services industries, educational service industries, health and social service industries, accommodation, food and beverage service industries and other service industries.

3 Employment statistics include sawmills and pulp mills within the Manufacturing sector

4 Canadian Council on Social Development (2002).

# Economic Diversification

DIVERSE EMPLOYMENT DISTRIBUTION

UNCERTAIN

## Highlights

- In 1996, the majority of employment in the Basin came from the Community, Business and Personal Services[1] (39% of total employment), Retail Trade (12%) and Manufacturing[2] (11%) sectors.
- Based on measures of employment distribution among sectors, the Basin's economy was less diversified in 1996 compared to 1981. However, it should be noted that some individual sectors such as CBPS may have become more diversified due to the emergence of new technology, innovation and consulting services.
- The CBPS sector accounted for the highest amount of employment and employment growth in the Basin and all of its regions, increasing from 30% to 39% of total employment between 1981and 1996.
- During this period, there were reductions in the proportion of total Basin employment provided by almost every other sector.
- There was a decrease in the proportion of total employment provided by the Manufacturing sector, which dropped from 15% to 11% between 1981 and 1996.[2] There was also a slight reduction in the proportion of total employment provided by the Government Services sector, which dropped from 6% to 5%.

## Why is this important for sustainability?

- Economic diversification is an important measure of economic health and community stability, resilience and sustainability.
- A healthy economy helps to support many important public and private services and programs for Basin residents.
- Diversified economies are based on a variety of sectors, resources and services, and provide a range of social, economic and environmental benefits.
- A sustainable economy is built by managing local, regional and global economic resources and activities in a way that meets current needs without diminishing opportunities for future generations.
- A diverse economy is one of the primary means of ensuring that changes in these resources and activities can be adjusted to and managed effectively.
- Diverse economies help to ensure reduced reliance and impact on any one resource or service.

## What are the trends and current conditions?

### Basin-wide Employment Diversification

- Between 1981and 1996, the CBPS sector accounted for the highest amount of employment and employment growth in the Basin and all of its regions, increasing from 30% to 39% of total employment.
- During this period, there were reductions in the proportion of total Basin employment provided by almost every other sector.
- There was a decrease in the proportion of total employment provided by the Manufacturing sector, which dropped from 15% to 11% between 1981 and 1996.[2] There was also a slight reduction in the proportion of total employment provided by the Government Services sector, which dropped from 6% to 5%.

### Regional Employment Diversification

- The CBPS sector is the primary source of employment in all regions of the Basin; however, other main sources of employment in the Basin vary by region.
- The Manufacturing sector, which includes employment from pulp mills and sawmills, is the second highest employment sector in the Upper Fraser and Cariboo regions.
- The Retail Trades sector is the second highest employment sector in the Thompson, Fraser Valley and Greater Vancouver, Squamish, Pemberton regions.
- The Fraser Valley region has the greatest dependence on the Agriculture and Government Services sectors.
- The Greater Vancouver, Squamish, Pemberton region relies the most on the Finance, Insurance and Real Estate sectors.
- The Thompson region is most dependent on the Mining sector.

### Economic Performance

- Economic growth information (i.e., changes in Gross Domestic Product) is not available specifically for the Basin. However, the Basin did represent roughly 61% of the province's labour force in 1996, which may be assumed to translate roughly into the same share of BC's GDP.
- BC's real GDP (adjusted for inflation) grew steadily by 55% between 1981 and 2001. Real GDP per capita in the province increased by over 100% during this period. It is likely that similar increases in real GDP were observed in the Basin.
- The BC Economic Index is a broad economic performance index composed of seven economic indicators including total employment, real retail sales, real manufacturing shipments, housing starts, international entries into BC, real non-residential building permits and the leading Canada composite index. The Index grew steadily by 65% between 1981 and 2001.

## Making sustainability happen

### What Can Be Done?

- What can be done to advance a more sustainable economy? Some examples: education and labour force training, business planning, investment, and dialogue between a diverse range of interests.
- What can communities do? Some examples: continue to provide leadership and develop partnerships with government and business, and diversify local and regional economies.
- What can individuals do? Some examples: pursue education and training opportunities, learn about labour market trends, obtain job transition training, consider employee assistance and other support programs.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

## What are some future information needs?

- Further investigation of and information on the relationship among trends in employment by sector, income by sector and GDP.
- More detail regarding individual economic sectors such as the CBPS sector, with particular consideration of high tech and innovation industries.
- Updated data when the 2001 Census data are available.
- Consider other measures of economic diversification.
- An inventory of community economic diversification approaches and programs to serve as a "Lessons Learned" reference for communities, businesses and organizations.


REFERENCES USED

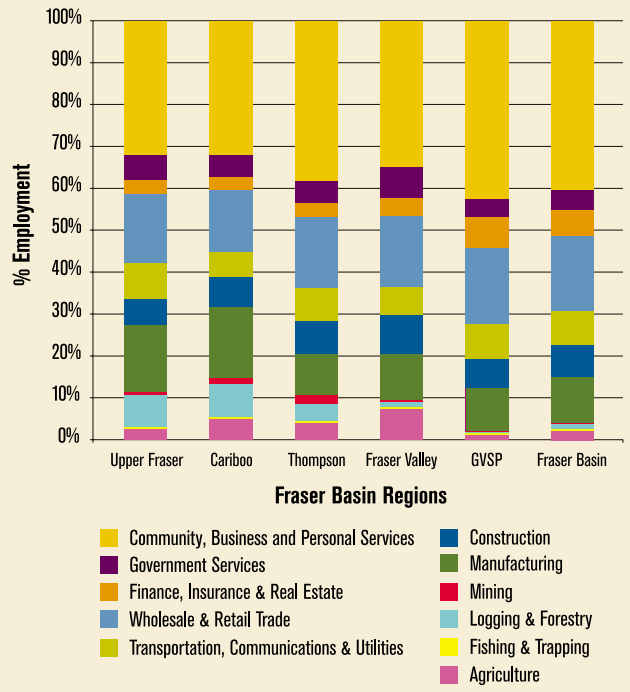
- Statistics Canada, Population Census (1981, 1986, 1991, 1996).
- Business Council of BC, BC Economic Index (2002).


FOOTNOTES

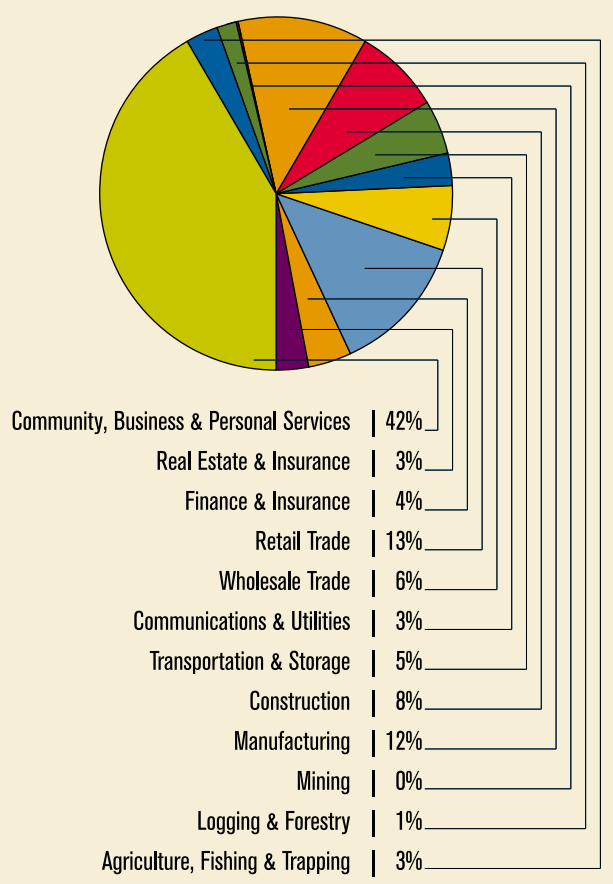
[1] The Community, Business and Personal Services (CBPS) sector is an amalgamation of business services industries, educational service industries, health and social service industries, accommodation, food and beverage service industries, new technologies, consulting services and other service industries.

[2] The Manufacturing sector includes employment in sawmills and pulp mills.

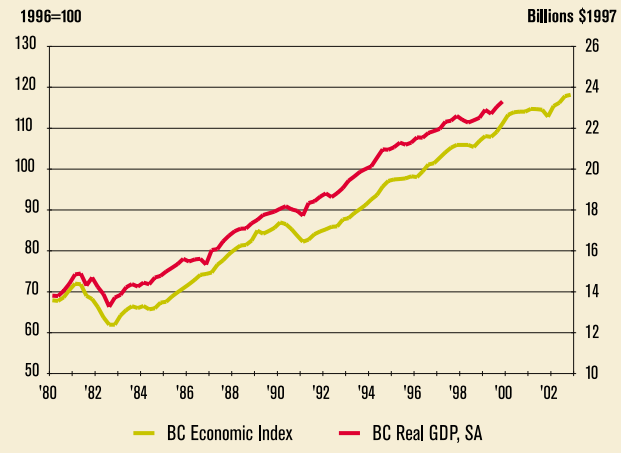
**Percent of Regional Employment by Industry Sector (1996)**




**% Employment by Sector in the Fraser Basin (1996)**




**BC Economic Index vs Real GDP, Quarterly (1980–2002)**



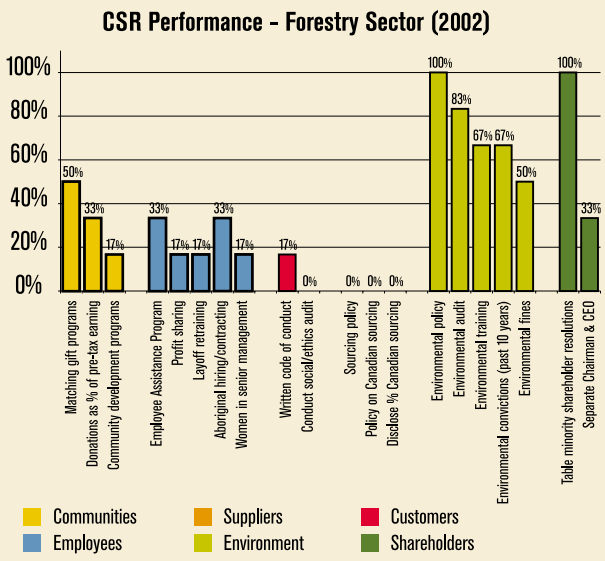
# Corporate Social Responsibility

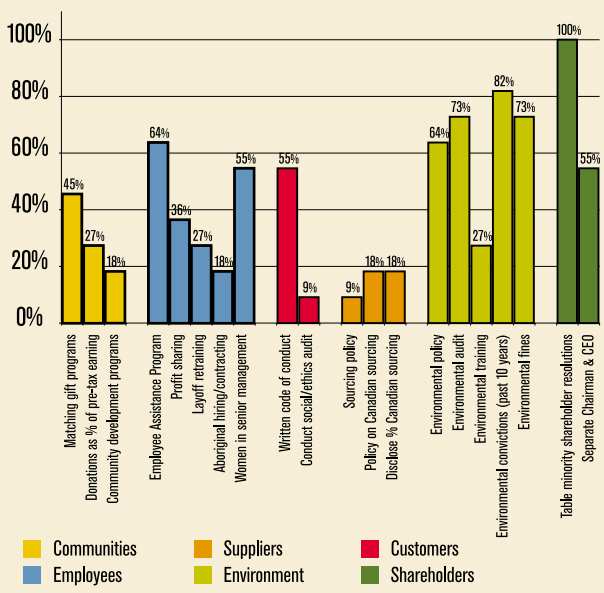
CSR - FOREST SECTOR

GETTING BETTER

CSR - OTHER SECTOR

UNCERTAIN




## Some examples

- **Canadian Business for Social Responsibility (CBSR)** – CBSR defines, promotes and educates on responsible business policies and practices. CBSR's Good Company Guidelines provide a framework to enable companies to assess, improve and report on their social, environmental and financial performance. http://www.cbsr.ca/
- **CSR Canada** – A business-led initiative developing a national survey to gain insight into Canadian attitudes regarding responsible companies, raising awareness of responsible business practices and providing practical solutions, tools and resources. http://www.csrcanada.com
- **Sustainable Forest Management (SFM) Certification** – A process of assessing forest company operations according to management objectives, criteria and indicators. SFM Certification is consistent with many of the goals and objectives of CSR. http://www.sfms.com
- **TELUS** – TELUS is one of Canada's leading telecommunications companies and is working to implement CSR in its operations. TELUS is committed to donating a minimum of 1% of pre-tax profits to charitable organizations. TELUS has a matching grant program, matching employee donations to charitable organizations dollar for dollar, and also supports and encourages employee volunteerism through its Volunteer Involvement Fund.
- **Vancouver City Savings and Credit Union's (VanCity's) Corporate Reporting** – VanCity is Canada's largest English-speaking cooperative financial institution and is widely recognized for being a leader in implementing CSR, particularly for auditing and reporting on its CSR efforts since 1997. The audit involves employees, stakeholders and customers, and considers progress in implementing CSR policies. The audit is a critical input to business planning and continual improvement of VanCity's CSR agenda. o

## Highlights

- Research suggests that most Canadians expect companies to contribute to societal well-being, and they support companies that do. In a 1997 poll, 77% of respondents agreed that companies have a commitment to society[1]. Eight in 10 respondents stated they try to buy from companies that are good corporate citizens.
- Many companies in the Fraser Basin have taken and continue to take steps to become more socially and environmentally responsible in the way they conduct their businesses. This is referred to as Corporate Social Responsibility (CSR).
- Information about CSR implementation in the Fraser Basin is limited, and approaches vary from company to company and across different industry sectors.
- There has been considerable effort in recent years to operationalize the principles of CSR in the forest sector, including efforts by companies to achieve sustainable forest management certification.
- Among CSR criteria, environmental criteria were more frequently implemented compared with social criteria.

## Why is this important for sustainability?

- Business makes an important contribution to social and economic well-being by employing people and generating wealth in the community.
- CSR refers to an organization's policy and continuous action in such areas as employee relations, diversity, community development, environment, international relationships, marketplace practices, fiscal responsibility and accountability.[2]
- The concept of CSR is consistent with and supportive of sustainability goals and addresses a number of sustainability issues including resource and energy use, generation of wastes, income, employment, health, education and other social, economic and environmental challenges. Both concepts are premised on the idea that long-term economic prosperity, environmental stewardship and social well-being are mutually supportive, not conflicting, goals.

## What are the trends and current conditions?

- There is growing awareness about, support for and pressure on all types of businesses to be more socially and environmentally responsible.
- Many companies find that there are bottom line benefits of CSR, such as becoming more efficient; reducing costs; developing positive working relationships with employees, stakeholders and shareholders; and achieving competitive advantage in the marketplace.
- Research was undertaken on 17 companies to develop a preliminary understanding of the extent to which CSR is being implemented in the Basin, including six forestry companies and 11 other companies representing a variety of economic sectors. The businesses considered were large, publicly traded companies located and operating within the Fraser Basin with readily available information.[3] A variety of criteria were considered in relation to six key components of CSR: community, employees, customers, suppliers, the environment and shareholders.

### Forest Sector

- Research on six forest companies and 11 other companies in BC found the forestry industry to be relatively advanced, compared to other sectors, in terms of implementing CSR. This is particularly true for environmental criteria. All six companies researched have an environmental policy; five of the six have independent environmental audits and four of these provide environmental training for their employees.
- Only two companies offer Employee Assistance Programs[4] and policies for hiring/contracting to First Nations; only one of the six companies has either a code of ethics or a social/ethics audit; and only one offers profit sharing options to their employees or retraining in the case of layoffs.

### Other Sectors

- Research on 11 additional companies involved a broad cross-section of other sectors including financial services, retail trade, mining, energy, communications and agriculture.
- Similar to the forest sector, environmental criteria were implemented most frequently.
- Collectively, these companies outperformed the forest companies in employee, customer and supplier criteria.
- Five of the 11 companies were implementing at least one of the community criteria.

## Making sustainability happen

### What Can Be Done?

- How can I help to advance CSR? Some suggestions: inquire about the CSR practices of businesses that you are affiliated with (e.g., as an employee, investor, owner or consumer), learn about CSR practices that may be relevant to your company and support businesses that are socially and environmentally responsible.
- For more information see page 23 of this report or the Fraser Basin Council website www.fraserbasin.bc.ca

## What are some future information needs?

- There is no central, comprehensive inventory of the CSR practices of companies available to support an assessment of CSR performance of a representative sampling of companies using common criteria.
- There is a need to facilitate comparisons of CSR performance across industry sectors, recognizing that not all of the CSR criteria are relevant to all types of business. Small and medium sized businesses also need to be considered.
- Future research, based on a CSR assessment of randomly selected companies, would support an assessment of the extent to which CSR is being implemented within and among a variety of economic sectors. o


REFERENCES USED

- Canadian Sustainable Forestry Certification Coalition.
- EthicScan Canada Limited – Investor Reports.


FOOTNOTES

1 Angus Reid Group 1997, Public Opinion in Canada Concerning Corporate Responsibility.
2 As defined by Canadian Business for Social Responsibility (2002).
3 Information about implementation of CSR in the Fraser Basin is limited. EthicScan Canada Limited is one company that has developed and maintains a database of CSR criteria on a wide range of companies in Canada.
4 An EAP is an Employee Assistance Program.

FOREST COVER

UNCERTAIN

SUSTAINABLE FOREST MANAGEMENT

GETTING BETTER

# Forests and Forestry

## Highlights

- Of the 23 million hectares (ha) of the land in the Basin, 74% is covered with a diversity of forests, most in the Upper Fraser, Cariboo and Thompson regions.
- About 51% of Basin forests are between 21 and 140 years old, 37% are older than 140 years and 12% are younger than 21 years.
- Virtually every major BC forest company has achieved or is pursuing third-party Sustainable Forest Management (SFM) certification. About 8 million ha of Fraser Basin forests have been certified by SFI or CSA certification standards.[1]
- The Mountain Pine Beetle epidemic poses potentially devastating impacts to the affected forests and the forest sector, particularly in the interior regions. In 2001/2002, there were estimated total losses (i.e., areas defoliated) of over 800,000 hectares (ha) due to several bark beetle pest species.

## Why is this important for sustainability?

- The Basin's forests provide many social, economic and environmental benefits, such as clean water, fish and wildlife habitat, recreation opportunities and various spiritual and cultural values.
- Many communities and workers are highly dependent on the economic contributions of the forest sector. Significant job losses have already been experienced within the forest sector and more are expected as a result of restructuring in the industry, the softwood lumber dispute with the USA and related mill closures.
- Forest sustainability includes the biodiversity of forest stands (e.g., forest species and age classes), the diversification of forest product development, public involvement in forest management and the long-term health of forests.

## What are the trends and current conditions?

### Basin-wide and Regional Forest Cover

- Forest cover refers to the mix of tree species and age classes found in forests, indicating the condition and biodiversity of forests within the Basin as well as the range of options for future forest development.[2, 3]
- 75% of the Basin is covered with forests – over 17 million ha; the remaining 25% is considered non-forested and includes water bodies, ice, rock, alpine, range and agricultural land, and urbanized areas.
- The Upper Fraser region, with 6 million ha of forest cover (about 75% of the region), includes 52% of the Basin's spruce forests and 46% of the Basin's true fir forests, a majority are more than 140 years old.
- The Cariboo region, with 6 million ha of forest cover (about 81% of the region), includes 47% of the Basin's lodgepole pine forests, 69% of which are between 21 and 140 years old and 22% of which are more than 140 years old.
- The Thompson region, with 4 million ha of forest cover (about 75% of the region), includes 50% of the Basin's Douglas-fir forests, 51% of the its western red cedar forests and virtually all of the Basin's larch (95%), western white pine (99%) and ponderosa pine (89%) forests.
- The Fraser Valley and Greater Vancouver, Squamish, Pemberton regions have the least amount of forest cover about 60% and 50% of their respective land bases. Both urbanization and agriculture have diminished the forest cover in these regions.

### Resource Management

- Land and Resource Management Plans and the Cariboo-Chilcotin Land Use Plan (CCLUP) have substantially advanced sustainable forest management in the Basin, covering a majority of lands in the Basin.
- Sustainable Resource Management Plans are being completed for the Cariboo region.[4] The plans address a full range of environmental, social and economic values identified in the CCLUP, such as establishing landscape level objectives to ensure sustainable forest management over the long term and defining sustainable timber harvesting targets consistent with a broad range of forest values.

### Sustainable Forest Management Certification

- Since January 1999 there have been significant achievements in SFM Certification, a process of assessing forestry operations according to a set of sustainable management objectives, criteria and indicators such as protecting species at risk, biodiversity, local and Aboriginal employment, and non-timber forest values.
- Certification is one means of promoting and implementing SFM. There are three SFM certification systems and one environmental management system used in BC.
- Virtually every major BC forest company has achieved or is pursuing third-party SFM certification. Some achievements in the Fraser Basin include: six companies (5 million ha) under the Sustainable Forestry Initiative (SFI) Program and four companies (over 3 million ha) under Canadian Standards Association (CSA) certification.[1]
- Over 8 million ha in the Basin have achieved the ISO 14001 standard.

### Forest Pests

- There are a variety of naturally occurring forest pests, like the Mountain Pine Beetle, which are part of forest ecosystems. If unchecked, pest outbreaks may occur, adversely affecting certain tree species.
- In 2001/2002, it was estimated that over 800,000 ha were defoliated due to several bark beetle species[5]. One estimate of the extent of the mountain pine beetle epidemic – a native species in BC – is 9 million hectares of forest lands in BC, mostly in the Upper Fraser, Cariboo and Thompson regions of the Basin.
- The beetles kill trees and the wood loses its commercial value if not harvested and processed within two or three years.
- Both fire suppression and warm winters in recent years are believed to have contributed to this epidemic.

## Making sustainability happen

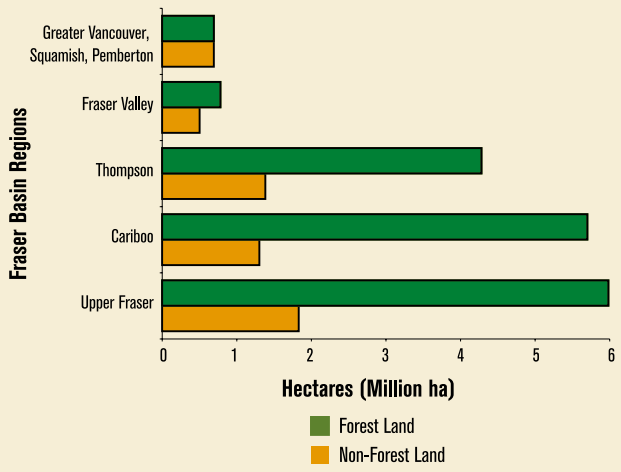
### What Can Be Done?

- What can I do to support sustainable forestry? Some suggestions: Buy local and BC forest products, inquire about SFM certification and participate in local land and resource management planning processes such as SFM plans.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

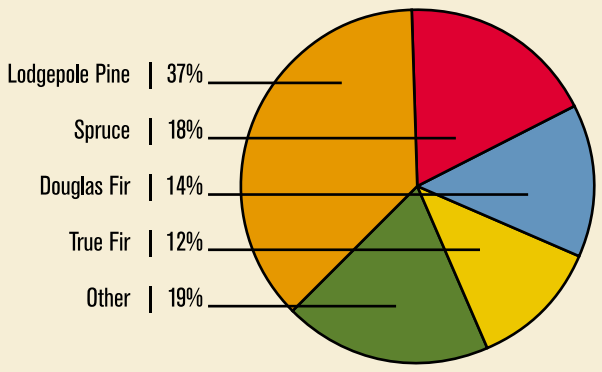
## What are some future information needs?

- Studies of the Fraser Basin forest cover in relation to the expected species and age-class diversity considering natural disturbance regimes.
- Tracking of SFM planning certification and on-the-ground operations in the Basin.

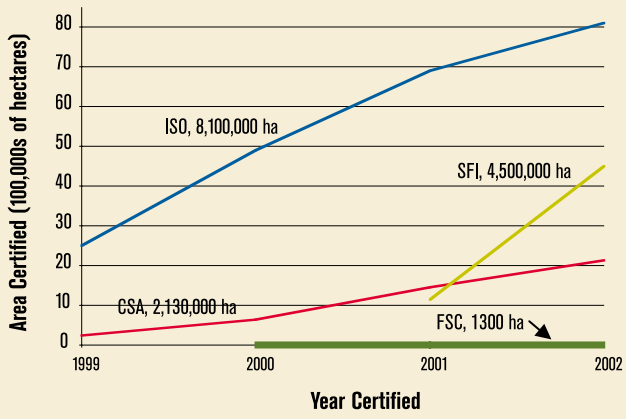
**Comparison of Forest and Non-Forest Land by Region in the Fraser Basin (2002)**




**Percent Forest Cover by Leading Species in the Fraser Basin (2002)**




**Area Certified or Registered in the Fraser Basin by Standard (1999–2002)**




- Study the role of the Basin's working forest economy including vulnerabilities and opportunities for forest-dependent communities or businesses (i.e., the forest resource inventory, annual growth and timber harvest statistics). o


REFERENCES USED

- Canadian Sustainable Forestry Certification Coalition. Certification Database (2002).
- Ministry of Forests. Annual Report 2001/2002.
- Ministry of Forests website (2002).
- Ministry of Sustainable Resource Management, Decision Support Services. Forest Inventory Database (2002).


FOOTNOTES

[1] Sustainable Forest Initiative (developed by the American Forestry & Paper Association) and Canada Standards Association.

[2] Forest cover considers both leading species and age class (0-21 years, 21-140 years and older than 140 years). Leading species refers to the species that is predominant in a particular forest unit.

[3] "Spruce" or "Douglas-Fir" forests refer to forests where Spruce or Douglas-Fir, respectively, are the leading species.

[4] Coordinated by the BC Ministry of Sustainable Resource Management.

[5] Based on provincial government estimates, including defoliation resulting from the mountain pine, spruce, western balsam, Douglas-fir, western pine and engraver beetles.

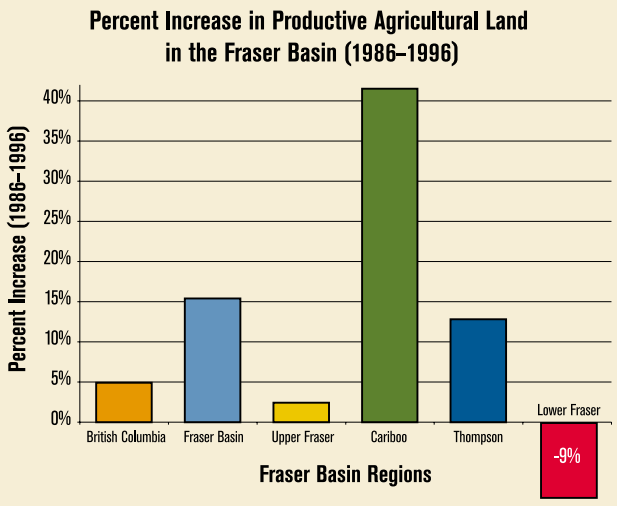
# Agriculture

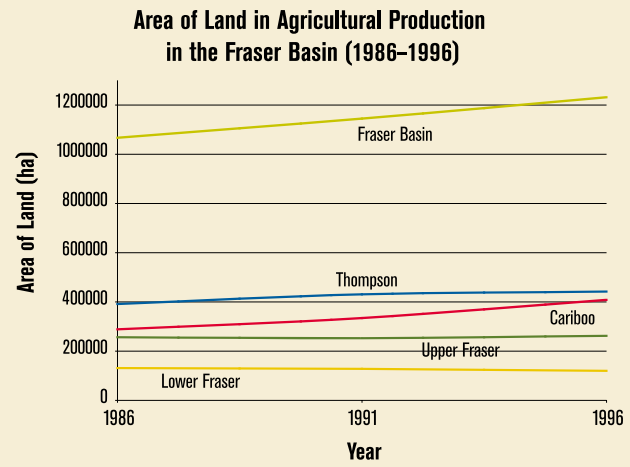
AREA IN AGRICULTURAL PRODUCTION

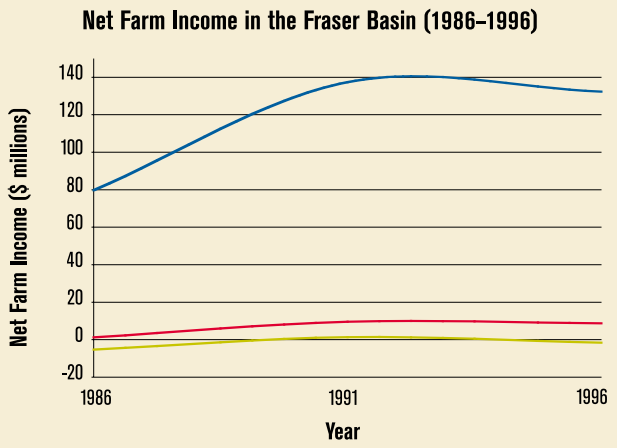
UNCERTAIN

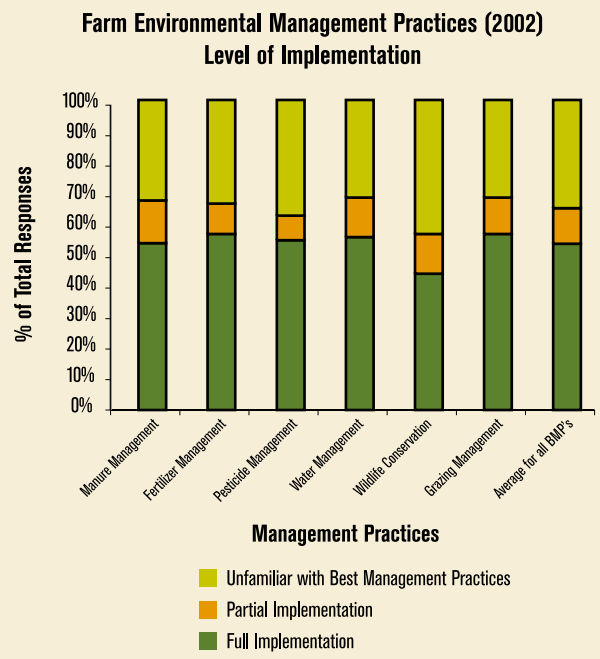
FARM ECONOMIES

GETTING BETTER




## Highlights

- The area of land in agricultural production in the Fraser Basin increased by 15% between 1986 and 1996. Most significant increases occurred in the Cariboo region, with a 42% increase; however, there has been a 9% reduction in productive farm area in the Lower Fraser region[1].
- Between 1974 and 1999, there were net decreases in the Agricultural Land Reserve in all regions of the Fraser Basin except the Upper Fraser.
- The Fraser Basin represented 78% of BC's total net farm income[2] in 1996; about 95% of this was earned in the Lower Fraser region.
- On average, 53% of farms reporting in the FEMS survey were fully implementing best management practices in regions where appropriate and available[3].
- The invasion of noxious weeds has both economic and environmental impacts.

## Why is this important for sustainability?

- An adequate, reliable and secure supply of quality food is vital to community health, well-being and sustainability.
- Agriculture provides economic benefits such as opportunities for employment, income and diversification.
- There are numerous conflicts between farm and non-farm uses of the rural landscape, such as air and water quality, and pressures associated with land speculation and development. Speculation may drive land prices up, resulting in significant incentives to sell farmland for non-farm uses such as residential development.
- Agricultural practices have an important influence on water quality, air quality, and fish and wildlife habitat.
- Agricultural communities of the Fraser Basin are vulnerable to a variety of factors including weather, market conditions, international competition, noxious weeds, urban sprawl, flooding, drought, pests and uncertainties associated with climate change impacts.

## What are the trends and current conditions?

### Area in Agricultural Production

- Agricultural lands in the Fraser Basin help produce a wide variety of foods including field crops, cattle and other livestock, fruits and vegetables, berry crops and many other products.
- There was a 9% reduction in productive farm area in the Lower Fraser region between 1986 and 1996.[1]
- The area of land in agricultural production in the Fraser Basin increased by 15% in this time period.
- Most significant increases occurred within the Cariboo region, with a 42% increase.

### Agricultural Land Reserve

- In total, the Agricultural Land Reserve (ALR) in the Fraser Basin remained about the same (0.1% increase) between 1974 and 1999.
- There were ALR losses in all regions of the Basin except the Upper Fraser, particularly in the Thompson region (3% of ALR in the region) and Lower Fraser region (6.6% of ALR in the region).
- ALR losses are typically a result of urban development.

### Net Farm Income

- The Fraser Basin represented 78% of BC's total net farm income[2] in 1996.
- The Lower Fraser region represented about 95% of the net farm income within the Fraser Basin in 1996. On average, agriculture within the Upper Fraser and Cariboo regions operated at a loss in 1996.
- Net farm income in the Fraser Basin grew by 184% between 1986 and 1996. Most significant growth occurred within the Thompson region (705% increase) and the Lower Fraser region (166%)

### Agriculture and the Environment

- On average, 53% of farms reporting in the Farm Environmental Management Survey (FEMS) were fully implementing best management practices (BMPs) in regions where appropriate and available[3] for manure, fertilizers, pesticides, water, wildlife and grazing. Another 12% of respondents were partially implementing BMPs and 36% were unfamiliar with BMPs.
- Organic agriculture largely prohibits the use of synthetic fertilizers and pesticides, feed additives and genetically modified organisms. The number of certified organic producers and processors in BC nearly tripled between 1992 and 2001 (from 154 to 430).

### Noxious Weeds

- Noxious weeds are typically non-native plants that have been introduced to BC without the natural controls that ordinarily keep them in check in their native habitats.
- Noxious weeds can decrease the value of marketable livestock, reduce yield and quality of agricultural crops, interfere with regeneration of forests, destroy natural habitat for wildlife and kill native grasses and wildflowers.

## Making sustainability happen

### What Can Be Done?

- How can I support farmers while strengthening the local economy? Some suggestions: buy from local farmers, support agricultural land use and learn about local farm issues.
- How can my community work with farmers to resolve conflicts between farm and non-farm uses of the land? Some suggestions: urban growth management, agriculture bylaws, agricultural advisory committees and agricultural area plans.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

## What are some future information needs?

- Future updates and more detail about farm environmental management practices, including the amount of food production and area of land where BMPs are applied and their contribution to sustainability.
- Analysis of the proportion of food needs in the Basin provided by Basin farmers and the sustainability benefits or impacts of this.
- Analysis of the global links to agriculture and sustainability, including farm imports, exports and the influence of international trade policy such as trade tariffs and subsidies.
- Inventory and evaluation of various tools intended to resolve conflicts between farm and non-farm uses of rural land. o

### REFERENCES USED


- Agricultural Land Commission.
- BC Ministry of Water, Land and Air Protection, BC Environmental Trends 2002.
- Statistics Canada. Census of Agriculture (1986-1996).
- Statistics Canada. Farm Environmental Management Survey (2002).


### FOOTNOTES

1 The agricultural data presented includes farms within the Fraser Basin watershed boundary. The Lower Fraser region includes farms within the Fraser Valley, Greater Vancouver and Squamish-Lillooet regional districts.

2 Net farm income was calculated by subtracting total farm operating expenses from total gross farm receipts.

3 The Farm Environmental Management Survey recognized that not all BMPs are appropriate for all operations or available in all regions. These responses were removed from this analysis.

ENERGY CONSUMPTION

GETTING WORSE

GREENHOUSE GAS EMISSIONS

GETTING WORSE

# Energy

## Highlights

- British Columbians consumed 1,145 petajoules[1] of energy in 1999, an increase of 28% since 1981. About two-thirds of the total energy consumed was from petroleum and natural gas.
- Total greenhouse gas (GHG) emissions in BC have increased by 25% between 1990 and 2000. In 2000, over 80% of the GHG emissions in BC were related to energy production and use, with the transportation sector accounting for approximately half of the increase.
- The growth in population observed between 1990 and 2000 (23%) has had a strong influence on both energy consumption and increases in total GHG emissions (25%).

## Why is this important for sustainability?

- A safe, reliable, affordable energy supply supports strong communities and vibrant economies.
- Non-renewable energy sources are depleted as they are used. Renewable sources such as hydroelectricity, solar, wind and tidal power provide energy in perpetuity, and are thus more sustainable.
- Sources of energy and the rate of energy consumption can have a significant impact on the environment, causing air pollution, flooding of river valleys and barriers to fish and wildlife movement.
- The combustion of fossil fuels is a major source of greenhouse gas emissions and air pollution. A majority of scientists have concluded that greenhouse gas emissions from human activity are resulting in changes to the earth's climate, with a variety of adverse impacts.

Transportation is a major energy consumer

## What are the trends and current conditions?

### Energy Consumption in BC

- British Columbians consumed 1,145 petajoules of energy in 1999, a 28% increase since 1981[2].
- About two-thirds of the total energy consumed in 1999 was provided by petroleum and natural gas. Hydroelectricity and alternative energy sources including biomass each provided about 18%.
- Due to energy efficiency, it took less energy to produce the same dollar value of goods and services in 1999 than in 1981.
- Between 1981 and 1999, there was an increase in natural gas consumption of 77% and hydroelectricity of 34%.

### Residential Energy Consumption in BC

- BC households consumed 152 petajoules of energy in 1999, or about 13% of all energy consumed.
- This represented a 14% increase from 1981 to 1999.
- Heating our homes accounted for about half of household energy consumption, while water heating represented about a quarter. Appliances represented about 16%, while lighting was about 5% of total residential energy consumed.

### Greenhouse Gas Emissions in BC

- Total greenhouse gas (GHG) emissions in BC have increased by 25% between 1990 and 2000.
- Over 80% of total GHG emissions in BC in 2000 were related to energy production and use, and 40% of total emissions resulted from transportation (cars, trucks, rail, marine, etc.).
- The growth in population observed between 1990 and 2000 (23%) has had a strong influence on increases in total GHG emissions (25%).

### Climate Change Impacts in the Fraser Basin

- Compared with a century ago, average temperatures are now warmer by 0.5°C on the coast and 1.1°C in the interior regions.
- The Fraser River is 1.1°C warmer now than it was in 1953.
- Average sea levels along most of the coast are four to 12 centimetres higher now than a century ago.
- Other potential impacts of climate change include increased flooding, drought, forest fires and pest outbreaks. For example, the recent Mountain Pine Beetle infestation in the interior regions of the Basin has been aided by a series of warmer than average winters, improving survival rates of the beetle.

## Making sustainability happen

### What Can Be Done?

- How can I reduce energy consumption and save money at the same time? Some suggestions: heat your home or business only where and when in use, insulate your water heater, seal windows and doors, use energy efficient appliances and vehicles, drive less or carpool.
- Is my community working together to reduce its impact on climate change by becoming more energy efficient? Some suggestions: create compact communities for efficient transportation and infrastructure, minimize consumption of fossil fuels, explore opportunities for cogeneration and reclamation of methane emissions from landfill operations, and plant trees to absorb carbon dioxide.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

## What are some future information needs?

- Data on energy consumption in the Fraser Basin and its regions.
- Information about traditional versus alternative forms of energy consumption and the resultant impacts on sustainability.
- Economic analysis of energy efficiency, alternative energy, climate change and the Kyoto Accord. o


REFERENCES USED

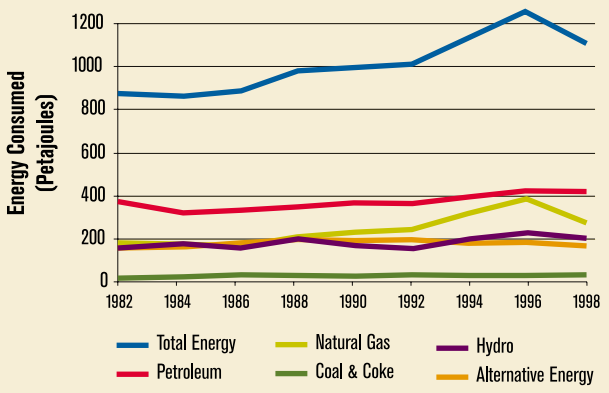
- BC Ministry of Water, Land and Air Protection (MWLAP). *Environmental Trends in BC (2002); Indicators of Climate Change for British Columbia (2002).*
- Environment Canada. Canada's Greenhouse Gas Inventory 1990–2000 (2002).
- Natural Resources Canada. National Energy Use Database.
- Statistics Canada, Energy Statistics Handbook.


FOOTNOTES

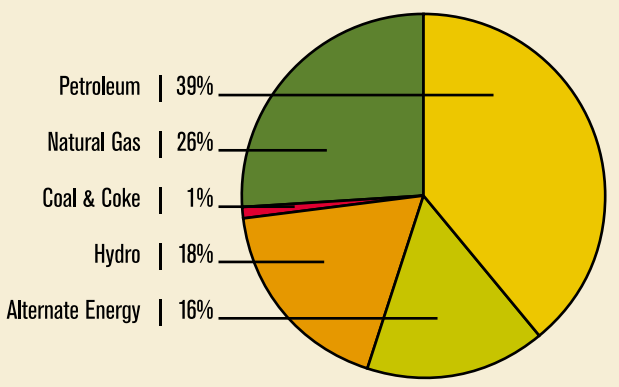
[1] A petajoule is equivalent to a thousand trillion joules, or about 30 million kilowatt-hours.

[2] It was not possible to acquire energy data for the Fraser Basin; therefore BC-wide data are presented.

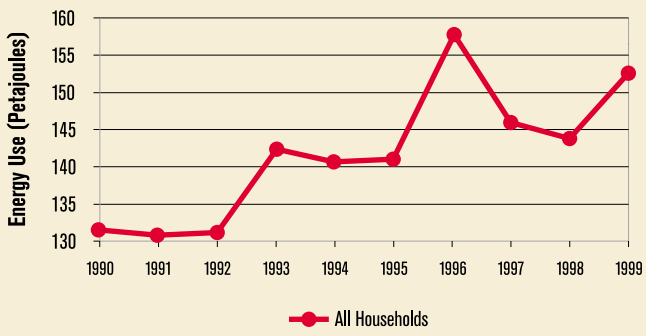
**Energy Consumption in BC by Source (1982-1998)**



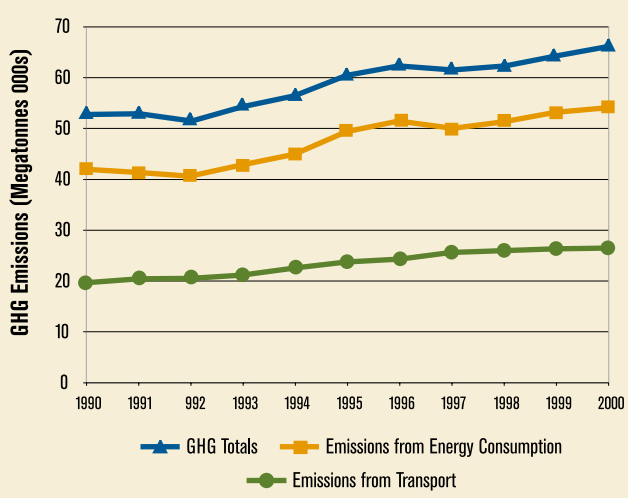

**Energy Consumption by Source (1999)**




**Total Residential Energy Use in BC (1990–1999)**




**Greenhouse Gas Emissions in BC (1990–2000)**




# Fraser River Flooding

POPULATION VULNERABLE


FLOOD MANAGEMENT


## Highlights

- Scientists predict that there is a one-in-three chance of experiencing a Fraser River flood of record[1] in the next 60 years. This could happen in any year. There were devastating Fraser River floods in 1894 and 1948, and there were high flood threats in 1997 and 1999.
- Many of the Basin's communities are partly vulnerable to Fraser River flooding, particularly in the Fraser Valley, Greater Vancouver and Thompson regions, but also in the Cariboo and Upper Fraser regions.
- In 2001, there were almost 327,000 people living in more than 100,000 homes within the floodplain of the lower Fraser River. This is a 168% increase between 1981 and 2001.
- Potential costs from the next Fraser River flood of record – if major dike failures occurred – could reach $2 billion or more in direct damages. This represents at least a 14-fold increase since the last great Fraser River flood in 1948.

## Why is this important for sustainability?

- Flooding can impact economic, social and environmental dimensions of sustainability. Among the risks are loss of life, injury, damage to property and infrastructure, disruption of business and community services, and disruption or loss of agricultural production.
- There may be significant flood impacts to regional, provincial and national economies resulting from disruption of major utilities, transportation and trade corridors including the Trans Canada Highway, railways, ports and the Vancouver International Airport.
- All groundwater wells located within the floodplain are at risk of contamination during a major flood event.
- Global climate change may exacerbate Fraser River flood risks.

## What are the trends and current conditions?

### Vulnerable Populations in the Floodplain of the Lower Fraser

- There are flood vulnerabilities in all regions of the Fraser Basin. During the next flood of record, residents in the floodplain may be directly impacted in terms of temporary evacuation, the need for emergency shelter, damage to property and possessions, or disruption of income and community services.
- More people than ever in history are living in the floodplain of the lower Fraser River (Fraser Valley and Greater Vancouver regional districts). Since 1981, there are about 116,000 more people living within the floodplain in the Greater Vancouver Regional District (180% increase) and about 14,000 more people living within the floodplain in the Fraser Valley Regional District (134% increase).
- There were about 7,000 Aboriginal people living in communities within the Fraser River floodplain in 1996. This includes about 17% of the Aboriginal population in the region – almost one in five.

### Historic Flood Impacts in the Fraser Basin

- The largest Fraser River flood on record occurred in 1894, when the Fraser River flood damaged or destroyed an unknown number of homes, roads, railways and farms.
- The second largest Fraser flood occurred in 1948. Although the flood level was smaller than in 1894, the impacts were greater due to increased levels of development and a larger population. Flooding in BC in 1948 (including the Fraser) caused recovery and rehabilitation costs of about $142 million[2].

### Policies and Management Practices

- Communities within the Fraser Basin are managing flood hazards through a variety of policies and practices including land use planning, flood protection works and emergency preparedness.
- More than three-quarters of all communities in the Fraser Basin that responded to a recent BC Ministry of Water, Land and Air Protection survey had floodplain maps, flood provisions in their Official Community Plans and flood protection works[3]. Almost 90% of respondents had developed emergency response plans.
- Some communities in the floodplain are protected by inadequate flood protection works that do not meet the provincial design standard based largely on the flood of record. For example, over half of the 118 kilometres of dikes from Hope to Mission are considered to be too low, with about 17% low by more than 0.4 metres, due in part to improved flood modelling, changes in river alignment and sediment deposition.

The great Fraser River flood of 1894 is considered the "flood record" on the Fraser.

## Making sustainability happen

### What Can Be Done?

- What can I do to learn about local flood hazards and about personal and household preparedness? Some suggestions: contact your local or provincial government or diking authority.
- What can my local government, diking authority and community do to minimize risks? Some suggestions: develop and maintain floodplain maps and models, avoid development in floodplains, develop floodplain bylaws, implement floodproofing designs, monitor and maintain all flood protection works, and develop emergency response plans and disaster recovery plans.
- For more information see page 23 of this report or the Fraser Basin Council website. www.fraserbasin.bc.ca

## What are some future information needs?

- Closer examination of the potential direct and indirect costs of a catastrophic Fraser River flood.
- Maintainance and enhancement of river and flood level monitoring for flood forecasting and warning.
- A better understanding of the benefits and impacts of instream sediment removal (i.e., dredging of sand and gravel from the river) for managing flood and erosion hazards while minimizing adverse habitat impacts. o


REFERENCES USED

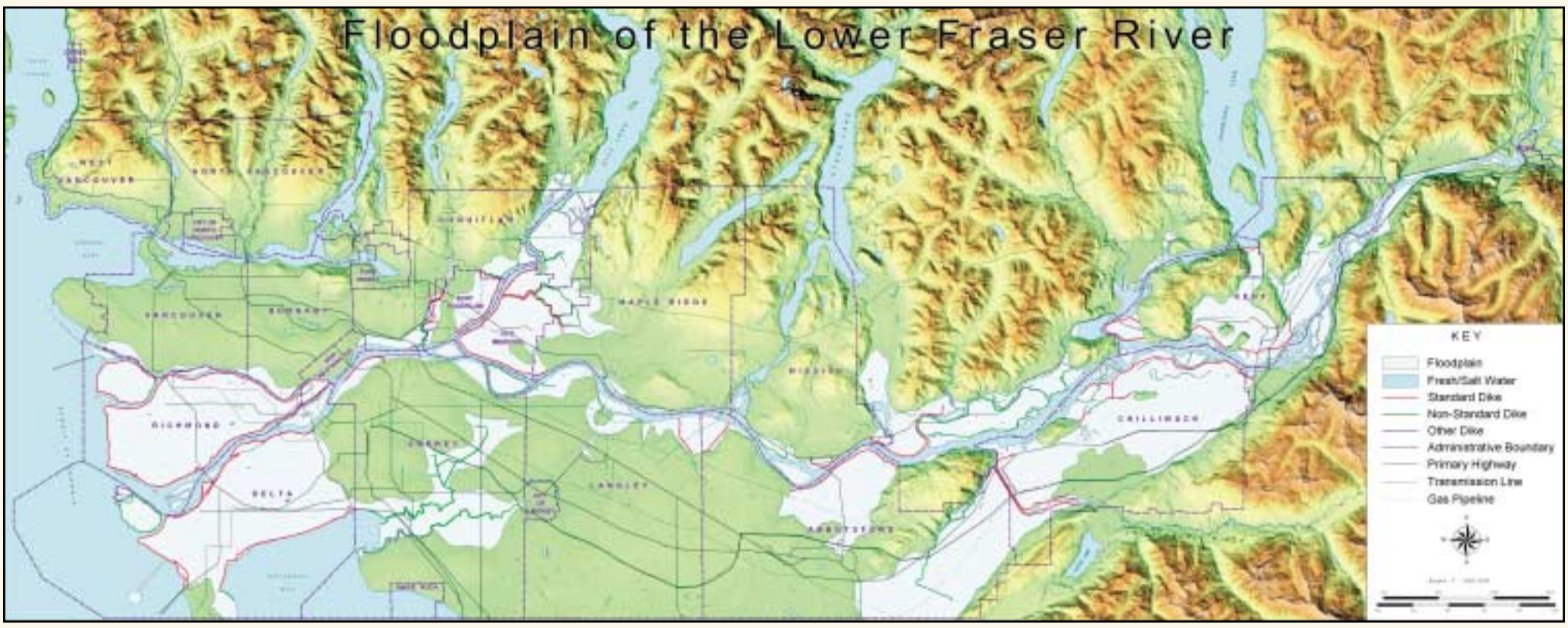
- Ministry of Water, Land and Air Protection (MWLAP). Floodplain of the Lower Fraser River – Map; Survey of Local Governments; and GIS analysis of diking adequacy (2002).
- Statistics Canada, Population Census (1981-1996).


FOOTNOTES

[1] The Fraser River flood of record occurred in 1894, with an estimated peak flow of 16,990 metres$^3$/second.

[2] Based on 1994 dollars, using the Consumer Price Index.

[3] Based on a MWLAP survey. 47 Fraser Basin communities responded, including the Upper Fraser (7), Cariboo (4), Thompson (11), Fraser Valley (6) and Greater Vancouver, Squamish, Pemberton regions (19).



# Resources for Sustainability

## Where can I learn more?

### General
- **Federal Government** main site for links to specific departments under "Departments and Agencies"– http://www.gc.ca/main_e.html
- **Provincial Government** main site for links to specific ministries under "Ministries and Organizations" – http://www.gov.bc.ca
- **Regional Government, Union of BC Municipalities** main site for links to specific local governments – http://www.civicnet.bc.ca

### Population
- **East Clayton Project, City of Surrey** – http://www.sustainablecommunities.agsci.ubc.ca/projects/Headwaters.html
- **Land Centre** – http://www.landcentre.ca/index.cfm
- **Northwest Environmental Watch** – http://www.northwestwatch.org
- **Smart Growth BC** – http://www.smartgrowth.bc.ca/

### Health
- **BC Medical Health Officer's Annual Reports** – http://www.healthplanning.gov.bc.ca/pho/
- **BC Network of Community Health Centres**, Resources Guide – http://www.chcnet.bc.ca/resources2.htm
- **BC Parent Support Services** – http://www.parentsupportbc.ca
- **Canadian Institute for Health Information** – http://www.cihi.ca/
- **Healthiest Babies Possible Program** – contact your regional health authority or community health centre.
- **Northern Family Health Society, Pregnancy Outreach Program** – http://www.nfhs–pg.org/programs/hbp.html

### Education
- **BC Ministry of Advanced Education, Industry Training and Career Centre** – http://www.learnandearn.bc.ca
- **Centre for Education Information and Research** – http://www.ceiss.org
- **First Call** – http://www.firstcallbc.org
- **Human Early Learning Partnership** – http://www.earlylearning.ubc.ca
- **Lifetime Learning Society, Mission** – Tel: 604–820–0220
- **Open Learning Agency** – http://www.ola.bc.ca
- **Opening Doors** – http://openingdoorsbc.com/

### Housing
- **Affordability and Choice Today** – http://www.actprogram.com/
- **BC Housing** – http://www.bchousing.org/
- **BC Hydro, Building Performance Program** – http://www.bchydro.com/business/identify/identify728.html
- **Greater Vancouver Regional Homelessness Plan** – http://www.gvrd.bc.ca/homelessness/
- **Green Buildings BC** – http://www.greenbuildingsbc.com/
- **Tenants' Rights Action Coalition** – http://www.tenants.bc.ca/ Tenant hotline: 1–800–665–1185

### Community Engagement
- **Big Brothers and Big Sisters** – http://www.bbsc.ca/
- **Canadian Centre for Philanthropy** – http://www.ccp.ca/
- **Citizens Handbook** – http://www.vcn.bc.ca/citizens–handbook/
- **Civic Youth Strategy, City of Vancouver** – http://www.city.vancouver.bc.ca/commsvcs/socialplanning/initiatives/cys/cys.htm
- **Community Access Program** – http://cap.ic.gc.ca/english/4000newbc.asp
- **Indigenous Youth–to–Youth Project** – http://www.sppf.org/conf2001/youth.html
- **National Civic League** – http://www.ncl.org/
- **Smart Growth Toolkit** – http://www.smartgrowth.bc.ca/index.cfm?Group_ID=3383
- **Social Capital Community Benchmark Survey** – http://www.cfsv.org/communitysurvey/
- **Sustainable Communities Network** – http://www.sustainable.org/creating/civic.html

### Aboriginal and Non–Aboriginal Relationships
- **Aboriginal Canada Portal** – http://www.aboriginalcanada.gc.ca/
- **Aboriginal Policy Institute** – http://www.aboriginalpolicyinstitute.ca/
- **Assembly of First Nations** – http://www.afn.ca
- **BC Assembly of First Nations** – http://www.bcafn.com
- **BC Ministry of the Attorney General, Treaty Negotiation Office** – http://www.gov.bc.ca/tno/
- **BC Ministry of Community, Aboriginal and Women's Services, Aboriginal Directorate** – http://www.mcaws.gov.bc.ca/aboriginal_dir/
- **BC Treaty Commission** – http://www.bctreaty.net/
- **First Nations Summit** – http://www.fns.bc.ca/
- **Indian and Northern Affairs Canada** – http://www.aainc–inac.gc.ca/
- **Industry Canada, Aboriginal Business Canada Program** – http://abc–eac.ic.gc.ca
- **Links to Aboriginal Resources** – http://www.bloorstreet.com/300block/aborl.htm
- **Spirit of Aboriginal Youth** – http://www.saymag.com/
- **Union of BC Indian Chiefs** – http://www.ubcic.bc.ca/

### Water Quality
- **Aquifers in BC** – http://wlapwww.gov.bc.ca/wat/aquifers/index.html
- **BC Lake Stewardship Society** – http://www.nalms.org/bclss/bmphome.html
- **BC Ministry of Health Services, Safe Drinking Water Action Plan** – http://www.healthservices.gov.bc.ca/cpa/publications/safe_drinking_printcopy.pdf
- **Clear Water Initiative, Coquitlam Environmental Task Force** – http://www.douglas.bc.ca/iue/cwi.htm
- **Environment Canada, Freshwater Website** – http://www.ec.gc.ca/water/e_main.html
- **Environment Canada, Water Quality Station Information Search Tool** – http://scitech.pyr.ec.gc.ca/climhydro/welcome_e.asp
- **Living by Water Project** – http://www.livingbywater.ca/
- **Networking BC Rivers** – http://www.educ.sfu.ca/nbcr/

### Air Quality
- **BC Ministry of Water, Land and Air Protection, Air and Climate Change Branch** – http://wlapwww.gov.bc.ca/air
- **Environment Canada, Introduction to Clean Air** – www.ec.gc.ca/air
- **Fraser Valley Regional District, Air Quality Management Plan** – http://www.fvrd.bc.ca/Planning
- **Greater Vancouver Regional District, Air Quality** – http://www.gvrd.bc.ca/services/air
- **Natural Resources Canada, Burn It Smart!** – http://www.burnitsmart.org/

### Fish and Wildlife
- **BC Ministry of Sustainable Resource Management, BC Species Explorer** – http://srmwww.gov.bc.ca/atrisk/
- **BC Ministry of Water, Land and Air Protection** – http://www.gov.bc.ca/wlap/
- **BC Wildlife Federation** – http://www.bcwf.bc.ca/
- **David Suzuki Foundation** – http://www.davidsuzuki.org/
- **Federation of BC Naturalists** – http://www.naturalists.bc.ca/
- **Fisheries and Oceans Canada** – http://www.ncr.dfo.ca/index.htm
- **Fraser River Sturgeon Conservation Society** – http://www.rickhansen.com/fraser
- **Land Conservancy of BC** – http://www.conservancy.bc.ca/
- **Langley Environmental Partners Society** – http://www.leps.bc.ca
- **Naturescape BC** – http://www.hctf.ca/nature.htm
- **Pacific Fisheries Resource Conservation Council** – http://www.fish.bc.ca/

### Income and Employment
- **BladeRunners** – http://www.nyec.org/pepnet/awardees/brp.htm
- **Canadian Council on Social Development** – http://www.ccsd.ca/
- **Labour Market Information Service** – http://lmi–imt.hrdc–drhc.gc.ca/
- **PovNet** – http://www.povnet.org/about_PovNet.htm
- **Tradeworks Training Society** – http://www.tradeworks.bc.ca/
- **Youth@BC** – http://www.bcpl.gov.bc.ca/youth@bc/

### Economic Diversification
- **B.C. Chamber of Commerce** – http://www.bcchamber.org/
- **Business Council of British Columbia** – http://www.bcbc.com/
- **Community Futures Development Association of BC** – http://communityfutures.ca/provincial/bc/
- **Gateway to Community Economic Development** – http://www.sfu.ca/cedc/gateway/
- **Northern Exposure Gift Company** – http://www.pris.bc.ca/cfdc/negc.htm

### Corporate Social Responsibility
- **BC Better Business Bureau** – http://www.bbbvan.org/
- **Canadian Business for Social Responsibility** – http://www.cbsr.ca/
- **Corporate Knights** – www.corporateknights.ca
- **Ethics in Action** – http://www.ethicsinaction.com/
- **Industry Canada, Office of Consumer Affairs, Voluntary Codes Research Forum** – http://strategis.ic.gc.ca/SSG/ca00973e.html
- **Natural Step** – http://www.naturalstep.ca
- **Social Investment Organization** – www.socialinvestment.ca

### Forests and Forestry
- **BC Ministry of Forests** – http://www.for.gov.bc.ca/het/certification
- **Canadian Model Forest Network, Local Level Indicators Initiative** – http://www.modelforest.net/e/home_/indexe.html
- **Canadian Sustainable Forestry Certification Coalition** – http://www.sfms.com/
- **Forest Research Extension Network (FORREX)** – http://www.forrex.org

### Agriculture
- **AgAware BC** – http://www.agaware.bc.ca/
- **Agriculture and Agri–Food Canada** – http://www.agr.gc.ca/
- **Agriculture Council of British Columbia** – http://www.bcac.bc.ca/
- **BC Ministry of Agriculture, Food and Fisheries** – http://www.gov.bc.ca/agf/ For information on noxious weeds see http://www.agf.gov.bc.ca/cropprot/weeds.htm
- **FarmFolk/CityFolk** – http://www.ffcf.bc.ca/
- **Investment Agriculture Foundation of BC** – http://www.iafbc.ca/
- **Weeds BC** – http://www.weedsbc.ca/

### Energy
- **BC Climate Exchange** – http://www.BCClimateExchange.ca
- **BC Energy Aware Committee, Tool Kit for Community Energy Planning in BC** –http://www.energyaware.bc.ca/
- **BC Hydro** – http://www.bchydro.com and Water Use Planning – http://www.bchydro.com/wup/
- **Federation of Canadian Municipalities, Partners for Climate Protection** – http://www.fcm.ca/
- **Science Council of BC, Eco–Efficiency Partnership** – http://www.scbc.org/eep/index.html

### Fraser River Flooding
- **BC Emergency Social Services** – http://www.ess.bc.ca/
- **BC Ministry of Public Safety and Solicitor General, Provincial Emergency Program** – http://www.pep.bc.ca/
- **BC Ministry of Water, Land and Air Protection** – http://wlapwww.gov.bc.ca/wat/flood/
- **BC River Forecast Centre** – http://srmwww.gov.bc.ca/aib/wat/rfc/index.htm
- **Emergency Preparedness for Industry and Commerce Council** – http://www.epicc.org/
- **Emergency Preparedness Information Exchange** – http://epix.hazard.net/
- **First Nations Emergency Services Society** – http://www.fness.bc.ca/
- **Institute for Catastrophic Loss Reduction** – http://iclr.org/
- **Justice Institute of BC, Emergency Management Division** – http://www.jibc.bc.ca/emergency/f–emergency.html
- **Office of Critical Infrastructure Protection and Emergency Preparedness** – http://www.ocipep–bpiepc.gc.ca/

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Fraser Basin Council

## STATE OF THE FRASER BASIN CONFERENCE & WORKSHOP SPONSORS

**The Fraser Basin Council wishes to thank the companies, organizations and government agencies who sponsored our recent Conference at which we launched the State of Fraser Basin Report.**

British Columbia
Ministry of Sustainable Resource Management

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It's right here.

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Western Economic Diversification Canada / Diversification de l'économie de l'Ouest Canada

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# State of the Fraser Basin Report
# A Snapshot on Sustainability

On January 24, 2003, the Fraser Basin Council launched the *State on the Fraser Basin Report* at its biennial State of the Fraser Basin conference. The report provides a snapshot on the state of the Fraser Basin's health – socially, economically and environmentally.

The conference provided the opportunity to present the contents of the report to a diverse group of individuals and organizations who collectively can make a significant difference in reversing the declining trends described in this report, and move the Fraser Basin towards a more sustainable future.

The conference also provided an opportunity for participants to understand the importance of a collective response to the "sustainability challenge," and begin to think about what they can do, individually and as organizations, in response to this challenge. In fact, the conference program was designed to stimulate follow-up action by asking specific organizations and governments to present what they were prepared to do as an important next step.

The release of the report at the conference was the culmination of a 2½ year long process involving many individuals and organizations. The Council's indicators are a first step in an ongoing and evolving process to track sustainability trends over time.

The Fraser Basin Council would like to thank the following organizations for their participation on the Council's Sustainability Indicators Advisory Committee:

- Aboriginal Policy Institute
- Anielski Management Inc.
- Centre for Community Enterprise
- Environment Canada (Georgia Basin Ecosystem Initiative)
- Greater Vancouver Regional District
- Ministry of Community, Aboriginal and Women's Services
- Ministry of Forests
- Ministry of Sustainable Resource Management
- Ministry of Water, Land, and Air Protection
- Social Planning And Research Council of BC
- United Way of the Lower Mainland
- University of British Columbia
- University of Northern British Columbia
- West Coast Environmental Law
- Western Economic Diversification Canada

The Council also appreciates the substantial input and feedback provided by dozens of other reviewers and advisors, including a wide variety of agencies, organizations and individuals from many different communities throughout the Basin. o

## We Want Your Feedback

The Fraser Basin Council would like to hear from you about this *State of the Fraser Basin Report*.

- Has the report helped you better understand sustainability?
- Is the report useful in helping you advance sustainability at home, at work and in your community?
- Do you have suggestions about future reporting, other information sources or ways to improve our knowledge about sustainability over time?

A feedback form is available on the Council's website (www.fraserbasin.bc.ca) or by request (1-604-488-5350).

## Where Do We Go From Here?

The Fraser Basin Council is committed to further development of sustainability indicators and future reporting on trends in the Basin. The Council is also prepared to address many of the sustainability trends in its daily work with numerous partners and interested groups throughout the Basin. The Council recognizes that it must be engaged in specific activities to advance sustainability to complement its efforts to report on the health of the Fraser Basin. Therefore, it intends to continue to act as a catalyst for change by focusing its efforts on helping resolve significant issues of sustainability in the Basin.

This *State of the Fraser Basin Report* provides a snapshot on the health of Fraser Basin. To move to a more sustainable region and become a world sustainablity leader is going to take a considerable effort from residents, organizations and government agencies in all parts of the Basin. By working together we can make a difference.

## What Are You Prepared To Do?

Much is already being done to help sustain the Fraser River Basin. We'd be interested in finding out what you or your organization are already doing, or what you are prepared to do in the future. o

## Friends of the Fraser Basin

***The Fraser Basin Council needs your support.*** You can help sustain all life in the Basin with a donation to the Fraser Basin Council, a non-government, not-profit, charitable society. The Fraser Basin Council has a vision of civil society that works to achieve sustainability of the Basin. We do this by facilitating cooperation and decision-making among environmental, economic and social interests.

*Donations to the Fraser Basin Council are fully tax-deductible. Annual donations to registered charities of $200 or more garner a 29% tax credit.*

q Yes! I want to help the Fraser Basin Council realize its vision of a sustainable Basin!

Name _____

Address _____

City _____ Postal Code _____

Phone _____ Email _____

ENCLOSED IS MY CONTRIBUTION OF:

q $35 q $50 q $100 q $200

q $500 q OTHER:$_____

PAYMENT METHOD: Please make cheques payable to the Fraser Basin Council Society. See address below.

PLANNED GIVING:

q Yes, I am interested in receiving more information on planned giving opportunities including memorial gifts, bequests and legacies to the sustainability of the Fraser River Basin.

Fraser Basin Council

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