



Budget Paper A

THE ECONOMY

THE ECONOMY

Contents

CANADIAN ECONOMY	1
MANITOBA ECONOMY	3
Manufacturing.....	5
Agriculture	7
Mining.....	8
Hydro-Electricity.....	10
Housing	12
Retail Sales.....	13
Tourism.....	14
Labour Markets	14
Investment.....	15
Population.....	17
Foreign Markets	18
Manitoba Foreign Exports.....	19
Manitoba Economic Outlook.....	20
THE MANITOBA ECONOMY: STRENGTH IN DIVERSITY	21
Manitoba Economic Statistics.....	24
Appendix 1: RESEARCH AND INNOVATION	27
Appendix 2: STRONG COMMUNITIES IN A SUSTAINABLE ENVIRONMENT	37
Appendix 3: INVESTING IN MANITOBA’S WATER RESOURCES	47

CANADIAN ECONOMY

The Canadian economy grew 1.5% in real terms in 2001, down from 4.4% growth in 2000. Gross Domestic Product (GDP) declined only in the third quarter last year, then recovered in the fourth quarter. This avoided two consecutive quarters of negative growth, or a 'technical recession'. Nominal GDP increased 2.7%, down considerably from the 8.3% posted in 2000, and the lowest annual increase since 1992 (see Chart 1).

After nearly a decade of strong expansion, growth in both the Canadian and U.S. economies fell considerably last year. In Canada, a sharp decline in business investment, weaker foreign exports and lower manufacturing output were responsible for slowing the pace of real growth through 2001.

In contrast, Canadian consumer spending remained relatively steady through the year. Throughout 2001, both the U.S. Federal Reserve and the Bank of Canada responded to weakening business conditions with substantial monetary easing. The Bank of Canada lowered the bank rate 10 times between January 2001 and January 2002, for a total reduction of 375 basis points (see Chart 2).

Reductions in the cost of borrowing, particularly low- and zero-interest financing incentives for new automobiles, prompted a 4.2% real increase in durable goods expenditures in 2001. As residential mortgage rates fell to levels not seen in over 40 years, consumers also spent enthusiastically on homes: the value of residential investment increased 4.4%, and Canadian housing starts increased 7.3% to 163,000, the highest level since 1992.

Total employment grew only 1.1% after average annual growth of 2.6% in the previous four years (see Chart 3). Both full-time and part-time employment advanced 1.1% in 2001. Canada's unemployment rate increased slightly to 7.2% last year, from 6.8% in 2000. The increased slack in

Chart 1
Canada and U.S.
Real GDP Growth

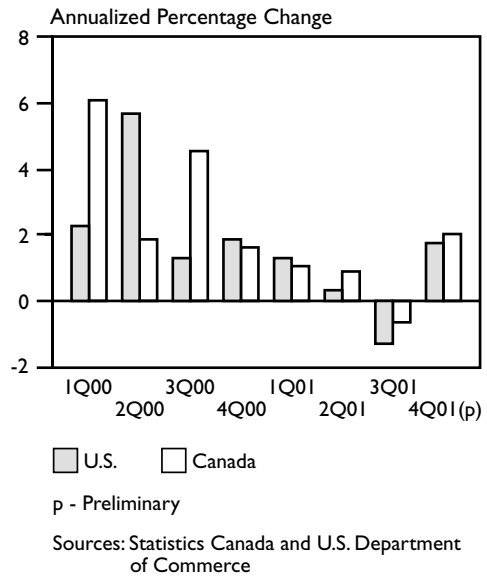


Chart 2
Canada and U.S. Interest Rates

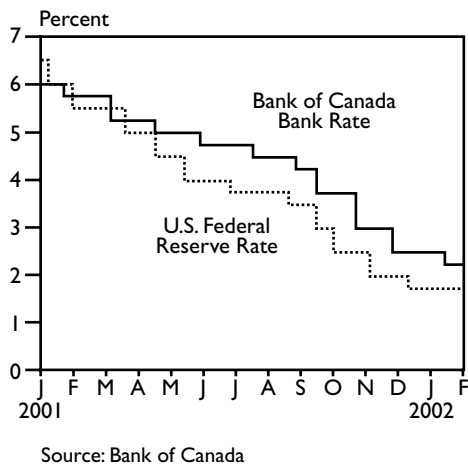
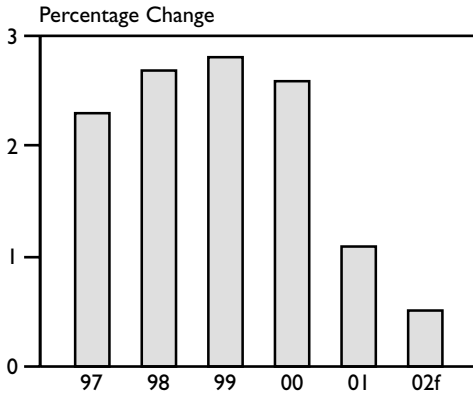


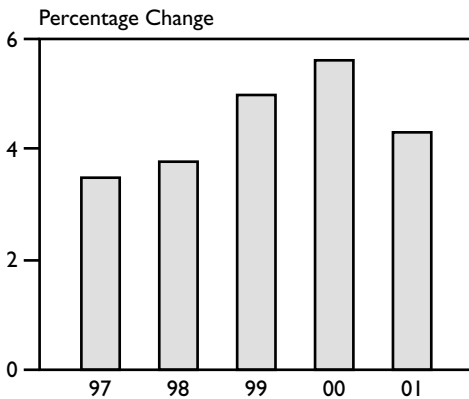
Chart 3
Canada Employment



f - Forecast

Sources: 1997-2001: Statistics Canada
2002: average of economic forecasters

Chart 4
Canada Personal Disposable Income



Source: Statistics Canada

labour markets limited growth in average weekly earnings to 1.8%. Lower demand for workers resulted in shorter average time worked, as average hours worked by Canadian workers fell by 2%.

The weaker conditions in the labour market dragged total labour income growth down to 4.2%, the smallest increase since 1996. Personal income grew 3.8%, while personal disposable income grew 4.3% (see Chart 4). The average economic projections by economic forecasters, compiled by Manitoba Finance, suggests that Canada's employment will grow only 0.5% in 2002, and the unemployment rate will increase further to 7.9%.

Total real exports of all goods and services fell by 4.0%, principally because of weakness in the U.S. market. This was the first year-over-year decline in exports since 1982 and contrasts with a strong 8.1% increase in 2000. Canada's foreign merchandise exports to the U.S., which accounted for 86% of total foreign merchandise exports, declined 2.5%, while non-U.S. merchandise exports declined 5.3%. Weakness was particularly pronounced in exports of telecommunications equipment, energy commodities and forestry products.

Canada's rate of Consumer Price Index (CPI) inflation in 2001 was virtually unchanged from 2000. However, this masks the significant reductions in the energy price component of CPI beginning in the second half of the year. Overall, CPI grew 2.6% last year, with 'core' CPI (excluding food and energy) growing only 2.0%. The survey of economic forecasters shows Canada's consumer price inflation moderating to 1.4% in 2002 (see Chart 5). This inflation rate remains well within the Bank of Canada's inflation control target range of 1% to 3%.

The Canada-U.S. exchange rate declined through 2001. The U.S. dollar exchange rate averaged US\$0.646 last year, down from US\$0.673 in 2000.

The consensus among economic forecasters is that Canada's real GDP growth will accelerate as 2002

progresses. Several economic indicators point to strengthening economic performance in the first quarter of the year. Currently, Manitoba Finance's survey of economic forecasters shows Canada's annual real GDP is projected to increase 1.8% in 2002. Nominal GDP is projected to increase by 2.0%. These projections will likely increase over the near term as forecasts are revised to reflect the stronger than anticipated economic performance in the last quarter of 2001 and the first quarter of 2002.

MANITOBA ECONOMY

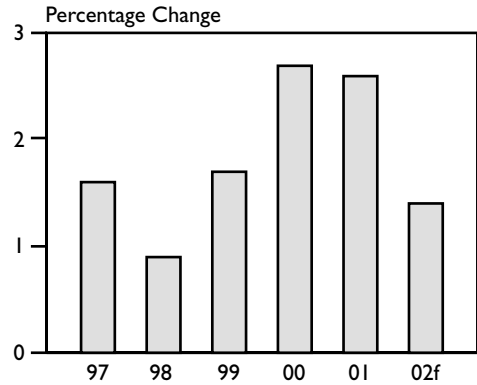
Manitoba's economy grew 1.6% in real terms in 2001, down from 3.0% growth in 2000 (see Chart 6). A pronounced decline in the rate of growth of labour income, along with a decline in aggregate corporate profits, were the principal factors that contributed to last year's weaker performance.

Nominal GDP in Manitoba grew 3.3% in 2001 to \$34.9 billion, down from 6.4% growth in 2000.

The Manitoba Bureau of Statistics estimates that real personal expenditure grew 2.7% last year, up from 2.6% in 2000. Lower borrowing rates, personal income tax reductions and special dealer incentives for new automobile purchases lifted consumer spending last year.

Real business investment in Manitoba continued to grow in 2001, even as national business investment declined. Real spending on non-residential structures increased 1.2%, while real investment in machinery and equipment advanced 3.2%, the third consecutive year of real growth in machinery and equipment spending. Statistics Canada's February 2002 Private and Public Investment (PPI) survey indicates that private investment in Manitoba is expected to fall 2.2% in 2002, slightly less than the 2.7% decline projected by the survey for Canada overall.

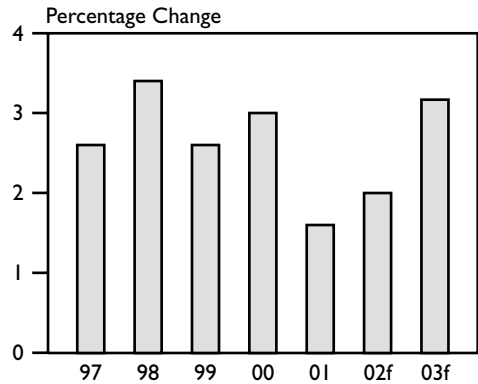
Chart 5
Canada Consumer Price Index



f - Forecast

Sources: 1997-2001: Statistics Canada
2002: average of economic forecasters

Chart 6
Manitoba Real Gross Domestic Product



f - Forecast

Sources: 1997-2001: Manitoba Bureau of Statistics
2002-2003: average of economic forecasters

Manitoba Real Gross Domestic Product at Basic Prices By Industry, 2000 and 2001p

(Millions of Constant 1997 Dollars)

	2000	2001p	% Change
Goods	8,560	8,628	0.8
Agriculture	1,492	1,479	-0.8
Mining	601	593	-1.3
Other Primary	74	72	-2.7
Manufacturing	3,894	3,901	0.2
Construction	1,343	1,379	2.7
Utilities	1,156	1,204	4.2
Services	21,560	21,975	1.9
Transportation & Storage	1,983	1,926	-2.8
Information & Culture	1,205	1,267	5.2
Wholesale Trade	1,838	1,955	6.4
Retail Trade	1,650	1,726	4.6
Finance & Insurance	1,235	1,260	2.0
Real Estate	1,869	1,846	-1.3
Imputed Rent	2,770	2,837	2.4
Professional Services	821	846	3.0
Other Business Services	379	398	5.2
Government	2,256	2,305	2.2
Education	1,589	1,605	1.0
Health & Social Services	2,133	2,140	0.4
Arts, Entertainment & Recreational Services	289	292	1.1
Accommodation	712	727	2.2
Other Services	831	845	1.7
GDP at Basic Prices	30,122	30,604	1.6

p – Preliminary

Source: Manitoba Bureau of Statistics

Manufacturing, Manitoba's largest industry, grew 0.2% in real terms last year, as weakness in the U.S. marketplace slowed shipments growth. Manitoba's agriculture industry was relatively successful last year, with higher prices for most major commodities and better growing conditions for crops in most regions of the province. Overall, farm cash receipts increased 17.2%.

Softer markets for major minerals resulted in a decline in the value of mineral production in

Manitoba last year, while improved markets for electricity saw Manitoba Hydro sales increase 12.6%.

Manitoba's retail sales grew 5.8%, the strongest annual increase since 1997, and third best among provinces. Robust growth in automobile and furniture and appliance sales helped push total retail sales up to new record levels.

Manitoba employment grew 0.6% in 2001, while the unemployment rate increased marginally. Manitoba posted the second-lowest unemployment rate among provinces. Manitoba's youth unemployment rate was also second-lowest.

Manitoba's consumer price inflation in 2001 was 2.6%, the same rate as Canada's. Significant declines in the energy component of the CPI in the latter half of 2001 were not sufficient to offset increases early in the year, resulting in a 6.4% increase in energy CPI. In contrast, CPI, excluding food and energy, rose only 1.8%. According to Manitoba Finance's survey of economic forecasters, Manitoba's CPI growth is expected to be at the national average in 2002, 1.4%.

Based on Manitoba Finance's current survey of economic forecasters, Manitoba's 2002 rate of real economic growth is expected to be higher than 2001. The survey shows that Manitoba's real GDP growth will be 2.0% in 2002, increasing to 3.2% in 2003. Revised projections for Manitoba's economic performance in 2002 are expected to improve over the near term, as forecasts are revised to reflect the stronger than anticipated economic performance in the last quarter of 2001 and the first quarter of 2002.

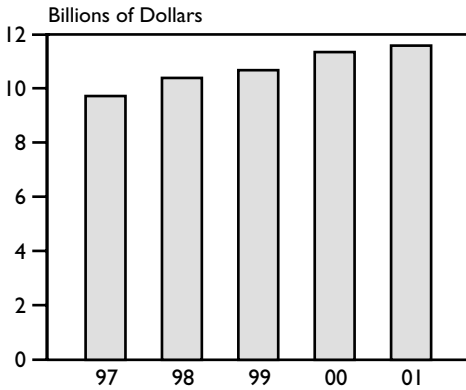
■ Manufacturing

Manufacturing is Manitoba's largest industry, accounting for approximately 13% of total GDP. Manufacturing also accounts for about 64% of total foreign exports, and about 69% of exports to the

“Manitoba is once again proving that its reputation as a diversified economy is well earned. Although the North American economy showed clear signs of fatigue in 2001, the province managed to post the second highest growth rate of all the provinces.”

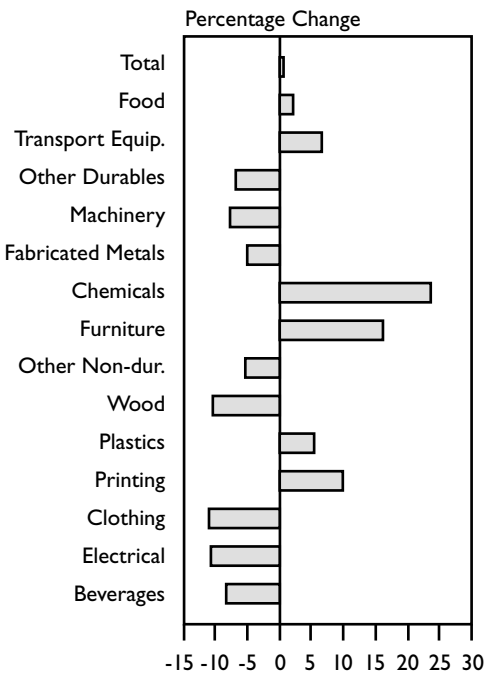
Conference Board of Canada
February 2002

Chart 7
Manitoba Manufacturing Shipments



Source: Statistics Canada

Chart 8
Manitoba Manufacturing Shipments by Industry, 2001



Note: Ranked by size in descending order.

Source: Statistics Canada

U.S. Manitoba's manufacturing sector is highly diverse and includes a broad range of consumer and industrial goods.

The value of Manitoba's manufacturing shipments grew 1.1% last year to \$11.5 billion, down from the 6.5% increase of 2000 (see Chart 7). Despite the lower shipments growth, Manitoba manufacturing industries outperformed the national manufacturing sector. Canada's manufacturing industries were hard hit by the North American economic slowdown, with the overall value of manufacturing shipments in Canada declining 5.2% in 2001. This was the first decline in national manufacturing shipments in a decade.

Six of the fourteen manufacturing industry categories in Manitoba posted gains in 2001 (see Chart 8). Major increases were posted in chemicals (24.4%), furniture (16.2%) and printing products (10.0%). Industries that posted shipment declines include wood products, clothing and electrical equipment, each with reductions of 10–11%.

Food processing industry shipments increased 3.1% last year. This industry has grown rapidly over the past several years, with 2001 shipments up 36% over 1998 levels. Food processing is Manitoba's largest manufacturing industry, accounting for about one-quarter of the province's manufacturing shipments and for over 10% of Manitoba's total foreign exports. Principal processed food products include processed meats, prepared vegetables, dairy products and grains/oilseeds products. Growth in this industry reflects the significant investments in new and expanded processing facilities over the past several years, with growth expected to continue over the medium term.

Transportation equipment posted a 7.5% gain in 2001, almost offsetting the decline in shipments posted in 2000. Principal transportation equipment products include aerospace equipment, urban and intercity buses, and recreational vehicles.

Transportation equipment is Manitoba's second largest manufacturing industry, and its largest source of foreign exports among commodity groups.

After posting a 15.6% increase in 2000, Manitoba capital investment in manufacturing declined 7.2% in 2001 (see Chart 9). Despite the decline, this performance was second-best among provinces, as manufacturing investment declined in nine of Canada's ten provinces. Nationally, manufacturing capital investment fell 18.1%.

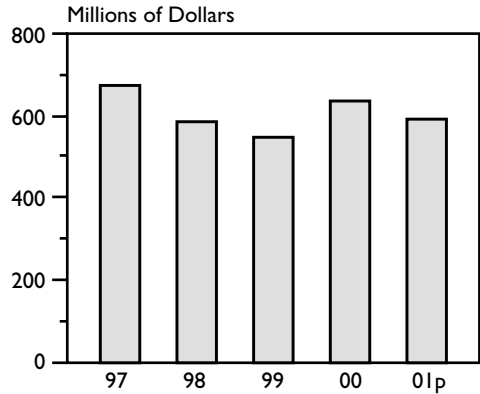
Strong growth in manufacturing shipments and investment over the past several years has resulted in a large increase in manufacturing sector employment. Manitoba posted the strongest growth in manufacturing employment among provinces in 2000, with a 9.8% increase. Last year, Manitoba's manufacturing employment remained unchanged, while national manufacturing employment declined by 0.2%.

■ Agriculture

Like the provincial economy overall, Manitoba's agriculture sector is highly diversified. In 2001, livestock receipts accounted for 55% of market receipts, while crop receipts accounted for 45%. Manitoba producers market a wide variety of livestock and crop commodities. Agriculture accounts for 20% of Manitoba's foreign commodity exports, and slightly less than 5% of Manitoba GDP directly.

2001 was a better year for Manitoba's agriculture industry overall. Prices for most crops posted moderate gains in 2001 while cattle and hog prices were strong. Better prices, as well as growth in livestock farm production volumes, combined to boost total farm cash receipts by 17.2% to a new record level of \$3.7 billion. Market receipts rose 15.8%, as receipts from livestock increased 16.4% and crops receipts rose 14.9% (see Chart 10).

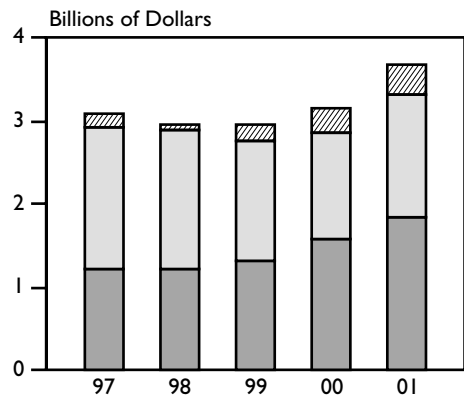
**Chart 9
Manitoba Manufacturing Investment**



p - Preliminary

Source: Statistics Canada

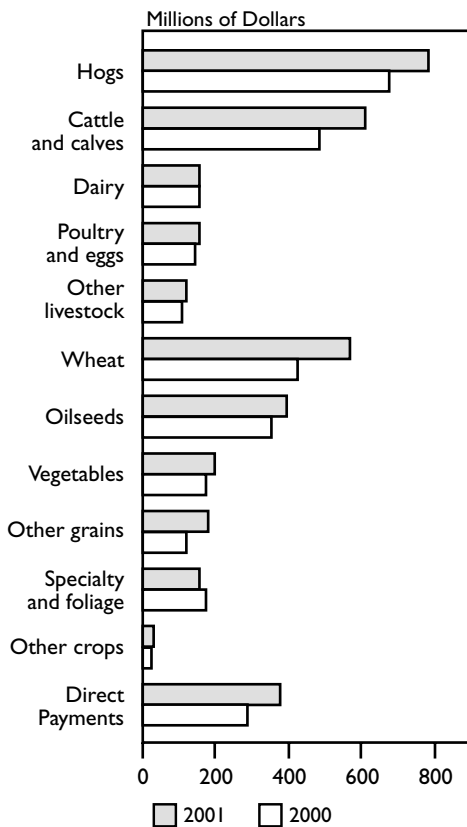
**Chart 10
Manitoba Farm Cash Receipts**



Legend: Livestock (dark grey), Crops (light grey), Direct Payments (hatched)

Source: Statistics Canada

Chart 11
Manitoba Farm Cash Receipts
by Product, 2001 and 2000



Source: Statistics Canada

Cash receipts for hogs increased 16.4%. Over the last three years, receipts from hog production have almost doubled, reaching \$785.3 million in 2001. The number of hogs marketed increased by approximately 11%, while the average annual hog price increased about 4% (see Chart 11).

Prices for cattle and calves improved further in 2001 from already-high levels, pushing up cash receipts by 25.2% in the year. Receipts from cattle and calves reached a record high level of \$608.3 million.

Stronger prices for wheat, Manitoba's principal crop, helped push up total wheat receipts by 33%. Canola prices were also much stronger, helping boost oilseeds receipts by 11.4%.

The total value of vegetables and horticultural products continued to grow in 2001. The production of vegetables, as well as specialty crops, has grown steadily in Manitoba over the last decade and has helped diversify the agriculture sector.

Direct payments to Manitoba producers – various forms of income assistance to producers, including crop insurance, income stabilization and adjustment programs – increased 32% last year to \$376 million. This increase is related to increased provincial and federal support under the Agriculture Income Disaster Assistance program (AIDA) as well as increased payments under the Net Income Stabilization Account.

The Manitoba Bureau of Statistics estimates that total accrued net income of farm operators increased 41.7% last year. Net cash income increased 46.4% to \$917 million.

■ Mining

The total value of mineral production in Manitoba declined 15.1% in 2001 to \$1.05 billion. The reduction erased some of the 36% gain posted in 2000 (see Chart 12).

The value of nickel production declined by 26.4% as international economies weakened in the year. The lower total value of production reflects a 1.7% decline in volume, as well as a sharp decline in the price of nickel. The 2001 average London Metals Exchange (LME) price of nickel declined 31% to US\$2.70. Nickel is Manitoba's most important mineral, accounting for 39% of the value of mineral production in Manitoba last year.

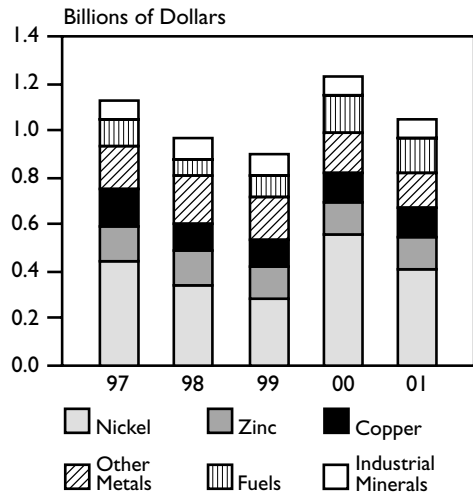
Zinc accounted for 13% of the value of mineral production in Manitoba in 2001, down only slightly from 2000. This relatively constant production value masked the sharp decline in zinc prices in 2001, as the LME price of this metal slipped 21% to levels near historical lows. In contrast, the volume of zinc produced in Manitoba increased 17%.

Like zinc and nickel, the price of copper dropped in 2001 in the face of weakening global economic activity. The average annual US\$ LME price of copper slipped 13% in 2001, more than offsetting a small increase in the volume of production in Manitoba last year. Consequently, the value of copper produced in Manitoba fell 5.6%. Copper accounted for 12% of the value of mineral production in Manitoba last year.

The low international prices for zinc and copper and generally depressed market conditions led to the decision by Hudson Bay Mining and Smelting to move up the closing date of the Ruttan mine in Leaf Rapids. The mine is presently slated to close at the end of June 2002.

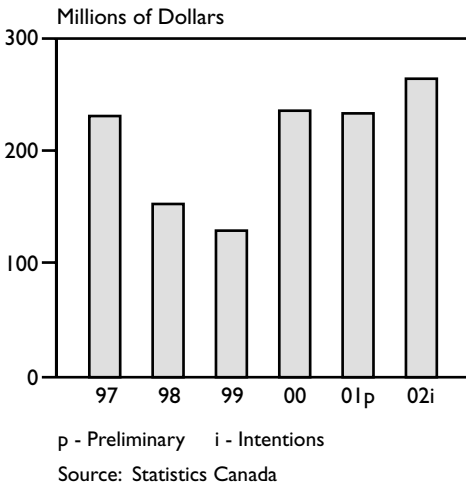
In 2001, Manitoba's gold mining industry suffered the loss of the Harmony Gold mining operation in Bissett. The mine was placed in "care and maintenance" mode in August. The value of gold mined in Manitoba last year declined 5.6% as both volume and price declined. Manitoba's other gold mine, the New Britannia facility at Snow Lake, continues as the province's only operating gold mine.

Chart 12
Manitoba Mineral Production



Source: Natural Resources Canada

Chart 13
Manitoba Mining Investment



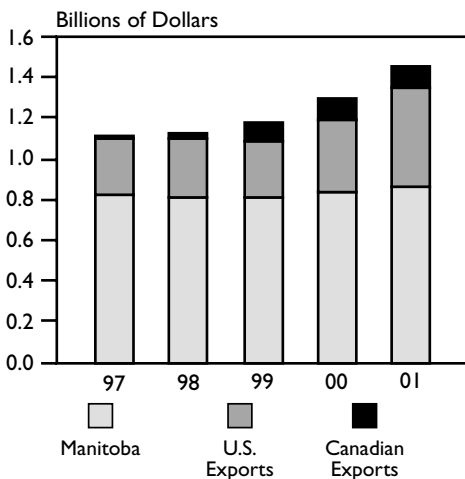
Oil producers in Manitoba's south-west region increased the volume of oil production last year by 3.5%. However, weaker prices pushed the total value of production down 18% to \$135 million. Lower oil prices did not deter drilling expenditure last year, with substantial levels of oil drilling activity. Industry drilling expenditures last year are estimated at over \$100 million.

The current outlook suggests that 2002 will be a relatively successful year for that industry with drilling expected to top 100 wells. Crude oil was discovered in Manitoba in 1951 and has been produced continuously ever since. There are 13 designated oil fields in Manitoba, with over 1,700 active wells.

Exploration expenditures in Manitoba increased slightly last year to \$28.3 million. Exploration in the province was conducted for numerous minerals including copper, zinc, gold, diamonds, platinum group metals and nickel.

Mining investment has been one of the major sources of improved production in the province's mining industry. Both Inco Limited and Hudson Bay Mining and Smelting announced major multiyear investment projects in 2000 and subsequent years. Mining investment in Manitoba is projected to increase 12.4% in 2002 (see Chart 13).

Chart 14
Manitoba Hydro-Electricity Sales



■ Hydro-Electricity

The value of electricity sales by Manitoba Hydro increased 12.6% last year, the fourteenth consecutive annual increase. Total sales increased to \$1.46 billion. Electricity sales within Manitoba increased 2.4%.

The value of export sales accounted for a record-high 41% of this total (see Chart 14). They increased 31.4% last year to \$596 million. Exports to the United States, which account for 83% of total export sales, increased 41.1%.

Manitoba Hydro is the province's largest electrical utility, accounting for the great majority of electricity generation, transmission and distribution in Manitoba. Virtually all of Manitoba's electricity is produced by water, a clean, renewable source of energy. Currently, Manitoba Hydro has a generating capability of 5,000 MW with the potential for a further 5,000 MW of generating capacity.

Manitoba Hydro is presently undertaking several major capital projects. Construction is under way on a \$177 million combustion turbine plant in Brandon. Two natural gas-fuelled combustion turbines, with a combined capacity of 260 MW, are being built to enable Manitoba Hydro to enhance its export revenues, and to provide additional reliability to Manitoba customers. Both units are expected to be operational by June 2002.

The Selkirk Generating Station fuel-switching project will convert Selkirk's two boilers to natural gas. The converted generating facility is expected to discontinue coal burning by the summer of 2002.

This, and other environmental initiatives, will continue Manitoba Hydro's leadership in protecting the environment, and also serve to strengthen its position as a leader among Canadian utilities in voluntary actions to reduce greenhouse gas emissions. The company is positioned to play an increasingly important role in producing even more of North America's electrical energy through environmentally desirable hydro-electric energy generation.

Active planning is under way to increase generation to meet longer-term energy requirements. Manitoba is progressing quickly in its preparations to ensure the 200 MW Wuskwatim Hydro-Electric Generating Station is available as an option for future decisions. This project, if approved, would involve a \$1 billion investment, with construction starting as early as the winter of 2003/04. Current activities include the comprehensive negotiations with Nisichawayasihk Cree Nation to finalize the terms and conditions of

Manitoba is progressing quickly in its preparations to ensure the 200 MW Wuskwatim Hydro-Electric Generating Station is available as an option for future decisions. This project, if approved, would involve a \$1 billion investment, with construction starting as early as the winter of 2003/04.

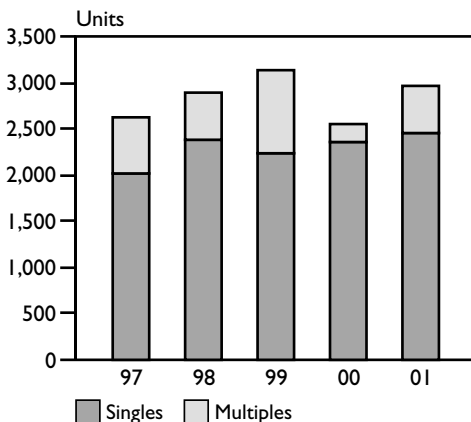
*In February 2002,
Manitoba Hydro submitted
a formal proposal for
the purchase of
Winnipeg Hydro...*

a partnership arrangement, environmental studies, public consultations, guideline development by provincial and federal environmental regulators, economic studies, engineering and exploration.

Manitoba Hydro is also actively negotiating with the Tataskweyak, York Landing, War Lake and Fox Lake Cree Nations to potentially develop the 620 MW Gull hydro-electric site. Community consultations and environmental, engineering and economic studies are also continuing for Gull.

In February 2002, Manitoba Hydro submitted a formal proposal for the purchase of Winnipeg Hydro, the only other electrical utility operating in Manitoba. The purchase will benefit all Manitobans through cost savings and improved customer services for all ratepayers, and will result in an assured revenue stream for the City of Winnipeg. Under this plan, Manitoba Hydro would also proceed with building a 400,000 square foot head office facility in downtown Winnipeg. The purchase of Winnipeg Hydro by Manitoba Hydro is subject to legislative approval.

Chart 15
Manitoba Housing Starts



Source: Canada Mortgage and Housing Corporation

■ Housing

After a decline in 2000, Manitoba's new housing market rebounded in 2001. Housing starts increased 15.7%, with single-family unit starts increasing 4.8% and multiple-family starts jumping 137.3% (see Chart 15).

In 2000, Manitoba's multiple family starts fell 76.5% after the completion of a number of major multiple-unit housing projects in 1999. Multiple-unit projects accounted for only 17% of total housing starts in 2001.

Manitoba's sharp increase in housing starts was the third-strongest increase among provinces. Canada's housing starts increase last year was 7.3%. Housing starts in both Canada and Manitoba were encouraged by substantial declines in borrowing costs through 2001.

Canada Mortgage and Housing Corporation (CMHC) projects that Manitoba housing starts will decline 5.5% in 2002, slightly more than the projected overall national decline of 4.1%. CMHC expects housing starts to decline in eight of the ten provinces this year.

Manitoba's strong housing market was reflected in a significant increase in the resale market. CMHC estimates that the number of Multiple Listing Service (MLS) residential sales increased 7.8% in 2001. While CMHC projects that national MLS sales will decline in 2002, it forecasts MLS sales in Manitoba will increase by a further 1.4%. Manitoba is one of only two provinces where MLS sales are projected to increase in 2002.

■ Retail Sales

Manitoba retail sales increased 5.8% in 2001 to \$9.9 billion. This is the strongest growth in retail sales since 1997 (see Chart 16).

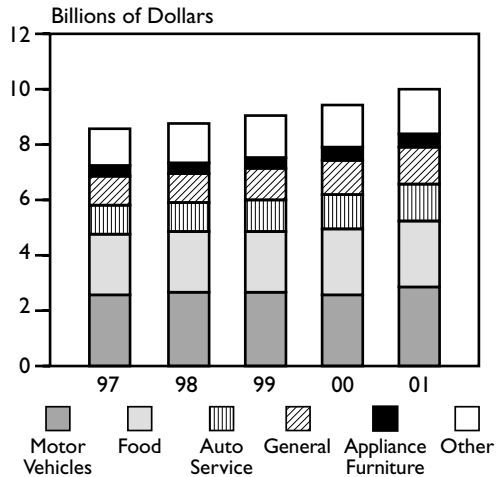
Favourable interest rates and special dealer incentives contributed to the strong growth in new automobile sales last year. Motor vehicle sales jumped 8.3% to \$2.8 billion, accounting for about 28% of total retail trade in Manitoba.

Strong growth in housing starts and move-up house sales helped drive up appliance and furniture sales by 7.3%.

The growth in retail sales in Winnipeg was stronger than retail sales growth outside of Winnipeg. Winnipeg retail sales increased 6.7%, while non-Winnipeg retail sales advanced 4.2%. Winnipeg motor vehicle dealers enjoyed a particularly strong increase in sales, as motor vehicle sales jumped 14.9% to record levels.

Manitoba households have the lowest debt-to-income ratio in Canada. Household debt, including mortgage debt, credit card debt and personal loans, equaled 51% of personal disposable income in 1999 (the

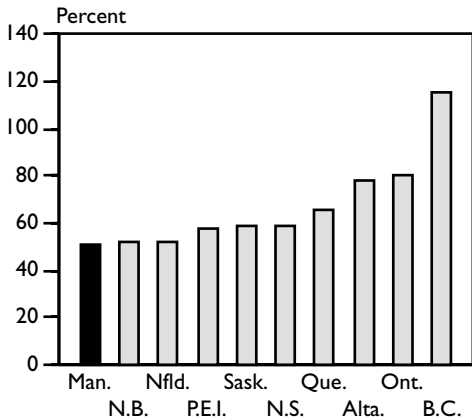
**Chart 16
Manitoba Retail Sales**



Source: Statistics Canada

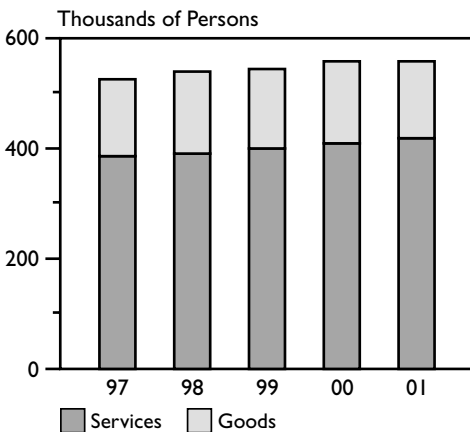
Manitoba consumers have the lowest debt-to-income ratio in Canada.

Chart 17
Household Debt as a Percentage of Personal Disposable Income, 1999



Sources: Statistics Canada and Manitoba Finance

Chart 18
Manitoba Employment



Source: Statistics Canada

latest year for which data is available). This is well below the national average of 78% (see Chart 17).

■ Tourism

Total tourism expenditures increased by 1.5% to \$1,146 million in 2001, despite the slowdown in travel that developed after September 11. Last year, airport traffic in Manitoba declined 2.2% with scheduled service declining 0.2% and charter traffic declining 30%. Highway traffic flows from the U.S. and other parts of Canada also fell. While the number of major meetings and conventions in Manitoba declined from 223 to 204, the number of delegates rose 7.0% to 51,696.

Manitoba has a history of successfully hosting major national and international events. In 2001, Manitoba hosted the International Society of Heart Research with over 1,000 delegates from over 60 countries. In 2002, the province will host the North American Indigenous Games with 7,000 athletes, coaches and officials expected to participate.

■ Labour Markets

Manitoba employment increased 0.6% in 2001, or by 3,500 jobs, lower than Canada's employment increase of 1.1%. In 2000, Manitoba posted 2.2% employment growth, the strongest annual increase since 1986 (see Chart 18).

Manitoba's part-time employment grew 2.5% last year, while full-time employment increased 0.2%. Youth (ages 15–24) employment advanced 0.8%, slightly below the national increase of 1.0%. This was the third consecutive annual increase in youth employment in Manitoba.

While employment in Manitoba continued to grow, labour force growth outstripped the increase in employment, pushing up unemployment rates slightly.

Manitoba's overall unemployment rate increased 0.1% to 5.0% last year, and remained second-lowest among provinces and well below the national rate of 7.2% (see Chart 19). Manitoba's youth unemployment rate increased to 9.7%, again the second lowest rate among provinces and well below the national rate of 12.8%.

Manitoba Finance's survey of economic forecasters shows that Manitoba's employment is projected to grow by 0.5% in 2002, the same as the national average growth. The survey also shows that the average projected unemployment rate for Manitoba in 2002 is 5.4%, up from the 2001 rate of 5.0%.

The positive developments in the provincial labour market last year continued to encourage higher levels of labour force participation. The labour force participation rate reached a new record-high level of 68.1%, up from 67.9% in 2000 and the second-highest in Canada among provinces. Manitoba's employment rate – the ratio of employed to the total working age population – also increased to a record-high level of 64.6% (see Chart 20). This was also the second-highest rate among provinces.

■ Investment

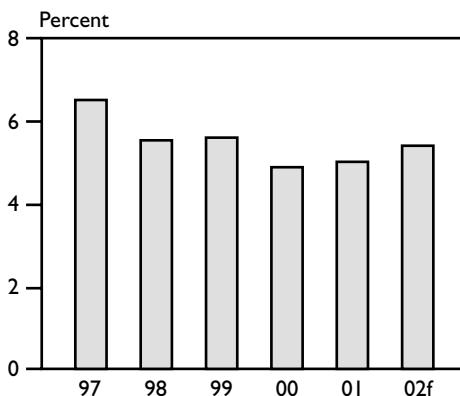
Total capital investment in Manitoba is estimated to have increased 3.0% in 2001, according to Statistics Canada's Private and Public Investment in Canada survey (PPI). The increase was the highest since 1997. At \$5.34 billion, this was the highest level of PPI ever recorded in Manitoba (see Chart 21).

Private capital investment edged up 0.4%, below the national average increase of 2.4%. Private investment accounted for 73% of total capital investment in Manitoba last year.

Public capital investment increased 10.8% in 2001, below the national average increase of 15.0%.

Utilities and health care industries recorded strong investment growth. Retail trade, and real estate, rental & leasing, reported significant declines.

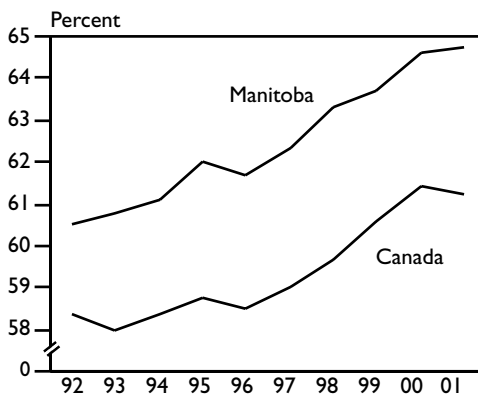
Chart 19
Manitoba Unemployment Rate



f - Forecast

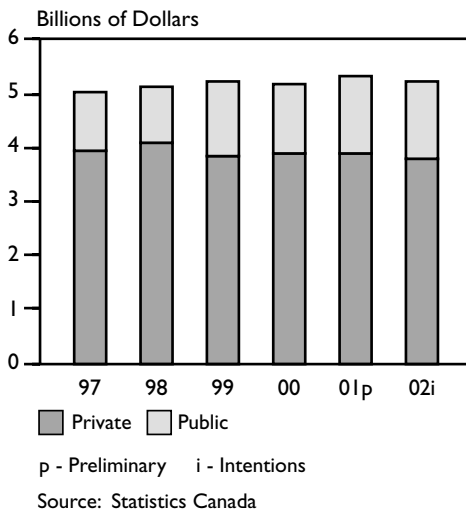
Sources: 1997-2001: Statistics Canada
2002: average of economic forecasters

Chart 20
Manitoba and Canada Employment Rate



Source: Statistics Canada

Chart 21
Manitoba Capital Investment



Investment in manufacturing, Manitoba's largest industry, declined by 7.2% after a strong 15.6% gain in 2000. 2001 manufacturing investment, while lower than 2000, was the second-best performance among provinces. Nationally, manufacturing investment declined by 18.1%.

For 2002, according to the PPI survey, total capital investment in Manitoba is expected to decline by 1.9%. Canada's capital investment is expected to decline by 1.0%. Manitoba's private capital investment is expected to decline by 2.2% while public capital investment is expected to fall 1.1%.

Several major capital investments are planned for Manitoba for 2002. Examples of some investment projects under way at this time, or planned for later this year, include:

J.R. Simplot is investing over \$110 million in the first phase of a new potato processing plant near Portage La Prairie. The first stage of the project will employ 230 staff;

Construction of the **National Research Council's (NRC) new industrial partnership facility** is targeted to begin in summer 2002. The new \$10 million facility will be built adjacent to the NRC's Institute for Biodiagnostics and will incubate start-up companies in the high-tech sector and spin-offs from the NRC, as well as from university research, and help them to become self-sustaining;

Biovail Corporation, one of the largest Canadian-owned pharmaceutical companies, has announced an \$11 million, 40,000 square foot expansion to its Steinbach plant. The addition will boost the size of the facility by about 40% and will add approximately 100 staff;

Work has begun on the \$25 million **I.H. Asper Clinical Research Institute** adjacent to the St. Boniface General Hospital Research Centre. The new 100,000 square foot research facility will help further cardiovascular care through the bridging of

research and patient care, and will provide the clinical resources necessary for the improvement of cardiovascular medicines and treatments;

The \$25 million **Functional Foods and Nutraceuticals Research Centre** will be established at SMARTpark;

Maple Leaf Distillers is undertaking a \$6.4 million expansion to expand its manufacturing and distribution capacity in Canada;

Schweitzer-Mauduit Canada will be building a new \$2.9 million flax-straw processing mill near Carman. The new plant will produce high quality flax fibre;

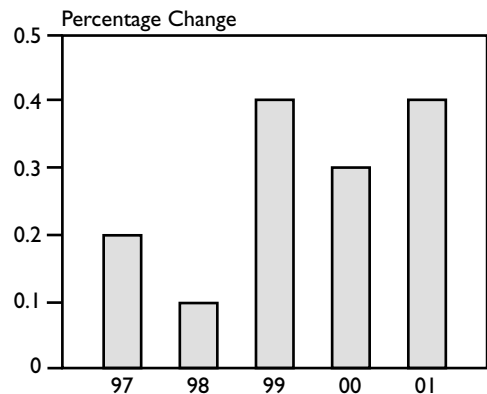
Standard Aero Limited has completed the first phase of a \$92 million multi-year investment in a repair facility designed to service the General Electric CF34 engines, one of the best-selling aircraft engines in the world. The initial facility has been completed and the second facility, a test station, is on schedule for completion in July. At full capacity the expansion is expected to add 450 employees;

Air Canada and Manitoba-based **Acsion Industries** announced a strategic partnership that will create 270 jobs and strengthen the province's growing aerospace industry. The firms have formed a new joint venture company, ACETEK Composites, which will repair composite aircraft parts using a variety of innovative technologies. This \$10 million project will establish a new repair facility in Winnipeg with an initial operating capability expected later this year.

■ Population

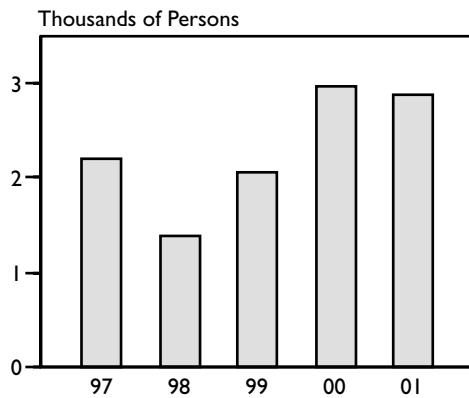
Manitoba's total population was estimated at 1,150,000 persons as of July 1, 2001. This is Manitoba's "official" population for the year. The population growth for the year was 4,000 persons, or 0.4%, fifth highest among provinces but below Canada's increase of 1.0% (see Chart 22).

Chart 22
Manitoba Population



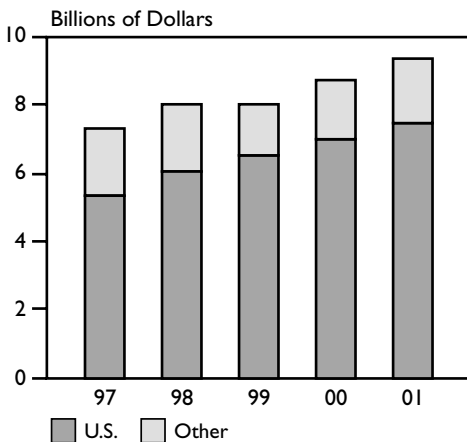
Source: Statistics Canada

Chart 23
Manitoba Net International Migration



Source: Statistics Canada

Chart 24
Manitoba Foreign Exports



Source: Statistics Canada

Manitoba's total net out-migration increased to 2,089 in 2001, up from net out-migration of 391 in 2000.

Net interprovincial out-migration totaled 4,549, as 17,502 persons came to Manitoba from other provinces and territories while 22,051 moved to other provinces and territories. Only three of Canada's ten provinces saw positive net interprovincial migration last year: Alberta, Ontario and Prince Edward Island.

Manitoba's net international immigration was 2,891, down slightly from 2,981 in 2000 (see Chart 23). Other migration, including non-permanent residents and Manitobans returning from abroad, resulted in a net decline of population during the year of 431.

■ Foreign Markets

Total foreign merchandise exports increased 7.4% in 2001 after an 8.3% increase in 2000. Exports to the U.S., which account for 80% of total merchandise exports, increased 7.3% while non-U.S. exports rose 7.9% (see Chart 24).

Merchandise exports to the U.S. have increased for 10 consecutive years. The value of these exports has increased by over 300% since 1991.

Last year, all major commodity industries posted merchandise export gains. Agriculture products, which equal 19.8% of provincial exports, increased 14.5%, while other primary commodities, which account for 7.6% of exports, grew by 10.8%.

Manufacturing exports comprise almost two-thirds of foreign commodity exports. Included in this group is a wide range of products, including transportation equipment, machinery, coins, pharmaceuticals, furniture, plastics, clothing and apparel, chemicals and machinery. Last year, manufacturing exports rose 4.2%, with about half of the 20 manufacturing industry categories posting gains.

Manitoba Foreign Exports

BY INDUSTRY	1997	1998	1999	2000	2001	2001 Share
	(Millions of Dollars)					(%)
Manufacturing						
Transportation						
Equipment	749.7	1,048.1	1,229.6	1,052.9	1,141.8	12.2
Food and Beverages	665.9	1,043.0	838.5	846.7	977.8	10.4
Primary Metals	551.5	716.0	608.1	745.8	803.6	8.6
Machinery	766.1	718.4	503.9	584.8	535.7	5.7
Wood	266.8	351.8	505.6	540.8	531.3	5.7
Chemicals	131.1	232.0	333.6	359.2	418.1	4.5
Electrical	296.5	303.7	235.7	274.7	273.9	2.9
Paper and Allied	237.4	236.2	240.9	268.6	254.9	2.7
Plastics	109.8	137.4	170.0	178.5	199.7	2.1
Furniture and Fixtures	132.1	131.1	128.0	158.2	171.5	1.8
Printing and Publishing	65.3	92.9	101.4	124.8	165.3	1.8
Clothing and Textiles	117.0	136.5	157.7	193.2	156.5	1.7
Fabricated Metals	63.8	76.6	72.0	95.1	126.0	1.3
Other Manufacturing	190.1	181.1	222.7	335.5	241.7	2.6
Total Manufacturing	4,343.2	5,404.9	5,347.6	5,758.7	5,997.9	64.1
Agriculture	2,019.2	1,775.2	1,585.3	1,615.8	1,850.0	19.8
Other Primary	789.0	710.5	893.5	1,082.6	1,243.7	13.3
Other Exports	162.6	178.0	222.9	256.8	267.6	2.9
Total Exports	\$7,313.9	\$8,068.5	\$8,049.5	\$8,713.9	\$9,359.2	100.0
BY DESTINATION						
United States	5,381.5	6,068.5	6,495.3	6,973.4	7,481.7	79.9
Japan	435.9	403.5	378.3	364.9	437.3	4.7
Mexico	93.3	141.1	105.5	126.5	164.8	1.8
China	147.6	228.3	169.9	107.5	146.9	1.6
Belgium	149.5	119.1	88.2	127.5	143.0	1.5
Hong Kong	26.9	231.8	57.1	146.7	131.6	1.4
Iran	115.7	24.8	57.3	95.3	71.4	0.8
Taiwan	47.4	64.4	33.8	55.2	52.1	0.6
United Kingdom	78.6	108.7	68.3	61.4	51.6	0.6
Australia	19.4	21.2	18.8	27.4	39.1	0.4
Other Countries	818.1	657.2	577.0	628.1	639.6	6.8
Total Exports	\$7,313.9	\$8,068.5	\$8,049.5	\$8,713.9	\$9,359.2	100.0

Notes: Export data to the United States exclude \$898.9 million for coins in 2000.

Totals may not add due to rounding.

Source: Manitoba Bureau of Statistics

The Manitoba Outlook survey of economic forecasters shows that real GDP growth in Manitoba is expected to increase to 2.0% in 2002, with further strengthening to 3.2% in 2003.

■ Manitoba Economic Outlook

Like Canada generally, Manitoba is currently expected to benefit from a moderate economic recovery in 2002. The strength of the rebound in the Manitoba economy will depend on several factors, including the pace of economic recovery in the U.S., the course of monetary policy in Canada and the degree to which business investment recovers after the retrenchment in 2001.

The Manitoba Outlook survey of economic forecasters shows that real GDP growth in Manitoba is expected to increase to 2.0% in 2002, with further strengthening to 3.2% in 2003. This compares with projected real growth for Canada of 1.8% in 2002 and 3.7% in 2003.

Manitoba's nominal GDP is projected to grow 2.1% this year and 4.9% in 2003.

Manitoba's unemployment rate is projected to increase to 5.4%, up from 5.0% in 2001. Manitoba is forecast to continue to have the second lowest unemployment rate in Canada in 2002. Employment growth is projected at 0.5% in 2002, near the national average. In 2003, Manitoba's employment growth is projected to strengthen to 1.1%.

Manitoba's consumer price inflation is expected to remain in check in 2002 and 2003. This year, Manitoba CPI is projected to increase by 1.4%, down from 2.6% CPI growth in 2001. In 2003, Manitoba CPI is expected to grow by 1.6%.

Manitoba Outlook at a Glance

	2000	2001	2002	2003
	(Percentage Change Except as Noted)			
Gross Domestic Product				
Nominal	6.4	3.3	2.1	4.9
Real	3.0	1.6	2.0	3.2
Employment	2.2	0.6	0.5	1.1
Unemployment Rate (%)	4.9	5.0	5.4	5.2
CPI	2.5	2.6	1.4	1.6

Sources: 2000 and 2001 are actual from Statistics Canada and Manitoba Bureau of Statistics; 2002 and 2003 are average of economic forecasters

THE MANITOBA ECONOMY: STRENGTH IN DIVERSITY

Manitoba has one of Canada's most diverse economies. In 2000, a study by Moody's Investor Service showed that Winnipeg had the most diverse economic structure among major metropolitan centres in Canada.

Diversity is one of Manitoba's major economic strengths. It provides stability over time, as weakness in some industries tends to be balanced by strength in others. No one industry dominates the province's economic landscape.

In fact, Statistics Canada data shows that Manitoba's economy posted the most stable growth among provinces over the past five years. Manitoba also posted the fourth-highest real GDP advance among the 10 provinces.

New developments in traditional industries have provided opportunities for Manitoba businesses to expand into new markets, and bring new products to existing markets. This continual broadening of Manitoba's economic base will provide even greater stability and certainty for Manitobans into the future.

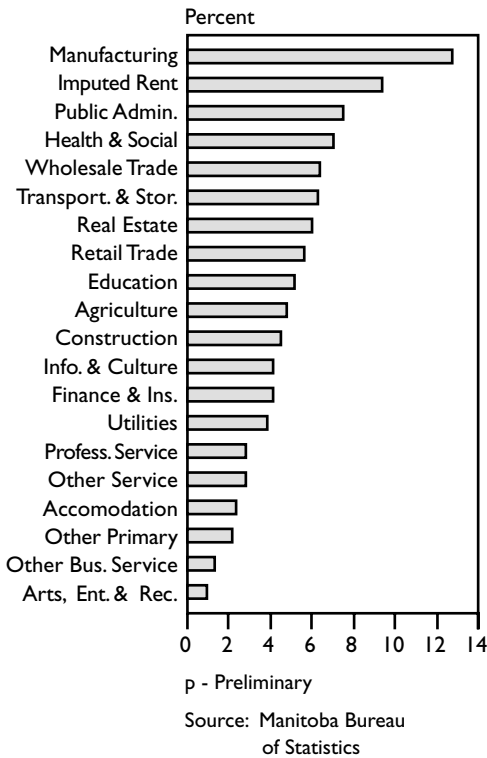
The growth in non-traditional exports is illustrated by the change in the composition of Manitoba's exports. While Manitoba's foreign commodity exports have increased dramatically over the past several years, the change in the shares of exports among major industries is even more telling. In particular, manufacturing, which in 1996 accounted for about 57% of Manitoba's exports, has grown steadily to account for 64% of foreign exports in 2001. New products contributed significantly to this growth, as exports of commodities like furniture, plastic products, pharmaceuticals, and printing and publishing goods increased dramatically.

Manitoba's economy posted the most stable growth among provinces over the past five years. Manitoba also posted the fourth-highest real GDP advance among the 10 provinces.

Composition of Manitoba Foreign Commodity Exports, 1996 & 2001

	1996	2001
	(Percent of Total)	
Manufacturing.....	57	64
Agriculture.....	28	20
Other Primary.....	9	8
Electricity	5	6
All Other.....	1	2

Chart 25
Shares of Manitoba Gross Domestic Product, 2001p



Manufacturing is Manitoba's largest sector, accounting for about 13% of total GDP. It accounted for about two-thirds of Manitoba's foreign commodity exports last year. Manitoba is home to Canada's largest furniture plant and is a major national manufacturer in aerospace equipment, clothing and processed foods. Manitoba is also North America's largest producer of intercity and urban buses.

Primary industries have historically played an important role in Manitoba's economic growth and development. Agriculture, mining and other primary industries contribute about 7% of Manitoba's GDP directly. Manitoba's agriculture sector has diversified significantly over the past several years, and now produces a wide array of crop and livestock varieties. Substantial investments in diversification into higher value-added industries have occurred over the past several years. This sector also has strong linkages to Manitoba's \$2.9 billion food processing industries.

One factor that has provided Manitoba with economic stability is its relatively large service sector. This sector includes industries such as wholesale and retail trade, finance and insurance, transportation, health care, education and real estate. Service-producing industries accounted for approximately 72% of Manitoba's total economy in 2001, higher than the Canadian level of 68%. The service sector also accounts for about 75% of Manitoba employment.

Manitoba's service sector tends to be less susceptible to fluctuations through the business cycle than most goods-producing industries. The province is home to many major service sector operations, including the head offices of two of Canada's major financial corporations, Great-West Life and Investors Group. The International Institute for Sustainable Development, the Canadian Wheat Board, CanWest Global Communications and several of Canada's major trucking companies are

headquartered in Winnipeg. Winnipeg is also a major centre for several other service industries, including other transportation and storage industries, business call centres and wholesale trade.

Research and innovation continue to play a major role in promoting the diversification of Manitoba's industries. The development and diffusion of innovations have strengthened the province, and a number of major research establishments are located in the province. Significant research and development activity is taking place in the medical and pharmaceutical sectors, aerospace and transportation equipment, machinery, business services and in the agri-foods sector.

Several new investments in 2002 will further expand Manitoba's capacity in its life sciences sector. These projects include the establishment of: a \$25 million state-of-the-art Functional Foods and Nutraceuticals Research Centre at the University of Manitoba's research and innovation technology park, SMARTpark; the \$25 million I.H. Asper Clinical Research Institute, adjacent to the St. Boniface General Hospital Research Centre; the National Research Council's (NRC) new \$10 million industrial partnership facility to be built adjacent to the NRC's Institute for Biodiagnostics; and the new \$3 million Breast Cancer Research and Diagnostic Centre, to be affiliated with the Manitoba Institute for Cell Biology.

Manufacturing Exports, Major Growth Categories, 1996-2001

	Percent Change
Chemicals.....	260
Printing & Publishing.....	255
Wood Products.....	157
Primary Metals.....	154
Fabricated Metals.....	118
Plastics.....	103
Transportation Equipment.....	80
Food & Beverages.....	79
Furniture.....	67

Manitoba is home to Canada's largest furniture plant and is a major national manufacturer in aerospace equipment, clothing and processed foods. Manitoba is also North America's largest producer of intercity and urban buses.

Manitoba Economic Statistics, 1997 to 2001

	1997	1998	1999	2000	2001
	(Millions of Dollars)				
SECTORS					
Farm Cash Receipts	3,076	2,962	2,959	3,133	3,673
Livestock	1,208	1,225	1,329	1,567	1,824
Crops	1,726	1,644	1,415	1,282	1,473
Direct Payments	142	92	216	285	376
Manufacturing Shipments	9,727	10,372	10,656	11,344	11,466
Mineral Production	1,126	967	907	1,234	1,048
Electric Power Sales	1,111	1,130	1,179	1,295	1,458
Export Sales	289	321	363	454	596
Housing Starts (no. of units)	2,612	2,895	3,133	2,560	2,963
Retail Trade	8,589	8,773	9,026	9,396	9,940
FOREIGN EXPORTS					
Total Exports	7,314	8,069	8,050	8,714	9,359
U.S.	5,382	6,068	6,495	6,973	7,482
GROSS DOMESTIC PRODUCT					
Nominal	29,826	30,881	31,777	33,801	34,914
Real	29,826	30,850	31,659	32,604	33,112
BASE RATE WAGE SETTLEMENTS (%)					
Public	1.0	1.2	2.5	2.5	2.4
Private	1.9	1.6	3.1	3.3	2.2
Total	1.1	1.4	2.5	2.6	2.3
INVESTMENT					
Total	5,039	5,152	5,237	5,181	5,337
Private	3,940	4,083	3,847	3,870	3,885
Public	1,099	1,069	1,390	1,311	1,452
Non-residential	4,231	4,287	4,368	4,323	4,455
Housing	808	866	870	858	882
POPULATION					
July 1 (000's)	1,137	1,138	1,142	1,146	1,150
LABOUR MARKET					
Labour Force (000's)	562.0	566.8	574.8	583.2	587.1
Employment (000's)	525.6	535.7	542.7	554.4	557.9
Participation Rate (%)	66.6	67.0	67.5	67.9	68.1
Unemployment Rate (%)	6.5	5.5	5.6	4.9	5.0
CONSUMER PRICE INDEX					
(Index, 1992=100)	111.6	113.0	115.2	118.1	121.2
BANKRUPTCIES					
Business	292	266	216	253	300
Farm	19	27	29	18	19
Personal	2,770	2,422	2,466	2,475	2,493

1997 1998 1999 2000 2001

(Annual Percentage Change)

9.3	-3.7	-0.1	5.9	17.2
7.7	1.4	8.4	18.0	16.4
5.4	-4.7	-14.0	-9.4	14.9
152.8	-35.2	134.6	31.7	32.0
11.3	6.6	2.7	6.5	1.1
12.4	-14.1	-6.2	36.0	-15.1
3.6	1.6	4.4	9.8	12.6
12.5	11.2	13.0	24.9	31.4
12.7	10.8	8.2	-18.3	15.7
8.4	2.1	2.9	4.1	5.8
17.6	10.3	-0.2	8.3	7.4
19.4	12.8	7.0	7.4	7.3
4.7	3.5	2.9	6.4	3.3
2.6	3.4	2.6	3.0	1.6
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
21.1	2.2	1.6	-1.1	3.0
28.3	3.6	-5.8	0.6	0.4
0.9	-2.7	30.0	-5.7	10.8
23.4	1.3	1.9	-1.0	3.1
10.4	7.1	0.5	-1.3	2.8
0.2	0.1	0.4	0.3	0.4
0.6	0.9	1.4	1.5	0.7
1.3	1.9	1.3	2.2	0.6
-	-	-	-	-
-	-	-	-	-
2.2	1.3	1.9	2.5	2.6
-0.3	-8.9	-18.8	17.1	18.6
-20.8	42.1	7.4	-37.9	5.6
0.8	-12.6	1.8	0.4	0.7

SECTORS

Farm Cash Receipts
Livestock
Crops
Direct Payments
Manufacturing Shipments
Mineral Production
Electric Power Sales
Export Sales
Housing Starts (no. of units)
Retail Trade

FOREIGN EXPORTS

Total Exports
U.S.

GROSS DOMESTIC PRODUCT

Nominal
Real

BASE RATE WAGE SETTLEMENTS (%)

Public
Private
Total

INVESTMENT

Total
Private
Public
Non-residential
Housing

POPULATION

July 1 (000's)

LABOUR MARKET

Labour Force (000's)
Employment (000's)
Participation Rate (%)
Unemployment Rate (%)

CONSUMER PRICE INDEX

(Index, 1992=100)

BANKRUPTCIES

Business
Farm
Personal

Appendix I: **RESEARCH AND INNOVATION**

Research and development... innovation... technology diffusion... these are key elements of economic growth and development.

Research and innovation improves competitiveness by enhancing the quality and affordability of products and services. In turn, increased competitiveness can lay the foundation for further productivity growth, investment, job creation, export opportunities and higher living standards.

Research also facilitates improvements to our quality of life. Advances in research promote progress in important areas such as medicine, conservation, education and agricultural production. All of these improvements directly enhance our well-being.

■ Manitoba's Current Research Environment

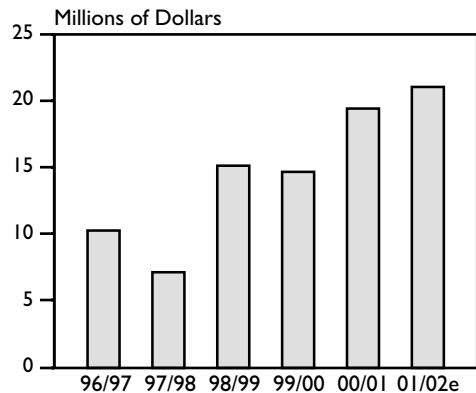
The current level of gross expenditure on research and development (R & D) in Manitoba is estimated to be equal to about 1.2% of Manitoba GDP, fourth-highest among the 10 provinces. Industry, government and universities all undertake significant R & D activity in Manitoba.

Statistics Canada estimates that, in 1999, almost 200 Manitoba businesses were involved in R & D programs across a variety of economic sectors. These firms spent \$134 million on in-house R & D, an increase of 40% from the previous year. Manitoba firms employed 1,227 personnel in research activities.

Research and innovation in Manitoba spans a broad range of industries, including engineering, medicine, pharmaceuticals, agriculture and agri-food, aerospace and other transportation equipment. The list of firms undertaking research in the province include Apotex, Cangene Corporation, Medicare Inc., Vansco Electronics, Advanta Seeds, Brett-Young Seeds, Agricore United, Monsanto and Bristol Aerospace.

One of Manitoba's widely recognized research strengths is in the fast-growing biotechnology sector. The province is home to 37 biotechnology companies; one in 10 of Canada's biotechnology companies currently undertakes research in Manitoba. Health, environmental and agricultural biotechnology are the primary research and innovation areas, with a specific focus on cardiovascular and infectious diseases, cell biology and gene technology, nutraceuticals, disease resistance and quality enhancement in cereal and oilseed crops. The province is home to 20 research centres/groups that undertake biotechnology research.

Provincial Government Expenditure on R&D, 96/97 - 01/02e



e - Estimate

Source: Statistics Canada

Manitoba is home to a number of major public research and development facilities. These include the University of Manitoba, the new \$142 million Canadian Science Centre for Human and Animal Health, the National Research Council's Institute of Biodiagnostics, the Manitoba Industrial Technology Centre, the Food Development Centre, the National Centre for Agri-Food Research in Medicine, the St. Boniface General Hospital Research Centre and the Prairie Agricultural Machinery Institute.

While the province is widely recognized for its current research facilities and programs, a number of significant new projects will further add to the province's R & D networks.

- The 110,000 square foot St. Boniface General Hospital Research Centre is currently home to dozens of major world-class research programs, including those in the cardiovascular sciences, oncology and health research on ageing. Work is now under way on the \$25 million I.H. Asper Clinical Research Institute, adjacent to the St. Boniface General Hospital Research Centre. The new 100,000 square foot research facility will help further cardiovascular care through the bridging of research and patient care, and will provide the clinical resources necessary for the improvement of cardiovascular medicines and treatments.
- The Province, in partnership with the University of Manitoba and Western Economic Diversification, is committed to the establishment of a \$25 million state-of-the-art Functional Foods and Nutraceuticals Research Centre to be located in SMARTpark at the University of Manitoba. About 90 researchers will undertake a range of research projects involving better extraction of the beneficial components of food, food quality and safety, packing and delivery and identifying opportunities for Manitoba products to be processed into higher value-added functional foods.
- In a few months, construction will begin on the National Research Council's new \$10 million facility, adjacent to the NRC's Institute for Biodiagnostics (IBD). The facility will incubate start-up companies from the high tech sector and spin-offs from the NRC, and university research, assisting them to become self-sustaining. Established in 1992, the IBD has grown to employ over 150 researchers and support staff, specializing in magnetic resonance technology, spectroscopy, informatics and biosystems research.
- Winnipeg's reputation as a centre of excellence for medical research helped secure the new (\$3 million) Breast Cancer Research and Diagnostic Centre. Supported by the federal and provincial governments in partnership with the CancerCare Manitoba Foundation, the Centre will be affiliated with the Manitoba Institute for Cell Biology. The Institute currently has over 100 researchers actively involved in scientific research.

The federal government continues to have a major presence in science and technology (S&T) funding in Canada. In Manitoba, federal funding for R & D was estimated at \$101 million for 1999/2000, about 2.8% of the federal government's total commitment to R & D nationally. This share of national R & D investment is lower than Manitoba's share of national population, and the Government of Manitoba has encouraged the federal government to boost R & D funding in the province to ameliorate the funding deficiency.

Federal spending on science activities includes natural sciences and social sciences funded by the federal government and performed by federal departments and agencies, universities, businesses or other organizations. Federal departments and agencies conducting research in Manitoba include Agriculture Canada, Environment Canada, Fisheries and Oceans and the National Research Council.

■ Provincial Support for Research and Innovation

The Province supports research and innovation both through direct spending programs, and through the Manitoba Research and Development Tax Credit.

Manitoba's direct expenditures on R & D include internal departmental spending, support to business enterprises, R & D support to universities and health care organizations, and through the activities of the Industrial Technology Centre.

In 2001/02, direct expenditure on R & D by the Provincial Government is estimated at \$20.1 million, up 8.0% from \$19.4 million in 2000/01, and significantly higher than the \$14.7 million R & D expenditure in 1999/2000.

Most of the Provincial Government's direct expenditure commitment to R & D is provided to universities. About 55% of total Provincial R & D support is for work performed by Manitoba's institutions of higher education.

A further 25% of Provincial R & D expenditure is provided to hospitals and health organizations, including the Manitoba Health Research Council.

Direct spending within Government departments accounts for about 8% of the Province's R & D expenditure. The balance, 12%, is funding for R & D performed by business enterprises, the Industrial Technology Centre and other parties.

Manitoba's Research and Development Tax Credit encourages private sector R & D activity in Manitoba. The Tax Credit Program provides a 15% non-refundable credit for qualifying R & D expenditures (see *Manitoba Research & Development Tax Credit*, page A31).

Manitoba partners with the federal government through the Manitoba Innovations Fund (MIF). The MIF was established to assist in increasing the capabilities of Manitoba universities, colleges, hospitals and not-for-profit sector to conduct scientific research and product development. Provincial expenditures are matched by federal government contributions through the Canadian Foundation for Innovation.

In 2001/02, 47 projects were funded through the MIF, including 24 projects through the Regional Partnerships Program (a co-funding arrangement with the Canadian Institutes for Health Research). The MIF program helped encourage another \$6 million from the federal government in support of research at the province's three main universities and the St. Boniface General Hospital Research Centre. The table *Manitoba Innovations Fund Projects, 2001/02* (page A33) provides a list of some of the research projects funded last year, as well as the provincial funding commitment to each project.

As well as providing support for health research through the MIF and the subcomponent program, the Regional Partnerships Program, Manitoba has implemented the Health Research Initiative. This

Program provides funding to assist Manitoba health research centres in meeting a portion of operating expenses related to health research activities. The program is an incentive based initiative with the distribution of funds tied to the amount of research revenue each Manitoba health research centre attracts from private industry and from granting agencies outside the province. Manitoba organizations that benefited from the \$3 million allocated under the provincial Health Research Initiative include CancerCare Manitoba, Children's Hospital, Health Sciences Centre, St. Boniface General Hospital Research Centre and the University of Manitoba.

The Manitoba Health Research Council (MHRC) promotes and assists basic, clinical and applied health sciences in Manitoba, and advises the Minister of Health on health matters referred to MHRC. The MHRC operates a number of funding programs, including awards to post-doctoral and graduate students, PhD dissertation awards, operating and establishment grants and bridge funding for researchers. In 2001/02, MHRC awarded \$2.6 million in research grants to health researchers, including \$866,000 for the federal-provincial Regional Partnerships Program. The Province also supports health research through its support for the Manitoba Centre for Health Policy and Evaluation (\$1.9 million).

The Government of Manitoba is also a partner with the federal government in the Networks of Centres of Excellence program. This program was established several years ago to support research at universities and hospitals in partnership with the private sector.

Manitoba's objectives in developing the Manitoba Centres of Excellence Fund (MCEF) are to attract and maintain world-class R & D activity to Manitoba, and to generate related spin-off benefits for local companies and non-profit institutions.

Manitoba was involved in several Network of Centres of Excellence research programs in 2001/02. MCEF grants of between \$10,000 and \$190,000 were provided to research programs such as the Canadian Genetic Diseases Network, the Canadian Institute for Telecommunications Research, Intelligent Sensing for Innovative Structures, Vaccines & Immunotherapeutics of Cancer & Chronic Viral Diseases (CANVAC), and the Mathematics of Information Technology and Complex Systems.

Manitoba continues to support a number of major research initiatives in the province related to agriculture. The Agri-food Research and Development Initiative (ARDI) provides funding for research and development aimed at enhancing diversification, value-added opportunities and export capabilities in the province's large agri-food sector. \$1 million was devoted to this program in 2001/02.

The Province operates a special operating agency, the Food Development Centre, to undertake R & D and related services to bring new Manitoba food products to market. Located in Portage La Prairie, the Centre provides support to clients in areas such as product development, food engineering and shelf-life testing.

Portage La Prairie is also home to the Prairie Agricultural Machinery Institute (PAMI) Manitoba testing and development station. Established over 25 years ago, PAMI is jointly sponsored by the governments of Manitoba and Saskatchewan. PAMI tests machinery for a wide range of clients, including equipment manufacturers, farm producers, commodity groups and governments. Since 1985, PAMI has been a largely self-supporting research organization through fee-for-service arrangements.

■ MANITOBA RESEARCH & DEVELOPMENT TAX CREDIT

In 1992, Manitoba introduced a 15% non-refundable Corporate Income Tax credit for scientific research and experimental development undertaken in Manitoba by a taxable corporation with a permanent establishment in Manitoba. The incentive is tied to the criteria used to determine eligibility for the federal investment tax credit on qualifying R & D expenses and supplements the federal incentive.

The federal and provincial R & D credits are broadly targeted insofar as both incentives are activity based, and apply to all sectors and industries. Both current expenditures, which include remuneration of persons engaged in research and the cost of materials, and prescribed capital expenditures, which include the cost of machinery and equipment, are eligible expenses for purposes of Manitoba R & D tax credit amounts. The tax credit is government assistance and, accordingly, reduces the R & D expense base for purposes of calculating the federal tax credit.

From the inception of the Manitoba R & D tax credit through to the 2000 taxation year (latest year for which data is available), \$62.4 million in provincial tax credits have been paid to firms conducting R & D in Manitoba.

Among industries in Manitoba, manufacturing accounts for 56% of the R & D credit recipients. Service industries account for a further 36% – over a third of these are in wholesale and retail trade. The remaining 8% of credit claimants are involved in primary industry (agriculture, mining, etc.).

Further details in respect of the Research and Development Tax Credit programs are available at <http://www.cra-adrc.gc.ca/taxcredit/sred/menu-e.html>.

Over the years, studies by various agencies have repeatedly confirmed that Canada's income tax treatment of research and development, especially when coupled with provincial incentives, is among the most generous in the world. The following table shows the after-tax cost associated with R & D current expenses for a large corporation and a small privately-owned corporation, based on 2002 income tax rates, in Manitoba.

After-Tax Cost of \$100 R & D Expenditure

	<u>Large Corporation</u>	<u>Small Private Corporation</u>
Eligible R&D expenditure	\$100.00	\$100.00
(less) Manitoba tax credit	15.00	15.00
(less) Federal tax credit	<u>17.00</u>	<u>29.75</u>
Deductible Amount	68.00	55.25
Tax Savings:		
Manitoba	11.22	2.76
Federal	<u>17.76</u>	<u>7.25</u>
Net-after tax cost	39.02	45.24

Another special operating agency of the Manitoba government is the Industrial Technology Centre (ITC). ITC provides advanced technical research and testing for a variety of clients. Capabilities of the ITC include a calibration laboratory, noise and vibration analysis, mechanical testing and administrative support for product development and related activities.

In December 2001, ITC opened the new \$1.5 million Virtual Reality Centre. The Centre provides Manitoba industry with access to the most modern visualization technology available. This technology allows businesses to realistically simulate new products before they are built. Manufacturers can use virtual technology to design any product with computer images that show how two-dimensional models will actually look and feel in a three dimensional world.

Manitoba is home to one of five TRILabs applied research laboratories. Sponsored by a private-public sectors partnership, this facility specializes in information and communications technology research. Research is based on five strategic areas: data networking, network access, network systems, photonics and wireless systems. Manitoba's research centre focuses on Internet-based technologies. Created in April 1995, it is now a major component of Manitoba's high-tech infrastructure, delivering benefits to small-and medium-sized enterprises, high-tech students, the University of Manitoba and the information and communication technology sector at large. The Department of Industry, Trade and Mines presently provides funding of \$480,000 per annum for the facility.

As well as direct sponsorship of research and innovation programs in the province, the Manitoba government has supported several capital supply programs. Several provide venture capital support to new and innovative companies and projects. These include the Manitoba Science and Technology Fund, Vision Capital Fund, Renaissance Capital Manitoba Ventures Fund. Two labour-sponsored venture capital corporations, the Crocus Investment Fund and ENSIS Growth Fund Inc., are an active source of smaller business investment capital. Levels of venture capital investment range from less than \$1 million to several millions of dollars.

In January 2002, the governments of Manitoba and Saskatchewan, together with several private and public sector organizations, announced the creation of a new \$45 million venture capital fund focusing on new biotechnology and medical investments in the two provinces.

Similar to some existing limited partnership funds, the Western Life Sciences Venture Fund will focus on bringing life sciences research and new knowledge to commercial development.

Manitoba Hydro commits approximately \$4 million per annum to a research and development program to assist in providing higher system reliability, lower electricity rates, increased safety of the system infrastructure and improved customer quality of service. Some of this research is undertaken in-house, while the company sponsors other research at universities and other external research facilities. Other key alliances are with the Canadian Electricity Association and the U.S. Electric

Manitoba Venture Capital Fund Companies

- Vision Capital Fund
- Manitoba Capital Fund
- Crocus Investment Fund
- ENSIS Growth Fund
- Manitoba Science & Technology Fund
- Renaissance Capital Manitoba Ventures Fund
- Western Life Sciences Venture Fund

Manitoba Innovations Fund Projects, 2001/02

	Funding
	(Thousands of Dollars)
Establishment of a Laboratory for Molecular Systematic Analysis Of Biodiversity	123
R & D facility for renewal of Northern Region Infrastructure	206
ICP-MS Laboratory for Trace Element Studies	252
Molecular Neuroscience Imaging Centre.....	199
Microbial Diversity and Molecular Genetics Laboratory.....	200
Mass spectrometer for high molecular weight measurements.....	152
Infrastructure to support and accelerate projects for gene sequencing.....	128
Enhancements of integrated database for research	125
regarding population health questions	
Stored Grain Ecosystem Facility for Research and Design	135
Data infrastructure for improving health and human capital.....	236
Infrastructure for research in sustainable crop production.....	200
Facility for Micro-Fabricated Software Adaptive Antennas	350
Canadian National Site Licensing Project at Universities	572
of Brandon, Manitoba and Winnipeg	
Electron microprobe.....	616
Biophysical and functional studies of the cardiovascular system.....	530
at the St. Boniface Hospital Research Centre	
Equipment for a Viral and Cell Culture Facility In Molecular Cardiology	123
at the Manitoba Institute of Cardiovascular Sciences	
CCD x-ray detector and microbeam spectrometer	158
Brandon University Solid State Liquid NMR Facility	418
Computer operated DNA sequencer and clinical.....	112
colour vision assessment laboratory, University of Winnipeg	
Equipment for Four Dimensional Multiparameter Imaging Centre	201
at University of Manitoba at St. Boniface Hospital Research Centre	
Facility for simulation and measurement of antennas and	153
microwave components	
Regional Partnerships Program funding for medical research.....	866
in Manitoba (24 projects)	
Other projects	870
Total	\$6,925

Power Research Institute. At any one time, Manitoba Hydro may be involved in as many as 100 individual research projects.

Manitoba Hydro operates the HVDC Research Centre. The Centre, established in 1981, performs innovative research and development in HVDC and power electronic technologies, instrumentation, and simulation. The Centre has become a world leader in the technology of electric power system simulation, applied power systems analysis, and related technologies.

Overall, the research activities of Manitoba Hydro help ensure the company is on the leading edge of technological developments, and keeps the company positioned as a strong and capable force in the North American market.

■ University of Manitoba

Much of Manitoba's strength in research and innovation arises from work undertaken at its universities. These institutions are providing the knowledge and the skilled labour force necessary for economic development and growth in the 21st century economy. They serve as incubators for new ideas in basic and applied research, and are a training ground for the next generation of researchers.

In 1999/2000, Statistics Canada estimates that R & D expenditures by Manitoba's higher education sector totaled \$157.5 million. Natural sciences and engineering (including health sciences) accounted for approximately three-quarters of this total, while social sciences accounted for the remainder.

The University of Manitoba is one of Canada's major research universities. It provides instruction to thousands of students annually, and has 6,000 academic and support staff. The University's reputation for outstanding research has earned it national and international recognition, and has helped it to earn over \$90 million annually in grants and contracts. Many of the research projects conducted at the University involve collaboration and partnership with other higher education institutions, private firms and governments.

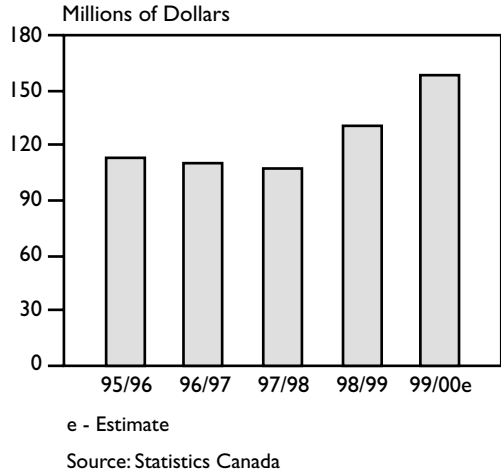
The University is home to more than 20 research centres and institutes including applied ethics, ageing, cell biology, transportation and higher education to cardiovascular sciences, health policy, earth observation science and theoretical physics. The University is home to the Freshwater Institute, Cadham Provincial Laboratories and the Agriculture Canada Research Station.

The University is an active participant in the national Networks of Centres of Excellence program. Currently, the University's researchers participate in 16 of the 22 networks created under this program, and the University is the headquarters of Intelligent Sensing for Innovative Structures Canada (ISIS), the national network focusing on 'smart' civil infrastructure. Other Networks in which the University participates include: genetic diseases, arthritis, stroke research, telecommunications research, robotics and intelligent systems, bacterial diseases, protein engineering, water research, sustainable forest management, photonic innovations, microelectronic devices and systems, automobile design and engineering, vaccines and immunotherapeutics, mathematics of information technology and health information.

With support from federal agencies and private donors, the University of Manitoba has established a number of research chairs to ensure its leadership role in areas of established excellence. The research programs of these chairs focus on such important fields as aerospace materials, infectious diseases, population health, earth materials, applied electromagnetics, archaeology, and cancer cell biology. The University's life sciences research activities are further strengthened through active partnerships with several major provincial medical research organizations, including CancerCare Manitoba, the Health Sciences Centre, St. Boniface General Hospital Research Centre, the Children's Hospital Foundation, and the Canadian Science Centre for Human and Animal Health.

SMARTpark is the research and innovation technology park located at the University of Manitoba. SMARTpark brings together industry and the University to promote R & D and the growth of knowledge-based industry. One of the

R & D Expenditures in Manitoba Higher Education 1995/96 - 1999/00e



key features of the park is its proximity and access to the University. Late in 2001, a new \$25 million Functional Foods and Nutraceuticals research facility was announced for the SMARTpark facility.

Appendix 2: STRONG COMMUNITIES IN A SUSTAINABLE ENVIRONMENT

Sustainable development involves integration of environmental concerns with the need to create economic opportunity in communities – communities that strive to provide a high quality of life while putting as much back into their surroundings as they take out. The following examples of how the Manitoba Government is working toward this complex goal are by no means comprehensive or exhaustive.

■ A Sustainable Public Sector

Mandated by Manitoba's *Sustainable Development Act*, passed in 1997, the Manitoba Government has put in motion a wide-ranging set of initiatives to get its environmental house in order. The aim is to ensure that sustainable development principles inform the everyday workings of the Government. Under the Sustainable Development Strategy, announced in June 2000 by Manitoba Conservation Minister Oscar Lathlin, the Government has introduced:

- a *Provincial Sustainable Development Code of Practice* to ensure that all Government activity takes due regard for climate change, health, water quality, and sustainability of local communities;
- a set of *Provincial Sustainable Development Financial Management Guidelines* which require departments to incorporate sustainable development objectives in all programs and initiatives; and
- *Green Procurement Guidelines* to ensure goods and services are acquired and used in an environmentally responsible way that also contributes to sustainable communities.

These processes include consultation, evaluation, and revision to ensure that Government practices keep abreast of changing conditions, needs and issues.

■ Developing a Strategic Vision with Public Participation

In addition to putting sustainable practices in place for its own operations, the Manitoba Government is responsible for public policy initiatives and monitoring to promote the environmental sustainability of our communities and our economy. This is a new area, and all jurisdictions are learning as they go along.

INDICATOR CATEGORIES

- demographics
- economic performance
- land use
- biodiversity and habitat conservation
- wildlife
- air
- water
- fish
- forests
- soil
- agriculture
- minerals
- energy
- consumption
- employment
- education
- equity and rights
- physical infrastructure
- community and culture
- governance
- health
- justice
- perceived quality of life

The Manitoba Round Table for Sustainable Development (MRSD), with input from public workshops in communities around the province during 2000, has developed and proposed to the Government a new set of sustainability indicators in 23 categories.

On the basis of these indicators, the Government is now preparing the first in a regular series of public sustainability reports for July 2005. Sustainability reporting is a tool aimed at helping Manitobans to identify long-term environmental problems and sustainable development issues as they arise, and to evaluate the effectiveness of public and private responses to such problems and issues.

Additional strategies are being developed with public participation and implemented in such areas as:

- green budgeting and finance;
- sustainable northern development;
- improved water quality, water management, and flood control;
- agriculture;
- wildlife;
- fisheries;
- climate change; and
- education for sustainable development.

“Environmental tax credits, which compensate and recognize landowners who carry out conservation practices, is one instrument that can be used to correct the distorted market structure associated with ecological goods and services. The Manitoba Climate Change Task Force applauds the government of Manitoba’s initiative to introduce an Environmentally Sensitive Areas Tax Credit.”

— the Axworthy Report

■ Getting Manitoba's Youth Involved

Manitoba's young people can contribute their input and energy toward our common future through the activities of the Manitoba Youth Round Table for Sustainable Development. MRSD has also established an annual scholarship to assist students attending an approved Manitoba post-secondary institution who pursue studies and undertake research which reflects the principles of sustainable development. This promotes the environmental agenda, while making Manitoba a better place to do R&D in this field. The Environmental Youth Corps (EYC) program provides ecologically oriented employment opportunities for youth.

■ Sustainable Communities

The Province's approach to sustainable development gives special attention to community economic needs and opportunities. One particular aim is to take an integrated view of the sustainability of Northern and Aboriginal communities. The 2002 Manitoba Budget provides \$400,000 for a new initiative in this regard – the Northern Development Strategy which includes Aboriginal Relations. Another example is the ongoing development planning exercise for communities in the region east of Lake Winnipeg.

■ A New Drinking Water Program

In response to a report at the end of 2000 from the Drinking Water Advisory Committee, a total of \$1.3 million has been allocated to the Department of Conservation for a new drinking water safety program. Its purpose is to improve the effectiveness of Provincial support for the testing of drinking water.

■ Environmentally Sensitive Areas Tax Credit

An example of innovative programming to help draw attention to the need for sustainability in agriculture is the Department of Finance's new Environmentally Sensitive Areas Tax Credit. First announced in last year's Manitoba Budget, this program offers property tax credits to agricultural landholders who meet specific sustainable land management requirements. The 2002 Budget allocates \$400,000 for this purpose, focused this year exclusively on riparian (creebank and riverbank) land management practices. This program is designed to reinforce mounting efforts in the agricultural community, by the Riparian Health Council, and by the Departments of Agriculture and Conservation, to improve the health of Manitoba's creeks and rivers. Success in this area will result in better buffering of droughts and floods, will promote wildlife habitat, and will assist in maintaining water quality standards.

■ The Protected Areas Initiative

Another example of long-term vision leading to sustained change over time is the Protected Areas Initiative. Protected areas are sites – land, freshwater, or marine – where industrial resource extraction is prohibited by regulation. Manitoba is building a “network” of protected areas based on scientific principles of ecological representation and integrity, to conserve ecosystems and help maintain the biodiversity found within the province. The network approach recognizes that public and private areas protected for various reasons can support and complement each other. Much has been done, and much remains to do.

The accompanying map shows a) existing protected areas, and b) other sites that are not yet protected but are considered Areas of Special Interest (ASI). ASIs are subject to study and community consultation with a view to their potential inclusion in the protected area network.

AREAS PROTECTED SINCE 2000

Provincial Parks

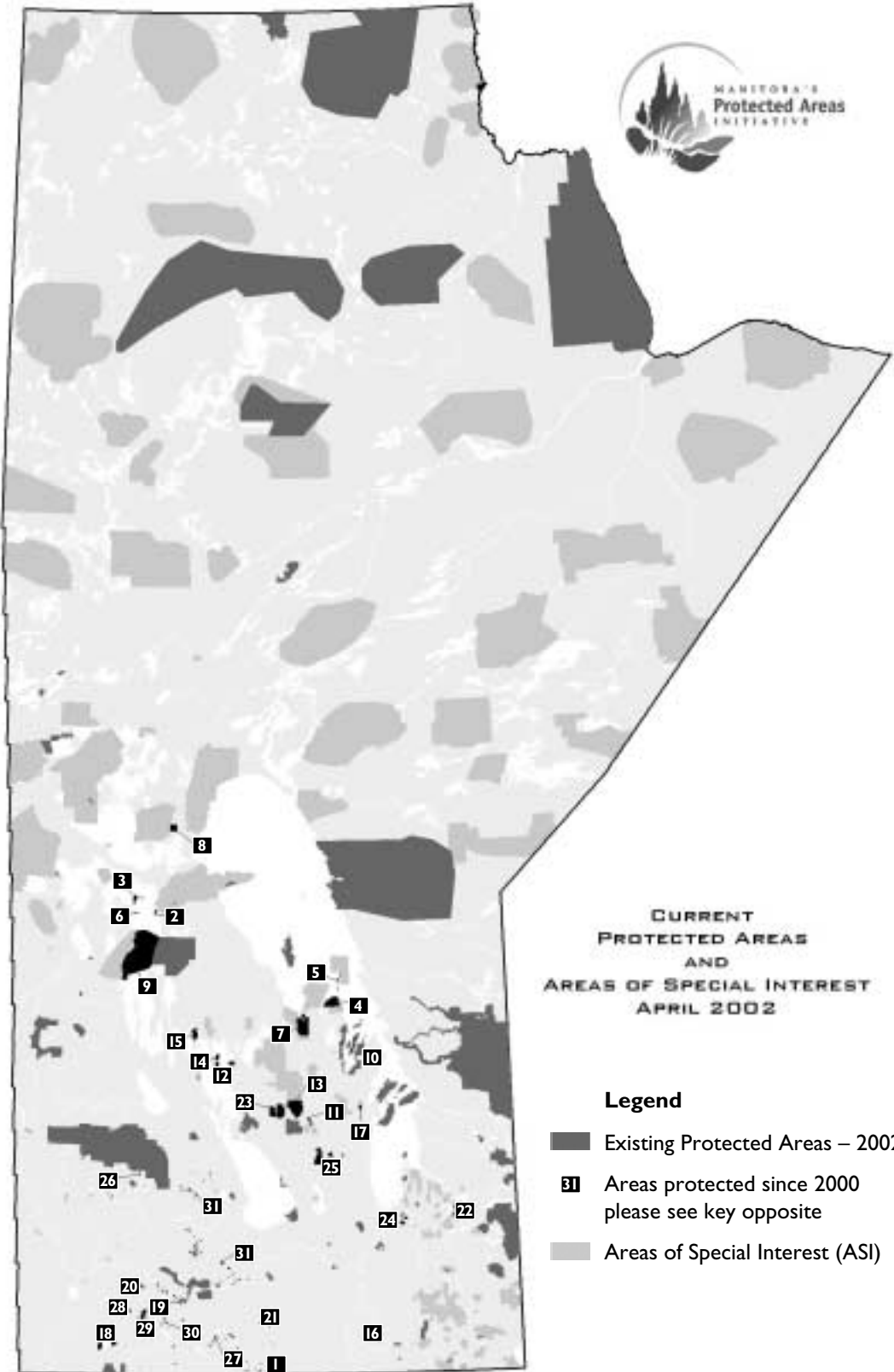
1. Pembina Valley Provincial Park

Park Reserves

2. Goose Islands Park Reserve
3. Grand Island Park Reserve
4. Kinwow Bay Park Reserve
5. Pelican Islands Park Reserve
6. Pemmican Island Park Reserve
7. Sturgeon Bay Park Reserve
8. Walter Cook Uplands Caves Park
9. Birch Island Park Reserve
10. Fisher Bay Park Reserve

Wildlife Management Areas or Portions thereof

- | | |
|------------------------------|---|
| 11. Broad Valley WMA | 25. Narcisse WMA |
| 12. Hilbre WMA | 26. Onanole WMA |
| 13. Mantagao WMA | 27. Pembina Valley WMA, Floral Unit,
Grassy Lake Unit, Marringhurst,
Mowbray Unit, Stuartville Unit,
West Derby Unit |
| 14. Peonan Point WMA | 28. Riverside WMA |
| 15. Proulx Lake WMA | 29. Souris River Bend WMA |
| 16. St Malo WMA | 30. Tiger Hills WMA.Ninette Unit |
| 17. Washow Bay WMA | 31. Whitemud Watershed WMA,
Chipping Hill Unit, Oak Leaf Unit,
Robin's Ridge Unit, Sight Hill Unit |
| 18. Whitewater Lake WMA | |
| 19. Assiniboine Corridor WMA | |
| 20. Brandon Hills WMA | |
| 21. Deerwood WMA, Miami Unit | |
| 22. Lee River WMA | |
| 23. Little Birch WMA | |
| 24. Mars Hill WMA | |



■ Funding Innovation through the Sustainable Development Innovations Fund (SDIF)

As environmental protection and restoration become important factors, innovation provides new economic opportunities, and alternative – more sustainable – ways of doing things. With a total allocation of \$3.4 million in 2002/03, the SDIF is the major mechanism through which the Manitoba Government provides funding for environmental innovation. The Fund directly supports industrial innovation; environmental education; research and innovative demonstration projects; waste and pollution prevention; and sustainable economic development and diversification for communities in various parts of Manitoba, including Aboriginal communities. Components of SDIF include the following.

- *The Waste Reduction and Pollution Prevention (WRAPP) Fund*, which is providing \$2.2 million over four years to support projects to reduce waste, prevent pollution, and promote new integrated waste-management practices. Priority areas include: organic-waste management and composting; development of integrated waste-management systems; diversion of construction and demolition wastes from landfills; and pollution prevention.
- *The Manitoba Climate Change Action Fund (MCCAF)*, which is providing \$1 million over four years to support a wide range of practical activities intended to help position Manitoba and its economy to adapt to climate change issues. These include: public education and outreach; scientific understanding about the impact of climate change and options for adaptation to it; and technological innovation and green energy alternatives.
- *Open Priority Program Funding*, which makes available \$1.6 million in 2002/03 to provide grants, usually up to \$50,000, for projects addressing such concerns as: regional waste management; northern environmental issues; sustainable agriculture; sustainable community development; ecosystem conservation; ecotourism; water quality protection and conservation; and education and awareness about all the above issues.

“Emissions trading is a key flexibility mechanism of the Kyoto Protocol, which allows developed countries to transfer emissions credits to each other. Developed countries that reduce emissions more than is required by their national target will be able to sell their excess credits to countries that find it more difficult or expensive to reduce their own emissions. Thus, emissions trading will reduce the overall cost of meeting the targets.”

— International Institute
for Sustainable Development (IISD)

Funding for the SDIF is linked to revenues generated by various Environmental Protection Taxes (EPTs) totalling about \$3 million. EPTs serve the dual function of a) raising revenue to correct or mitigate environmental damage from certain economic activities including product disposal, and b) sending corrected price signals to manufacturers, distributors and consumers. These have the effect of moving production and consumption toward more sustainable alternatives. EPTs include taxes on alcohol beverage containers and disposable diapers.

In addition, special product levies and environmental handling charges on products such as tires and non-alcoholic beverage containers are applied by the Tire Stewardship Board, the Manitoba Product Stewardship Corporation, and the Manitoba Association for Resource Recovery Corporation toward the efficient and environmentally sound disposal of these products.

■ Manitoba: Poised to Lead in a Clean-Energy Future

Global warming is the increase in the temperature of the earth's atmosphere, attributed to the build-up of greenhouse gases (primarily carbon dioxide, water vapour, methane gas, and nitrous oxide). The acceleration of this build-up is due to fossil-fuel use since the industrial revolution. The burning of carbon-based fossil fuels is a major contributor to greenhouse gas emission. Forest fires, droughts, floods, and increased climatic variability are only a few examples of the worrisome effects of global warming on the Prairies and other regions.

The World Economic Forum places Canada among the top nations of the world in environmental sustainability.¹ However, on a per capita basis, Canada is one of the larger world sources of greenhouse gases.² Various European countries, such as Denmark, have gone much farther than Canada in implementing policies to manage energy and emissions, and in developing public understanding and acceptance of such measures.

Nevertheless, the federal government has actively participated in international negotiations toward reduction of greenhouse gas emissions, including the Kyoto Protocol in 1997. The Bonn Agreement in 2001 set out details on how to measure emissions and reach national emission-reduction targets under the Kyoto Protocol. The Kyoto process would require the Canadian economy as a whole to contribute to worldwide efforts by reducing national greenhouse gas emissions to 6% below 1990 levels by 2012.

Consultations are now taking place between the federal and provincial/territorial governments – along with First Nations, the private sector, and other stakeholders – over the best ways to reach this national target and share the responsibility among regions, provinces, and economic sectors. The federal government has indicated it intends this process to culminate in formal Canadian ratification of the Kyoto Protocol. While the United States has said it does not intend to ratify the Kyoto Protocol, it is bound by an earlier United Nations framework convention to take its own effective action on climate control. This means that additional negotiation with the United States will be necessary to co-ordinate climate change and other energy measures.

1 Environmental Sustainability Index, as quoted in *The Economist*, March 16, 2002.

2 *Manitoba and Climate Change: Investing in our Future*, Report of the Manitoba Climate Change Task Force, also known as the Axworthy Report, September 2001.

Our Climate Change Strategy is conceived as a partnership between governments and public agencies at all levels: First Nations; non-governmental organizations; businesses; and researchers and educators.

In part because our leading energy provider, Manitoba Hydro, offers low-cost, clean, and renewable hydro-electric energy, our economy as a whole already relies less on fossil fuels than is the case in some other regions. Further, because there is considerable potential to expand our hydro production, we are in a good position to build our own industrial base on access to sustainable, clean hydro power. Even more important, if demand for hydro power increases significantly in a post-carbon world, we may be able to position ourselves to boost hydro exports. Finally, we are determined that Manitoba should be a leader in the development of alternative energy technologies to power an environmentally cleaner future.

The Manitoba Government has recognized the risks of climate change, as well as the important opportunities we expect for our economy due to the inevitable worldwide move toward cleaner energy. Our Province has been at the forefront in supporting the federal commitment to take national action on climate change issues, under the Kyoto Protocol and by other means. We believe it is right in principle, and in the national interest, to support a practical régime of emissions trading or other similar credits; the aim is to allow a market-mediated shift toward cleaner energy sources with a minimum of disruption, economic distortion, and inefficiency. This is a logical way for clean energy exporters such as Manitoba to receive credit for their contribution to the displacement of carbon fuels. It would serve as incentive for further investment in clean energy; it would also provide appropriate market signals to polluters to reflect in their production decisions the global costs of emissions they still create. Such an approach would have validity whether reduction targets were based on the Kyoto Protocol or on other mechanisms.

“If we do nothing now, we could find that we have to take much more urgent and damaging action at some point in the future.”

— Sir John Browne,
CEO of British Petroleum

Meanwhile, we are taking strategic action of our own to deal effectively with climate change issues and to position Manitoba for the economic changes that will result from a global shift toward cleaner energy sources.

- In 2001, we commissioned *Manitoba and Climate Change: Investing in our Future*, the report of the Manitoba Climate Change Task Force, which was chaired by Honourable Lloyd Axworthy, former federal Cabinet Minister and currently Director and CEO, Liu Centre for the Study of Global Issues, University of British Columbia. The Task Force conducted research on the issues, consulted widely with concerned Manitoba individuals and groups, and delivered 35 detailed and wide-ranging recommendations. Premier Doer has strongly supported the directions recommended by the Task Force, and the Province is using this report as a strategic road map in developing the Manitoba Climate Change Action Plan.

- We established the Manitoba Climate Change Action Fund (see above), which itself is the umbrella for government support of a wide range of research and innovation, including work on alternative energy sources, and sustainable development education.
- The Province, together with Manitoba Hydro, has established the Manitoba Climate Change Connection. This \$160,000, 18-month pilot project was a key recommendation of the Axworthy Report. Funded in part by the Climate Change Action Fund, it brings together stakeholders from across the province in a partnership to raise public awareness of climate change issues. Hosted by the Manitoba Eco-Network, the Manitoba Climate Change Connection will conduct public education and provide enquiry services for Manitobans.
- We are studying how best to assist specific emissions-intensive sectors – such as agriculture, transportation and forestry – to make a smooth, market-mediated transition to a future economy in which use of fossil fuels is generally more expensive. While Manitoba is poised to benefit from the shift to cleaner energy, success in smoothing the path for these sectors will provide added stability to the Manitoba economy as a whole.
- As part of a more explicit overall conservation mandate, Manitoba Hydro has been given an important role in positioning Manitoba to respond effectively to climate change issues. With its 1999 purchase of Centra Gas, and its prospective acquisition of Winnipeg Hydro, Manitoba Hydro is an integrated energy utility with unsurpassed expertise, experience, professionalism, and integrity. As a Crown corporation, it is also uniquely well placed to ensure that key aspects of energy policy are implemented efficiently so as to yield maximum benefits for all Manitobans.
- The fuel source at the Selkirk generating station is being switched from coal to natural gas. This will result in cleaner air and reduced greenhouse gas emissions.
- Earlier this month, Manitoba Hydro announced its new Residential Heat Pump Program. Hydro customers will be offered a low-interest loan of up to \$15,000 toward installation of a geothermal heat pump, and heat pump dealers and installers will receive training, information, and assistance in developing standards.
- Under the new Energy Development Initiative (EDI), the Government and Manitoba Hydro are seeking strengthened partnerships to promote strategic development of other alternative energy technologies, such as hydrogen and biomass. The federal government, First Nations, and local industries are all potential participants.
- We are working on new initiatives for ethanol production and use. For example, ten City of Winnipeg buses are taking part in a road test for a new Manitoba-produced ethanol-diesel fuel blend, which is expected to reduce tailpipe emission of both greenhouse gases and other respiratory irritants. If the test is successful, the fuel will become available more widely for agriculture, transport and industry.

- In January 2001, Manitoba Hydro announced a new residential Power Smart program to help Manitoba families save on their energy bills. Since that time, there have been 1,600 home energy audits conducted and over 5,600 low-interest loans approved, representing a value of \$18.8 million toward home renovations. It is estimated that 180 person-years of employment have been created as a result of this program.
- Manitoba Hydro, together with the Province, is assisting Manitobans through other new programs to ensure the sustainability of home heating. These include the R-2000 Home Program, New Home Workshops, and Home Energy Savers Workshops.

Appendix 3: INVESTING IN MANITOBA'S WATER RESOURCES

Water is fundamental to Manitobans' everyday lives. Water issues - hydro-electric energy generation, flood control, water drainage, water quality, and waste disposal - require careful attention. By investing in the management of this precious natural resource, we can invest in the future of our province, and ensure that water remains a valuable asset to Manitobans, and a beneficial part of our future.

In Budget 2002, the Government is:

- Committing a further \$40 million to the Red River Floodway. Since 1999, the Floodway has benefited from substantial improvements, including a major improvement to the reliability of the control structure. Many other flood-proofing investments have been undertaken including flood-proofing of ring dike communities, and flood-proofing of homes outside those communities.

Flood-proofing is critical, but it is also expensive. The Government continues to press the federal government to increase its commitment to assist in extending and expanding Manitoba's flood-proofing infrastructure.

- Continuing to address the need to secure Manitoba's water resources by opposing the Devils Lake and Garrison Diversion water projects.
- Investing in the province's future by undertaking significant infrastructure projects related to watershed management and drainage, water quality and supply, waste management and flood management. These improve both the quality of life for Manitobans, and also increase security. An illustrative list of capital projects, *Water-Related Infrastructure Projects*, follows.

Many of the listed projects were committed under the first year of the six-year, \$180 million Canada/Manitoba Infrastructure Program. A second round of Infrastructure Program project approvals will be announced shortly, and will again target significant funding from federal, provincial and local governments to improving water quality and waste water systems, particularly in Manitoba's rural and northern communities.

Water-Related Infrastructure Commitments

Thousands of Dollars

COUNT	CATEGORY	PROJECT COST	PROVINCIAL CONTRIBUTIONS	PROVINCIAL PERCENT
4	Feasibility studies	\$199.7	\$99.9	50.0%
33	Water supply & wells	\$42,494.8	\$12,457.7	29.3%
36	Water treatment plants	\$21,498.2	\$10,004.3	46.5%
26	Water & sewer systems	\$33,549.7	\$20,892.8	62.3%
7	Lift Stations	\$2,298.8	\$1,515.6	65.9%
44	Other waste management	\$24,156.9	\$9,052.1	37.5%
10	Drainage & Flood control	\$117,707.5	\$72,405.8	61.5%
160	TOTAL WATER-RELATED	\$241,905.6	\$126,428.2	52.3%

Selected Water-Related Infrastructure Projects Committed since 2000

PROPONENT

PROJECT TITLE

Feasibility Studies

Brokenhead, RM of	F.S. for a Municipal Water and Sewer System
Snow Lake, Town of	Water Supply System Feasibility Study
Souris, Town of	Water Treatment Plant Feasibility Study
Leaf Rapids, Town of	Water & Sewer Infrastructure Feasibility Study

Water Supply Projects (including wells)

Grey, RM of	Regional Water Supply - Haywood
Pembina Valley Water Co-Op	Water Distribution Lines - Haywood
Emerson, Town of	Waterline renewals
Somerset, Village of	Watermain replacement
Stanley, RM of	Corridor Water Extension
Brandon, City of	Ninth Street Reservoir Water Supply Line
Hamiota, Town of	Waterline renewal
Carberry, Town of	Water Pumphouse Upgrade
Cartier, RM of	Water Supply Pipeline - Elie SE & Sacotach
Cartier, RM of	Regional Water Supply Pipeline-Lido Plage to Springstein
Daly, RM of	Water Supply Pipeline-West Side Bradwardine
Dufferin, RM of	Water Supply Pipeline - PuraPork-Roland
Dufferin, RM of	Water Supply Pipeline
Dufferin, RM of	Water Supply Pipeline & Services
Kelsey, RM of, Phase II	Ph. II - Water Supply Pipeline
Kelsey, RM of, Phase I	Water Supply & Rural Water Pipeline
Macdonald, RM of	Water Supply Upgrade (SCADA & Reservoir already done)
Montcalm, RM of	Water Supply Pipeline
Portage La Prairie, City of	Water Supply Feeder mains
Portage La Prairie, City of	Water Supply Upgrading
Portage La Prairie, RM of	Water Supply Pipeline - Poplar Point
Portage La Prairie, City of	Water Supply Upgrade (Reservoir & Pump)
Portage La Prairie, RM of	2000 Water Supply Pipelines-Poplar Point
Portage La Prairie, RM of	Water Supply Pipeline Extension (Burnside-southport extension.)

Ritchot, RM of	Water Supply Pipeline Red River Drive
Rosedale, RM of	Water Supply Pipeline
Souris, Town of	Water Supply Upgrading
Souris, Town of	Water Supply Pipeline
Stanley, RM of	Reservoir and Water Supply Pipeline - Reinfeld
Stanley, RM of	Watermains & Service Connection
Victoria, RM of	Watermain Renewal & LS Upgrading - Holland
Wallace, RM of	Rural Water Pipeline F.S.
Taché, RM of	Decommissioning/Sealing Wells

Water Treatment Projects

Benito, Village of	Water Plant Upgrades
Dauphin, City of	Chlorination/Dechlorination
Rosburn, Town of	Improving Water Quality
Woodlands, RM of	Village of Woodlands Water Improvement
Cormorant, Village of	Water Treatment Plant Upgrade
Lac Du Bonnet, Town of	Water Treatment Plant Upgrade
Carman, Town of	Water Treatment Plant Filter/Media
Victoria, RM of	Holland Water Treatment Plant
Grey, RM of	Elm Creek Water Treatment Plant Upgrading RO Replacement
Benito, Village of	Water Treatment Plant Upgrading
Blanshard, RM of	Water Treatment Plant upgrading
Bowsman, Village of	Water Treatment Plant Upgrading
Deloraine, Town of	Water Treatment Plant Upgrading (Pressure System)
Deloraine, Town of	Water Treatment Plant Upgrading
Lac Du Bonnet, Town of	Functional Design of Water Treatment Plant
Lac Du Bonnet, Town of	Water Treatment Plant Upgrading
Manitou, Town of	Water Treatment Plant Upgrading
Mccreary, Village of	Water Treatment Plant Upgrading
Notre Dame De Lourdes, Village of	Water Treatment Plant Upgrading (Emergency Standby Pumping Unit)
Pilot Mound, Town of	Water Treatment Plant Upgrading
Portage La Prairie, City of	Water Treatment Plant Upgrading
Roblin, Town of	Water Treatment Plant Upgrading
Rosedale, RM of	Water Treatment Plant Upgrading
Rosburn, Town of	Water Treatment Plant Upgrading

Shellmouth-Boulton, RM of	Inglis Water Treatment Plant Upgrade
Shellmouth-Boulton, RM of	Ph. III Water Treatment Plant Upgrading - Inglis
Shellmouth-Boulton, RM of	Water Treatment Plant Upgrading-Phase IV - Increase Pump Capacity
Ste. Rose Du Lac, Town of	Water Treatment Plant Upgrading
Strathclair, RM of	Water Treatment Plant Upgrading (Strathclair)
Strathcona, RM of	Belmont Water Treatment Upgrading
Swan River, Town of	Functional Design for Water Treatment Plant
Swan River, Town of	Water Treatment Plant Upgrading and Reservoir Expansion
Thompson, RM of	Water Treatment Plant Upgrading
Virden, Town of	Water Treatment Upgrading
Winkler, Town of	Water Treatment Plant Clarifier Upgrade
Winnipegosis, Village of	Water Treatment Plant Upgrading

Water & Sewer System Projects

Rockwood, RM of	Balmoral Sewer & Water
Morris, RM of	Sperling Sewer & Water
Morris, Town of	Water & Wastewater Renewal
Whitehead, RM of	LUD Alexander Water & Sewer System
Neepawa, Town of	Sewer & Water Upgrades
Lansdowne, RM of	Arden Water & Sewer
Russell, Town of	Expansion of Sewer & Water
Park - North, RM of	San Clara Water & Sewer
Swan River, Town of	Water & Sewer Infrastructure
East St. Paul, RM of	Sewer & Water Infrastructure Enhancement
Lynn Lake, Town of	Water Supply & Treatment System
Duck Bay Community Council	Water & Sewer Lines Upgrade
Camperville Com. Council	Water & Sewer Lines Upgrade
The Pas, Town of	Water Distribution/Collection
Richot, RM of	Ritchot Regional Water System (St. Adolphe/Ile des Chênes)
Brokenhead, RM of	Brokenhead/Tyndall/ Garson Water Sewer
Alexander, RM of	Water & Sewer Infrastructure Upgrade - Phase I
Beausejour, Town of	Water & Sewer Extensions
Birtle, RM of	Upgrading of Low Pressure System in Foxwarren
Headingley, RM of	Sewage Treatment Plant and Watermain Upgrading
Headingley, RM of	Water & Sewer Extension to Empire/Strathboine/Roblin

Morris, RM of	Sperling Water & Sewer System- Res.,Pumphouse,Lagoon, LPS
Rivers, Town of	Lagoon FS, Water Treatment Plant Upgrade & Water Station, Water & Sewer Main Upgrade.
Springfield, RM of	Water & Sewer FS (Anola, Dugald & Oakbank)
North Norfolk, RM of	Townley Street Underground Service
North Norfolk, RM of	Memory Lane Underground Service

Lift Station Projects

Killarney, Town of	Mountain Ave. Lift Station
Flin Flon, City of	Lift Station Replacement
Kelsey, RM of	LUD of Cranberry Portage - Lift Stations
Hanover, RM of/Niverville, Town of	Industrial Park Infrastructure Upgrade
Coldwell, RM of	Lift Station Upgrading (Lundar)
Emerson, Town of	Lift Station Upgrading
Stuartburn, RM of	Vita - Lift Station and Forcemain Replacement

Other Waste Management Projects

Harrison, RM of	Water, Sewer & Lagoon Expansion- Wastewater Stabilization Pond
Whitemouth, RM of	Seven Sisters Sewer & Lagoon Expansion
Taché, RM of	Leachate Lift & Pipeline to Lorette Lagoon
De Salaberry, RM of	St. Malo Wastewater Stabilization Lagoon
Steinbach, City of	Wastewater Sewer Expansion
Plum Coulee, Village of	Wastewater Lagoon Expansion
Morden, Town of	Waste Treatment Upgrade & Expansion
Winkler, Town of	Wastewater Lagoon Expansion
Crystal City/Pilot Mound/ Louise, RM of	Joint Municipal Solid Waste Management Facility
Brandon, City of	Cell 3 B Sludge Holding Cell
Pipestone, RM of	Reston Lagoon
Boissevain, Town of	Replacement of Sewer & Sewer Lift Stations
Elton, RM of	Forrest Low-Pressure Sewer System & Lagoon
Cartier, RM of	Springstein Wastewater Pond and Forcemain
Ochre River, RM of	Lagoon - Renewal
Mccreary, Village of	Sewer System Renewal
Ste. Rose Du Lac, Town of	Water & Solid Waste Management
Mountain, RM of	LUD Birch River Gravity Sewer System

Minitonas, Town of	Sewage Disposal Upgrade
Teulon, Town of	Wastewater Lagoon Dyke Stabilization
Binscarth, Village of	F.S. of the Sewage Lagoon
Bowsman, Village of	Bowsman Sewage Lagoon FS
Brandon, City of	Wastewater Treatment Upgrade
Carman, Town of	Sludge Drying Beds
Cartier, RM of	Wastewater Stabilization Pond - Springstein
East St. Paul, RM of	Sewermain Extensions Hoddinott & Sperring Road
Elton, RM of	Sewage Lagoon FS (Forrest)
Erickson, Town of	Engineering Services for a Sewage Lagoon & Wetlands FS
Harrison, RM of	Sewage Lagoon FS (Sandy Lake)
Lansdowne, RM of	Arden Sewage Lagoon FS
Manitou, Town of	Sewerline Renewals Edith St.
Miniota, RM of	Miniota Sewage Lagoon FS
Morris, RM of	Sperling Sewage Lagoon FS
Pipestone, RM of	FS of the Sewage Lagoon - Reston
Pipestone, RM of	FS of the Sewage Lagoon - Reston
Portage La Prairie, RM of	F.S. of the Poplar Point Sewage Lagoon
Powerview, Village of	Sewermain Extensions & Lift Station
Roland, RM of	Roland Sewage Lagoon FS
Shoal Lake, RM of	Oakburn Sewage Lagoon FS
Shoal Lake, Town of	Lagoon Effluent Diversion
Souris, Town of	Sewage Treatment Plant Upgrading
Strathclair, RM of	Sewage Lagoon FS (Strathclair)
Taché, RM of	Lorette Wastewater Stabilization Pond
West St. Paul, RM of	Engineering Services for a Regional Sewage Facility
Whitehead, RM of	Alexander Sewage Lagoon FS

Drainage & Flood Control Projects

Montcalm, RM of	St. Joseph Drain Tile Construction
Province of Manitoba	Drainage & Capital Maintenance Program
Cooks Creek Conservation/ Springfield, RM	Wetland for Oakbank Lagoon Effluent
Province of Manitoba - Conservation	Red River Floodway - Notches Project
Red River Valley - Canada/MB Partnership	1,600 Homes & Businesses: Phase II Claims only
Winnipeg, City of	Individual Homes & Businesses: Phase II Claims only
Red River Valley - Canada/Manitoba Partnership	Community Ring Dykes for 14 Communities, Phase II only
Red River Valley - Canada/Manitoba Partnership	5 Town Dykes Phase II only
Province of Manitoba	Water Capital Allocations
Province of Manitoba	Waterway Maintenance (Water Branch)