
GROWING THE RURAL ECONOMY

Final Report

Action Committee on the Rural Economy

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Action Committee on the Rural Economy
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SECTION 1 INTRODUCTION AND BACKGROUND

The Action Committee on the Rural Economy (ACRE), a diverse industry/citizen committee that represents numerous rural interests, fulfilled a promise made in the December 1999 Throne Speech. ACRE's mandate was to act as a catalyst for exploring and generating innovative ideas for the government and for industry that will address the challenges and the opportunities for sustainable rural economic development that may emerge from the changes occurring in rural Saskatchewan.

By July 2001, it was clear that members of ACRE would need to consider radical policy recommendations to promote the substantial change needed to revitalize the rural economy. To understand the magnitude of the change involved, Doug Elliott, publisher of *Sask Trends Monitor* and Ken Perlich of *ECONEX* Consulting were contracted to evaluate the amount of investment and employment needed to reverse the fortunes of rural Saskatchewan.

The goal of the research was the development of a scenario that would reverse the population and employment decline in rural Saskatchewan over the next twenty years. An outline of what will be called the "growth strategy" in this report was presented to the subcommittees of ACRE and other interested groups in the Fall of 2001.

This report is a formal record of the research underlying the growth strategy including modifications that were made in the consultations with ACRE members. The presentation that was used for these consultations is attached to this report as an Appendix.

Since the original research was done, updated data became available for several of the key economic measures and the more recent information is used in this report. Consequently, some of the figures differ slightly from those presented to ACRE committee members. In particular:

- an additional year of employment data were released;
- two additional years of GDP data by industry were released; and
- an additional year of capital investment data was released and revisions to the previously released data were made.

Subsequent to the series of discussions with ACRE members, the strategy was described to S.N. Kulshreshtha of the Department of Agricultural Economics at the University of Saskatchewan. Dr. Kulshreshtha was asked to review and critique the assumptions and methodology embodied in the scenario and make comments on its soundness. Concerns raised by Dr. Kulshreshtha are included in this report where applicable. For a more detailed critique, however, the reader is encouraged to read Dr. Kulshreshtha's full report.

Report Organization

Section 2 provides a brief overview of recent economic and demographic trends in rural Saskatchewan. These trends are extrapolated into the future to develop a "status quo" scenario – a description of what rural Saskatchewan could look like if present trends continue.

In Section 3, the methodology for determining the growth strategy is described. The current size of the rural economy is estimated and targets are set for each of four industry groupings that make up the rural economy. This section then provides a calculation of the labour and capital requirements for each of the four industry groups if their target growth rates are to be achieved.

Section 4 summarizes Section 2 by comparing the key features of the growth strategy scenario with the status quo scenario.

One of the fundamental questions that arise from the scenario is whether or not the target growth rates are achievable. Section 5 explores a number of specific industry projects/developments to help determine if the target growth rates were too high to be achievable.

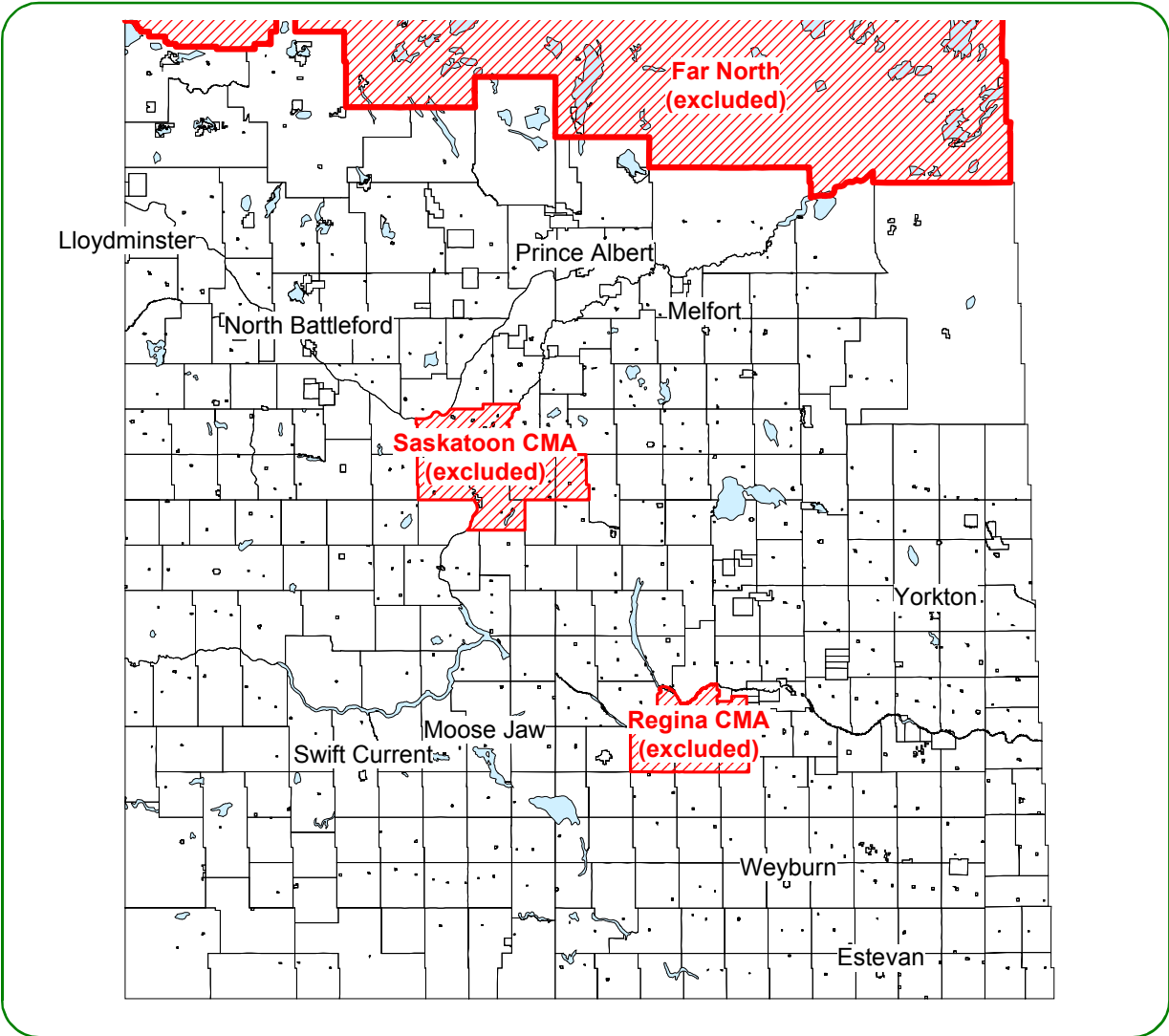
Section 6 contains a qualitative discussion of some of the findings of the research.

Definitions

The ACRE definition of "rural" Saskatchewan, that is, the southern part of the province outside the Census Metropolitan Areas of Regina and Saskatoon, is used in this analysis (see Figure 1.1). There is a general lack of data available for the "Far North" so this region sometimes had to be included in "rural" Saskatchewan in much of the analysis that follows¹.

¹ The Kulshreshtha study was critical of the definition of "rural" used in the strategy, both because of the inclusion of the cities of Moose Jaw and Prince Albert, and because of the inclusion of the Far North in some of the data.

Figure 1.2 Areas Included in Rural Saskatchewan



SECTION 2 ECONOMIC AND DEMOGRAPHIC TRENDS IN RURAL SASKATCHEWAN

This section contains descriptive information about current trends in rural Saskatchewan, developing a "status quo" scenario for the future.

2.1 Population

From a very long perspective and with the narrowest definition of "rural", the rural population in Saskatchewan has been declining for most of the past seventy years.

The Statistics Canada census measures the population actually living on farms in Saskatchewan. The results are shown in Table 2.1 and graphically in Figure 2.1. The non-farm population first exceeded the farm population in the 1951 Census. Except for a short period in the late 1960s, the trend is consistent; over time there are fewer people living on farms and more living in villages, towns, and cities. By 1996, 15% of the provincial population lived on farms compared with 20% in 1986 and 41% in 1956.

Table 2.1 Farm and Non-Farm Population, Saskatchewan

	Census population	Farm population	Non-farm population
1931	921,785	564,012	357,773
1941	895,992	514,677	381,315
1951	831,728	399,473	432,255
1956	880,665	362,231	518,434
1961	925,181	305,740	619,441
1966	955,344	281,089	674,255
1971	926,240	305,415	620,825
1976	921,325	202,710	718,610
1981	968,313	217,835	750,478
1986	1,009,610	199,020	810,590
1991	988,928	159,290	829,638
1996	990,237	145,560	844,677
2001	978,933	n/a	n/a

Figure 2.1 Farm and Non-Farm Population in Saskatchewan, 1931 to 1996

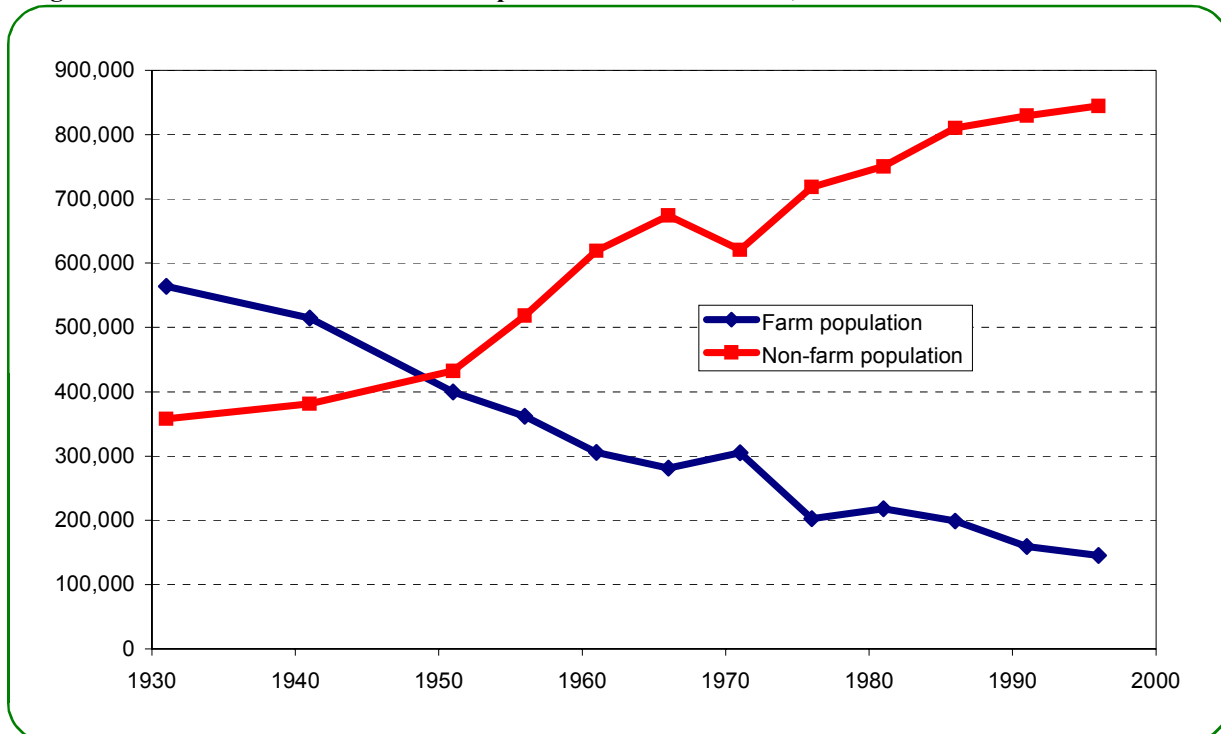


Table 2.2 Farm and Non-Farm Population, Saskatchewan

	Provincial total	Non-Rural				Rural
		Regina CMA	Saskatoon CMA	Far North (CD18)	Total	
1981	968,313	173,226	176,244	25,410	374,880	593,433
1986	1,009,610	186,521	201,686	25,234	413,441	596,169
1991	988,928	191,692	210,949	26,735	429,376	559,552
1996	990,237	193,652	219,056	31,104	443,812	546,425
2001	978,933	192,800	225,927	32,029	450,756	528,177
Change from 1981 to 2001	1.1%	11.3%	28.2%	26.0%	20.2%	-11.0%

Rural Saskatchewan is more than farming, however, as information later in this section will amply demonstrate.

Using the broader ACRE definition of "rural", the rural population in Saskatchewan has declined in the last two decades, but not as quickly as the farm population. Table 2.2 shows that, from 1981 to 2001, the rural population dropped by 11% from 593,433 to 528,177. The population in the urban/north increased by 20% over the same period. The rural population, as defined by ACRE, still represents a bare majority (54%) of the provincial population.

Figure 2.2 Rural and Urban/North Population, 1981 to 2001

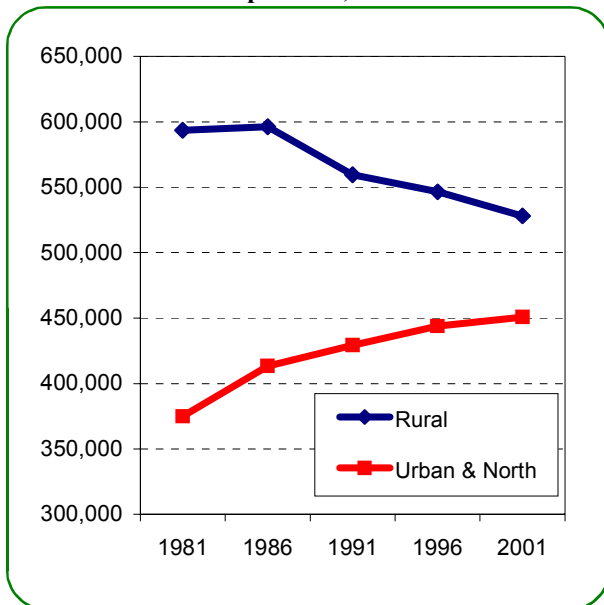
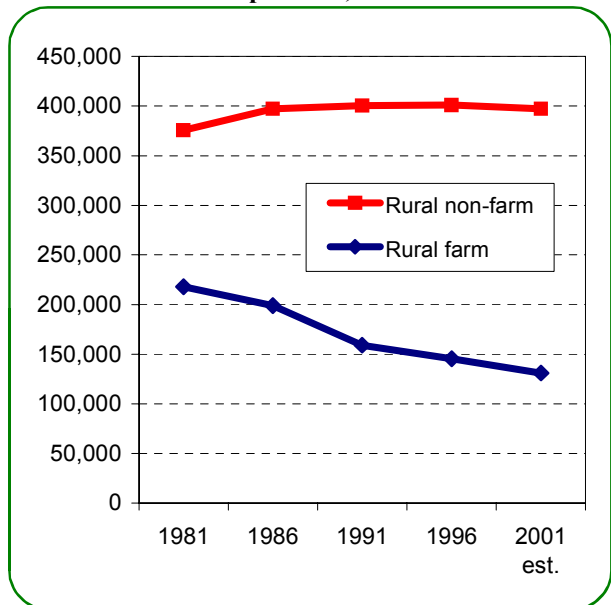


Figure 2.3 Rural Farm and Non-Farm Population, 1981 to 2001



Data in Tables 2.1 and 2.2 can be combined to show that all of the decline in the rural population is attributable to the drop in the farm population. Using an estimate of the 2001 farm population, Figure 2.3 shows that the rural non-farm population has been steady near 400,000 persons from 1986 to 2001.

In summary, then,

- the provincial population is becoming more concentrated in the large urban centres of Regina and Saskatoon, and
- the population outside Regina and Saskatoon is becoming more concentrated in urban centres rather than on the farm.

The driving force for this change is obvious even if the causes are a subject of debate. There are far fewer farms in Saskatchewan than there were even a decade ago.

2.2 Number of Farms

The Statistics Canada Census of Agriculture provides a count of the number of farm operations in the province. A "farm" is defined as an operation that produces agricultural products for sale – the products can include greenhouse and nursery products as well as the usual grain and livestock products².

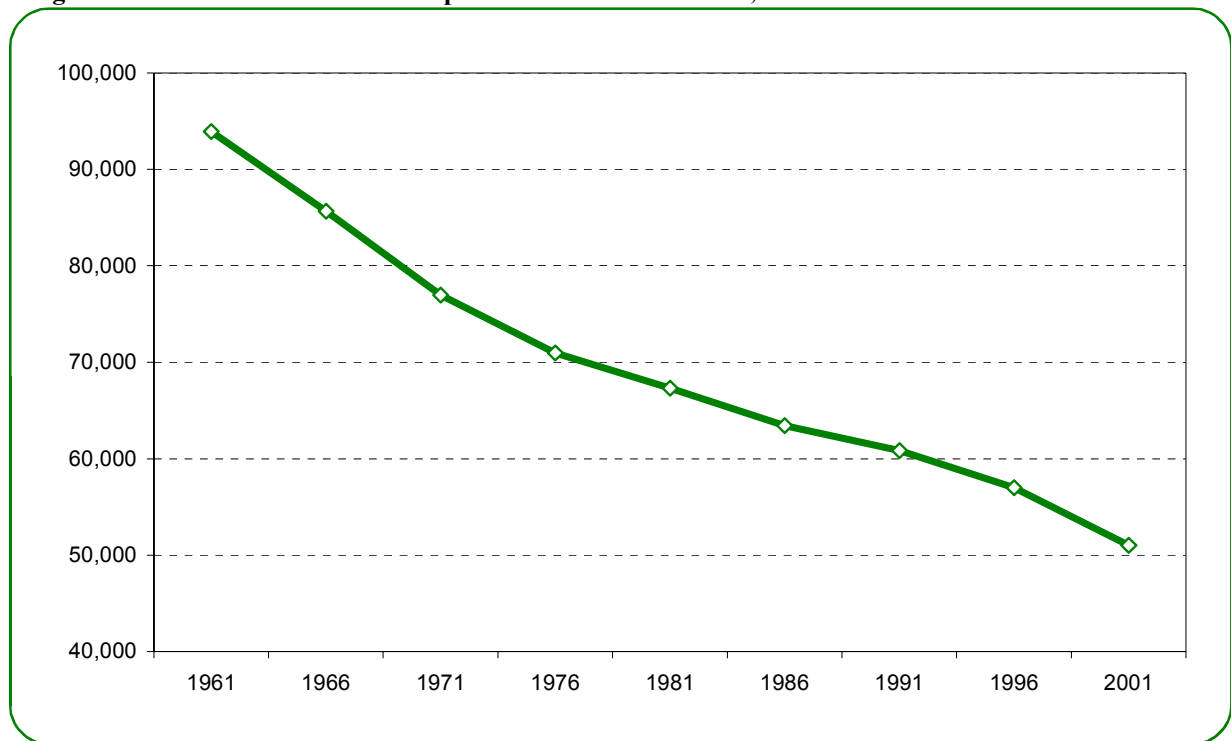
This is a broader definition of "farm" than many people would use. Eliminating farms with gross receipts of at least \$2,500, for example, reduces the number in 2001 from 50,998 to 48,990.

Eliminating those with gross receipts under \$10,000 lowers the count to 44,400.

Table 2.3 Number of Farm Operations in Saskatchewan

Census year	Number of farm operations	Change from previous census
1961	93,924	...
1966	85,686	-8.8%
1971	76,970	-10.2%
1976	70,958	-7.8%
1981	67,318	-5.1%
1986	63,431	-5.8%
1991	60,840	-4.1%
1996	56,995	-6.3%
2001	50,998	-10.5%

Figure 2.4 Number of Farm Operations in Saskatchewan, 1961 to 2001



² The definition has changed over time. Prior to 1991 there was a dollar value cutoff - \$250 per year in 1986, for example. Commercial hatcheries and Christmas tree farms were added in 1996. Prior to 1971 there was a one-acre threshold on the size of the land farmed

The number of farm operations has been declining on a more-or-less steady basis for the last forty years, from 93,924 in 1961 to 50,998 in 2001. In percentage terms, the largest declines occurred during the 1960s and the 1990s.

The farm population has declined more quickly than the number of farms because farm families, like other families, tend to be smaller than they used to be. In 1996, there were 2½ persons per farm operation compared with four persons per farm in 1971. The decline in the rural farm population is, in fact, a simple consequence of fewer farms and smaller families. Each trend contributes equally to the decline in the size of the farm population.

2.3 Employment

Employment trends in rural Saskatchewan are an important tool for understanding the rural economy. Later in this report, the data will also be used to help estimate the size of the rural economy. Employment is also one of the keys in the strategy for growing the rural economy.

Statistics Canada's monthly Labour Force Survey (LFS) provide data on employment in rural Saskatchewan although the data from this survey necessarily includes the Far North as part of the "rural" population³. The LFS has consistent industry-level employment data back to 1987 using the North American Industry Classification System (NAICS).

Industry level data from the LFS needs to be interpreted with caution because the survey measures the industry of the respondent's "main" job. The technical definition of main job is the job at which the respondent "usually" spends the most hours in the week prior to the survey. The concept may not work well for farmers whose usual hours of work are difficult to estimate. As well, the location of the person's residence rather than the location of the job is used in the LFS. Rural employment activity will be understated to the extent that persons living in Regina and Saskatoon work outside their respective CMAs and overstated to the extent that rural people work in the cities. Both of these factors will be relatively small.

Table 2.4 shows employment in rural and northern Saskatchewan compared with employment in Regina and Saskatoon. Tables 2.5 and 2.6 break down the total rural employment figure into industry groups.

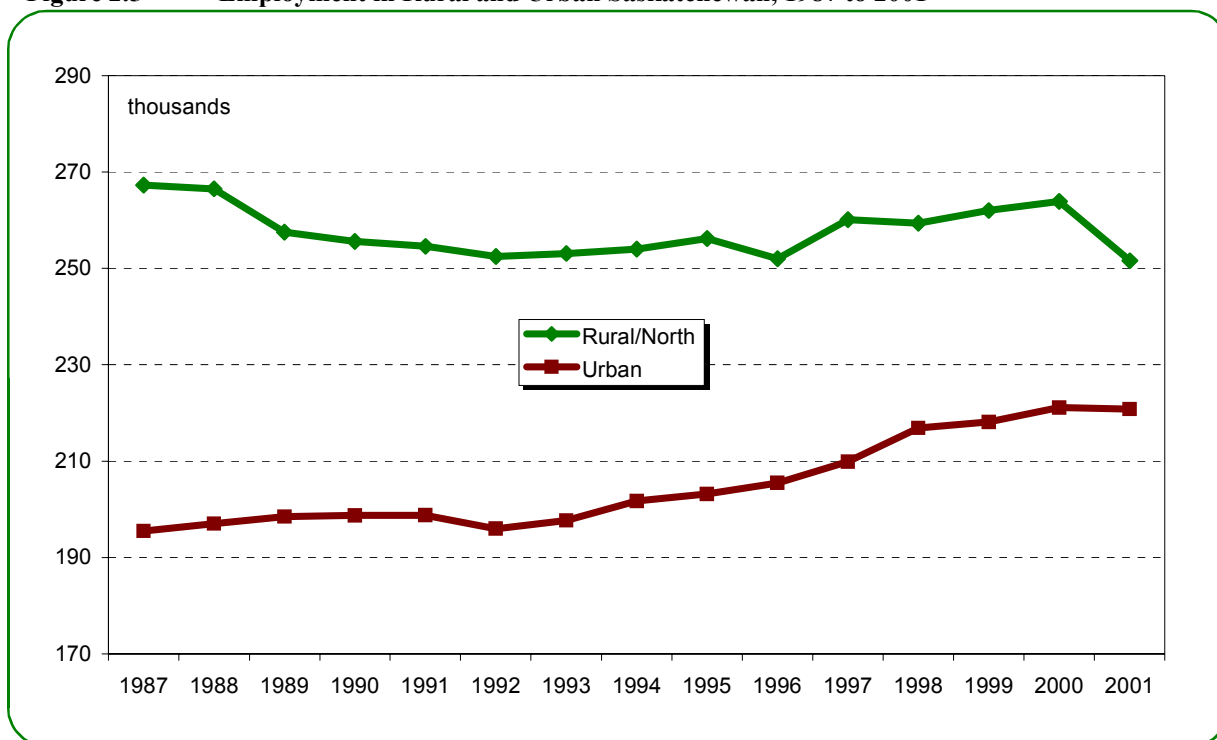
In the mid 1980s, rural/northern employment of 267,000 made up 58% of the total of 463,000 in the province. Since then rural employment has fluctuated near 260,000 persons while urban employment has grown so that, by 2001, rural employment represented 53% of total employment.

Table 2.4 Employment in Rural and Urban Saskatchewan

	Annual averages in thousands			Percent rural
	Total	Urban	Rural/ Northern	
1987	462.8	195.5	267.3	57.8%
1988	463.5	197.0	266.5	57.5%
1989	456.0	198.5	257.5	56.5%
1990	454.3	198.7	255.6	56.3%
1991	453.4	198.8	254.6	56.2%
1992	448.5	196.0	252.5	56.3%
1993	450.8	197.7	253.1	56.1%
1994	455.7	201.7	254.0	55.7%
1995	459.4	203.2	256.2	55.8%
1996	457.5	205.5	252.0	55.1%
1997	470.0	209.9	260.1	55.3%
1998	476.3	216.9	259.4	54.5%
1999	480.1	218.1	262.0	54.6%
2000	485.0	221.1	263.9	54.4%
2001	472.4	220.8	251.6	53.3%

³ Including the Far North will not significantly affect the trend – in 1996, less than 2% of employment in Saskatchewan was among residents of the Far North.

Figure 2.5 Employment in Rural and Urban Saskatchewan, 1987 to 2001



Tables 2.5 and 2.6 also show that within a relatively stable overall employment level in rural/northern Saskatchewan there are significant changes in the industries where people are working.

Employment in goods-producing industries has declined by 24% over the 15 years while employment in the larger services-producing industry group has increased by 9%. In fact, almost all of the decline in goods-producing industries is attributable to declines in agricultural employment. Excluding agriculture, employment in the goods-producing industries grew by 33%, led by a 58% increase in the volatile resources group (forestry, fishing, trapping, mining, oil and gas, and utilities) and a 68% increase in manufacturing.

In effect, rural employment in agriculture declined by 40,000 over the fifteen years but 12,000 of that decline was offset by increases in other goods producing industries and 14,000 by increases in the service-producing industries.

The 46% decline in agricultural employment is twice as large as the decline in the number of farms over the period. This suggests that some of the decline in agricultural employment that we are measuring is the result of an increase in the importance of off-farm income. Labour Force Survey respondents may be increasingly reporting their off-farm job as their "main" one. But the main reason for the difference is increased mechanization of farm operations. A single farm operator is able to farm more acres, enabling consolidation of farm operations with a) no change in employment and b) a reduction in the number of farms.

Table 2.5 Rural/Northern Employment, Goods Producing Sectors

	Total	Annual averages in thousands (main job)				
		Agriculture	Forestry, fishing, mining, oil and gas, utilities	Construction	Manufacturing	Goods-producing sector
1987	267.3	88.2	10.6	13.8	8.4	121.1
1988	266.5	81.2	12.4	12.5	10.5	116.1
1989	257.5	73.0	12.6	13.2	11.6	110.3
1990	255.6	75.1	12.9	11.2	10.6	109.6
1991	254.6	74.6	13.1	11.4	10.2	108.9
1992	252.5	74.1	12.6	11.7	9.9	108.0
1993	253.1	76.1	11.6	10.1	10.5	108.1
1994	254.0	71.2	11.7	10.4	10.8	104.3
1995	256.2	68.5	12.0	12.0	11.0	103.4
1996	252.0	66.5	13.1	10.5	12.5	102.6
1997	260.1	64.4	15.8	12.3	12.4	104.4
1998	259.4	67.3	14.8	11.6	12.7	106.2
1999	262.0	62.5	11.7	11.9	12.6	98.8
2000	263.9	57.9	14.0	13.4	13.0	98.4
2001	251.6	47.7	16.8	13.3	14.1	91.5
Growth, 1987 to 2001	-6%	-46%	58%	-4%	68%	-24%

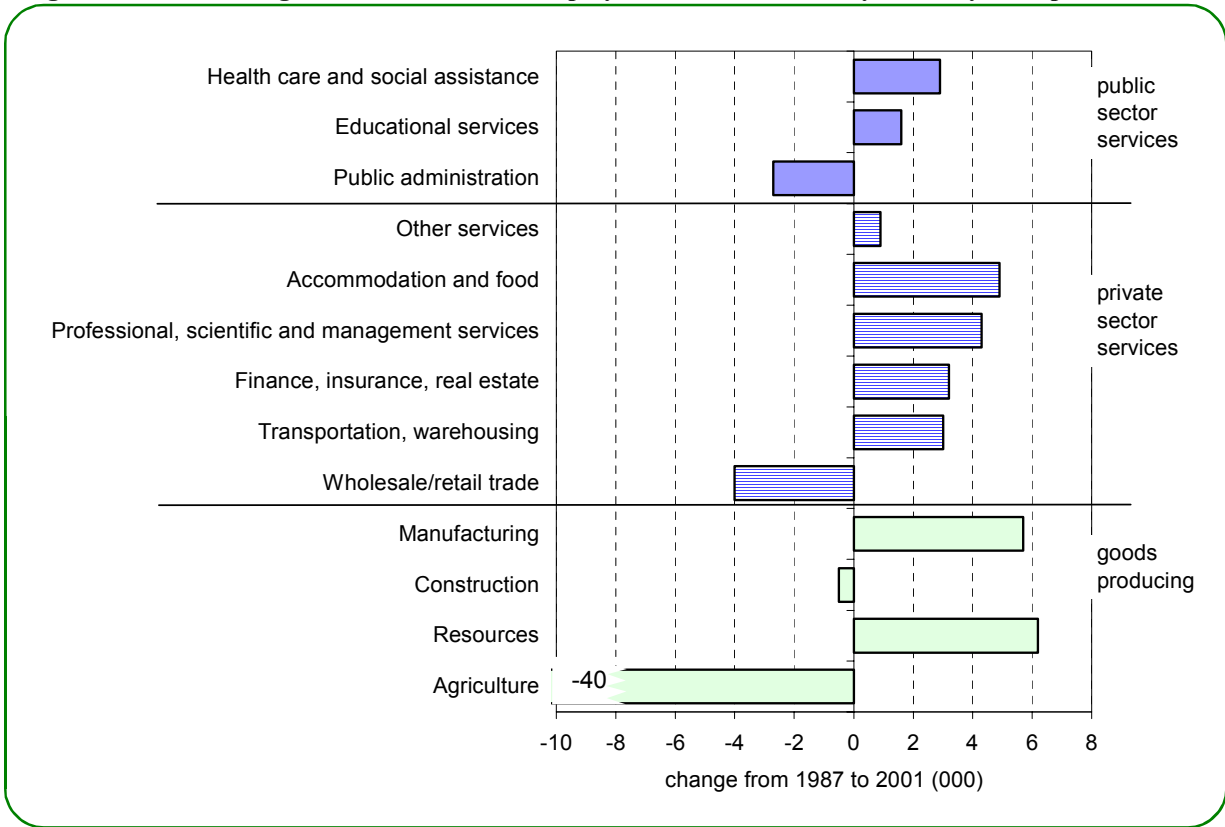
Employment in the services-producing sector grew during the fifteen year period although there were two subgroups that showed declines. Employment in retail and wholesale trade declined by 4,000 and employment in public administration (the three levels of government) declined by 2,700. In other private and public sector services, employment grew. There were significant increases in, for example:

- management and technical services;
- finance, insurance, and real estate;
- accommodation and food services; and
- transportation and warehousing.

Table 2.6 Rural/Northern Employment in Service-Producing Industries, 1987 to 2001

	Total	Annual Averages in thousands									
		Wholesale and retail trade	Transportation and warehousing	Finance, insurance, real estate	Professional, scientific, management services	Educational services	Health care and social assistance	Accommodation and food services	Other services	Public administration	Service sector total
1987	267.3	38.7	10.1	8.0	6.2	15.3	25.0	11.4	18.2	13.2	146.3
1988	266.5	36.0	11.1	10.0	6.4	14.9	27.3	11.9	18.9	14.1	150.5
1989	257.5	34.1	9.9	10.0	6.6	14.6	26.3	12.5	18.9	14.2	147.1
1990	255.6	35.2	9.8	10.3	6.4	15.3	27.0	12.2	16.2	13.7	145.9
1991	254.6	35.0	8.7	9.6	6.8	15.0	26.5	13.1	17.8	13.2	145.6
1992	252.5	33.3	9.1	9.5	6.3	15.4	27.0	12.0	17.7	14.1	144.5
1993	253.1	34.3	8.9	10.7	6.0	15.5	27.1	12.4	17.1	13.1	145.0
1994	254.0	36.0	10.7	10.4	6.6	15.8	27.4	13.6	16.6	12.6	149.7
1995	256.2	37.6	11.3	9.1	8.2	15.4	25.3	13.1	19.8	13.2	152.9
1996	252.0	36.6	12.0	9.4	7.5	15.9	25.3	13.5	17.2	11.7	149.5
1997	260.1	36.8	11.3	11.3	8.1	15.0	27.9	13.1	18.9	13.4	155.8
1998	259.4	38.1	11.1	9.6	8.7	16.0	25.6	14.2	17.7	12.3	153.3
1999	262.0	38.6	13.2	9.8	9.9	18.3	27.2	15.3	19.9	11.3	163.2
2000	263.9	39.6	14.5	10.2	10.2	18.2	26.9	17.0	18.3	10.7	165.5
2001	251.6	34.7	13.1	11.2	10.5	16.9	27.9	16.3	19.1	10.5	160.1
Growth 1987 to 2001	-6%	-10%	30%	40%	69%	10%	12%	43%	5%	-20%	9%

Figure 2.6 Change in Rural/Northern Employment, 1987 to 2001, by Industry Group

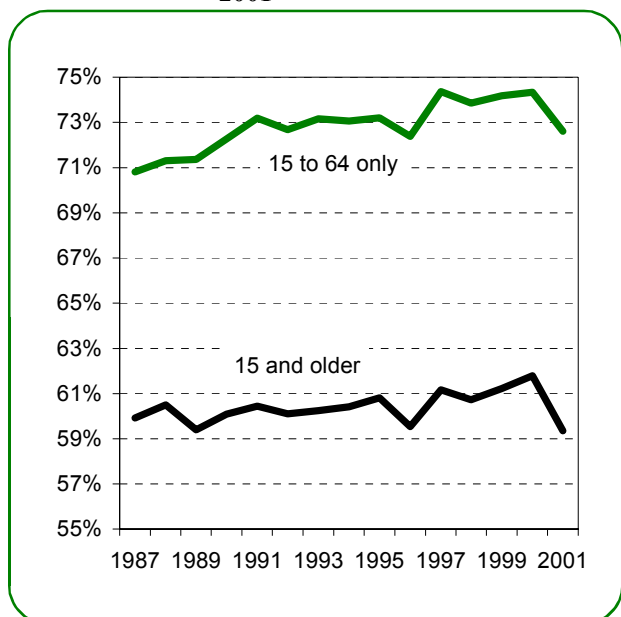


Employment Rates

There are two ways in which an employment decline such as the one in rural Saskatchewan can be manifest. The first possibility is that a larger proportion of the population is without work – either "unemployed" in the sense that they are still looking for work or "out of the labour force" in the sense that they are not seeking employment. In either case, the employment rate – the percentage of the population with employment – would decline.

The second possibility is that the population would decline. Those who wish to work and cannot find suitable employment would leave the area in search of employment elsewhere. In this

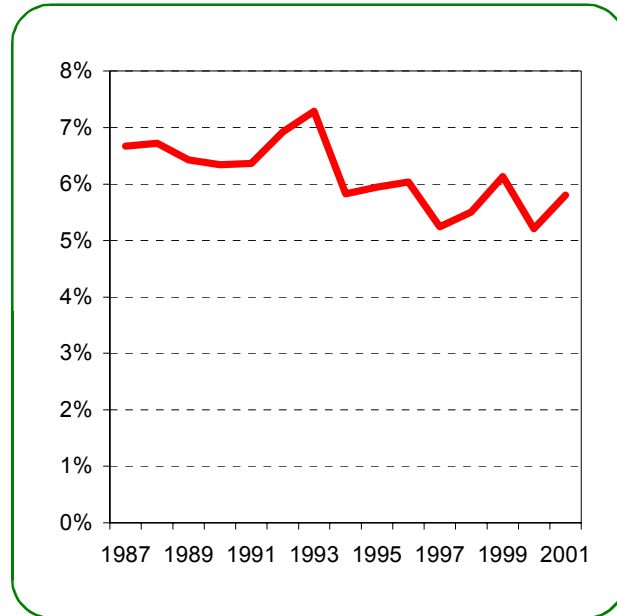
Figure 2.7 Employment Rate, Rural and Northern Saskatchewan, 1987 to 2001



case the employment rate would remain constant as the population "adjusts" to the number of jobs available.

Figure 2.7 shows that the second possibility is the better explanation for rural Saskatchewan. From 1987 to 2001, the employment rate among adults has fluctuated very near 60%⁴. That is, an average of six out of ten rural residents was employed at any given point in time. Restricted to those 15 to 64 years of age, the employment rate shows a slight upward trend, indicating that more, rather than fewer rural residents are working. The rural/northern unemployment rate, on the other hand, has been on a downward trend since 1987 (see Figure 2.8).

Figure 2.8 Unemployment Rate, 15 & older, Rural/Northern Saskatchewan



Summary

In summary, employment in rural/northern Saskatchewan has been effectively constant in the past fifteen years. The employment to population ratio has also been effectively flat as the adult population has kept pace with employment. Rural/northern jobs are gradually shifting from the goods-producing to the service-producing sectors.

⁴ The Kulshreshtha study did not agree with the view that population and employment were linked. Using a definition of "rural" that excludes Moose Jaw and Prince Albert, data were presented to show that the rural population was increasing more slowly than rural employment from 1976 to 1996. This is consistent with the slight upward trend in the employment rate evident in Figure 2.7 but is also affected by declining birth rates.

2.3 Communities

Even within a stable overall population, rural Saskatchewan is becoming more urbanized. To understand this phenomenon, Table 2.7 shows how 452 rural communities have fared since 1981. Included in the 452 communities are rural towns and villages (outside of the Far North and the Regina and Saskatoon CMAs) that are not:

- rural municipalities;
- Indian Reserves; or
- recreational villages.

Among the 348 communities that were under 500 in population in 2001, 303 or 87% had a decline in population from 1981 to 2001. The overall population decline among these communities was 21% over the twenty years. Even among larger communities, the majority had a

population decline from 1981 to 2001 – more than four out of five medium-sized (population 500 to 3,999) communities experienced declines from 1981 to 2001.

The population in the fourteen largest communities (population of 4,000 or more) increased by 3% from 1981 to 2001. Even among these communities, however, almost one half experienced a population decline.

This illustrates one of the fundamental issues facing rural Saskatchewan. A community with a population of 1,500 should be able to support public and private sectors services such as a school, health clinic, financial institution, and a varied retail and wholesale trade sector. There are only thirty

Figure 2.9 Distribution of Population in Rural Communities, 2001

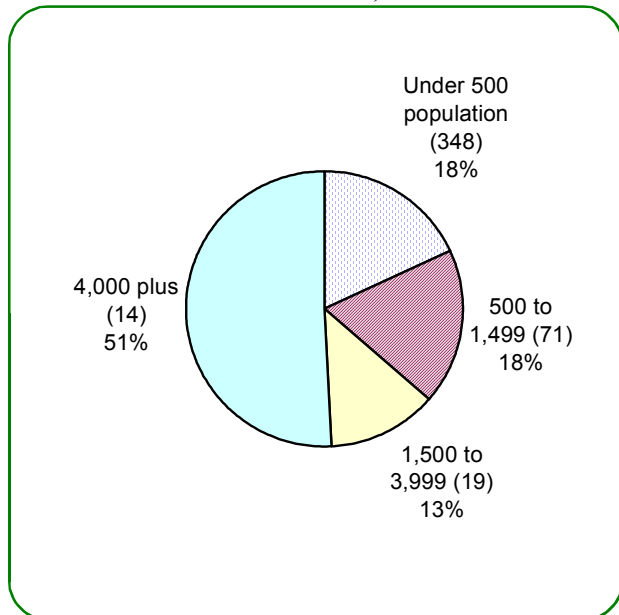
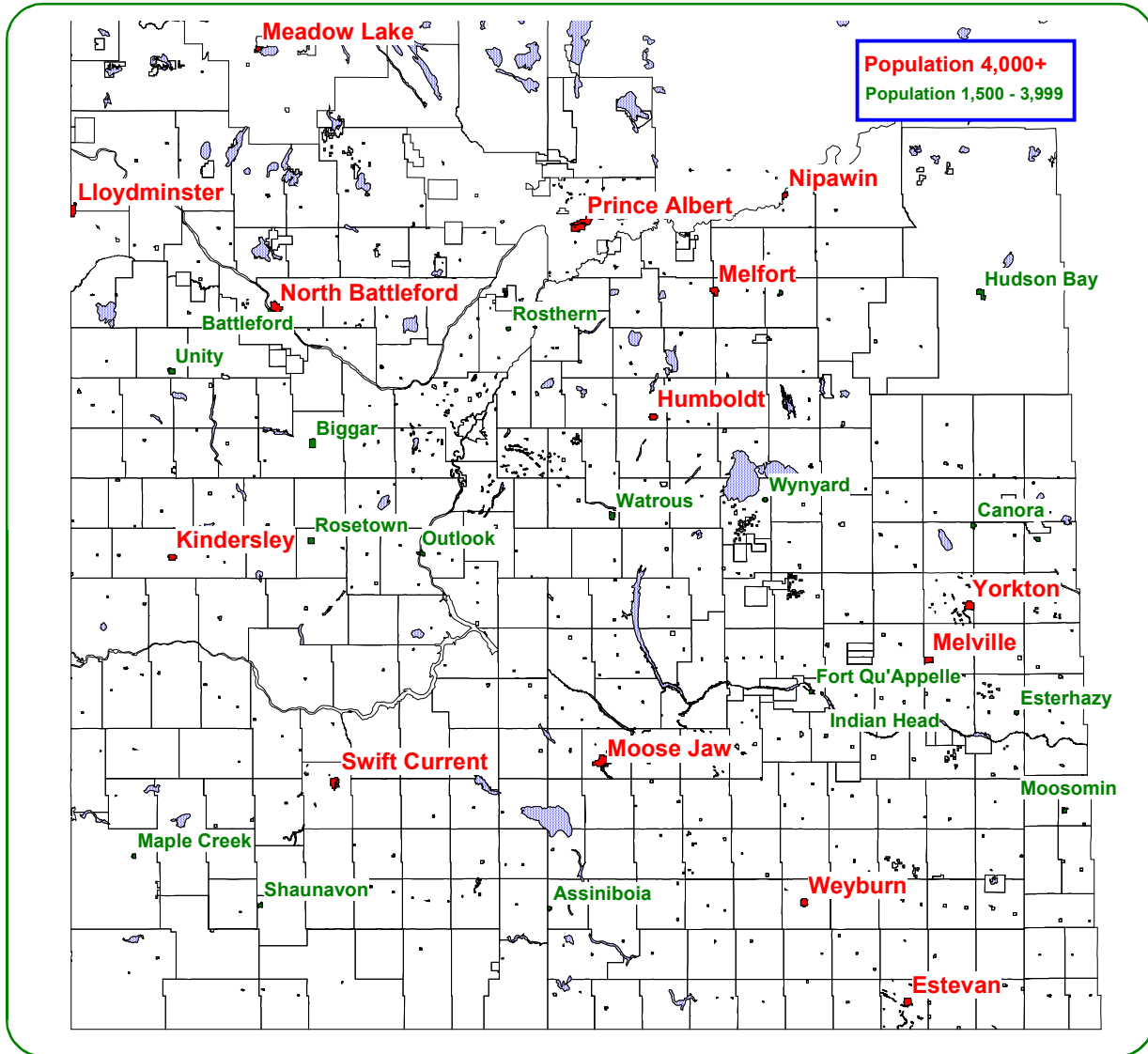


Table 2.7 Changes in Communities and Community Populations, 1981 to 2001

Size in 2001	Number			Population		
	in 2001	Declined since 1981	Increased or no change since 1981	in 1981	in 2001	Change
under 500	348	303	45	74,774	59,302	-21%
500 to 1,499	71	57	14	64,142	59,364	-7%
1,500 to 3,999	19	16	3	46,496	42,127	-9%
4,000 plus	14	6	8	161,824	166,236	3%
Total	452	382	70	347,236	327,029	-6%

three such communities in 2001; many residents in the province do not live in areas with enough population to support these basic public and private sector services.

Figure 2.10 Rural Communities with a Population of 1,500 or more in 2001



2.4 Economic Activity and Productivity

The traditional measure of the size of an economy is the Gross Domestic Product or GDP. In effect, the GDP is the market value of all goods and services produced in an economy. When the effects of price change ("inflation") are taken out of the GDP, it is referred to as "real GDP". In spite of some of the conceptual difficulties with GDP⁵, this is the statistic used by most economists to measure economic growth.

An obvious question about rural Saskatchewan is the size of its contribution to the provincial economy, in effect "What is the rural GDP?". Unfortunately no such measurement exists because the calculation of GDP requires detailed data about the flow of goods and services as well as revenues and expenditures of corporations and governments. That kind of information is simply not available at a sub-provincial level.

The issue is important, however, to the development of the strategy so an estimate of the size of the rural GDP was made for the strategy by using the rural share of employment. This is an imperfect process because employment activity, although a major part of the GDP, is only part of the overall total. And without specific employment data for the Far North, this estimate is actually for rural and northern Saskatchewan and will be referred to as such.

The methodology used is as follows.

1. GDP by industry for the province was obtained for the years from 1984 to 1999. Recently released figures for 2000 and 2001, which use a different industry classification scheme and base year, were used to estimate the figures for the most recent two years.
2. The proportion of industry employment that occurs in rural/northern Saskatchewan was derived using the data shown in Section 2.3 of this report. Estimates for the 1984 to 1986 period were "backcast" using a trend-line analysis.
3. The employment proportion was applied to GDP to estimate the proportion of the GDP that arises in rural/northern Saskatchewan.

This methodology yields reasonable results for most of the industry groups in the province. It is less accurate for the resource sector because a) production of resources is not well correlated with employment in the resource sector, and b) much of the resource industry is actually in northern rather than rural Saskatchewan.

⁵ There are numerous issues about the way the GDP is calculated but the most relevant for the Saskatchewan economy is that a resource is not considered to have any "value" until it is "produced". The Saskatchewan GDP, for example, grows rapidly whenever oil production is increased, a mineral is extracted, or a tree is cut down.

The results of this calculation for 2001 are shown in Table 2.8. That year, the methodology suggests that 55% of the provincial GDP of \$24.2 billion or \$13.2 billion occurred in rural/northern Saskatchewan.

Not surprisingly, almost all (93%) of agricultural GDP is allocated to rural/northern Saskatchewan. The other 7% will be the result of agricultural activity in the CMAs surrounding Regina and Saskatoon.

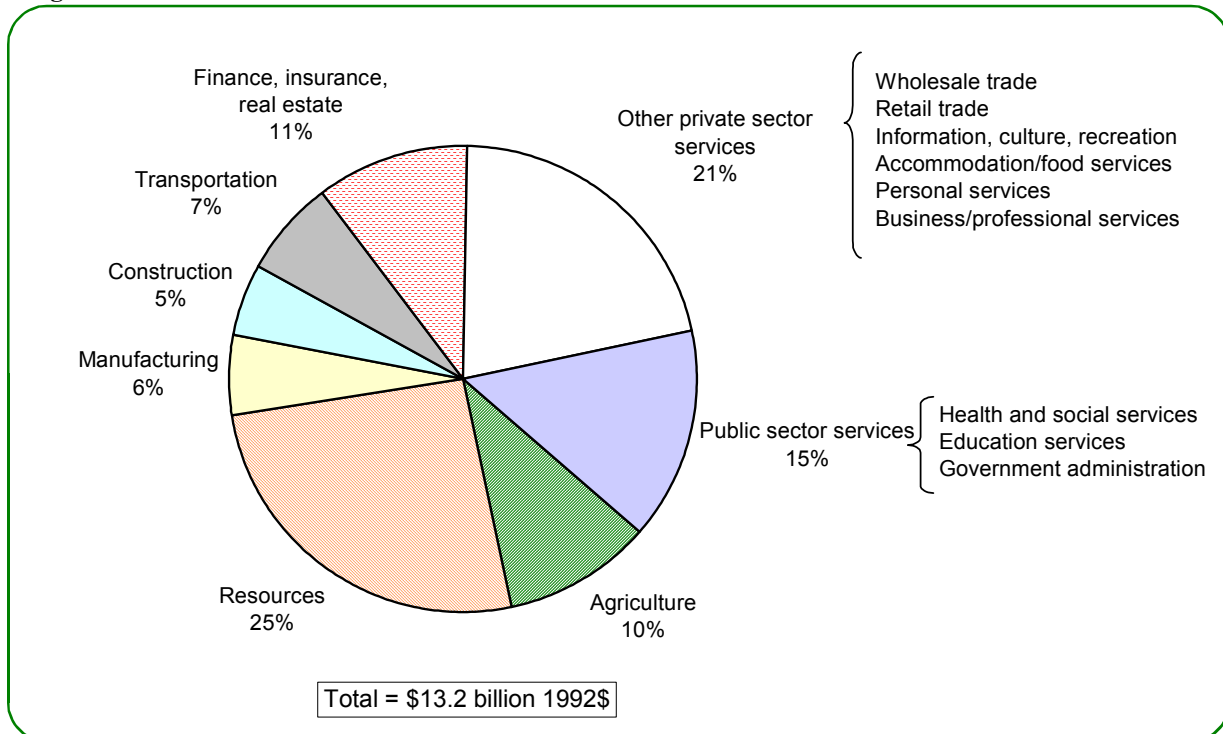
The proportion of GDP allocated to rural Saskatchewan is also high (79%) for the resource sector because almost all of the mining and oil/gas extraction takes place outside the two major cities.

Table 2.8 Estimate of Rural GDP in 2001

Industry group	GDP Estimate in Millions of Constant 1992 Dollars			Rural share
	Rural/Northern	Urban	Total	
Agriculture	\$1,345	\$102	\$1,447	93%
Resources/utilities	\$3,422	\$916	\$4,337	79%
Manufacturing	\$743	\$827	\$1,571	47%
Construction	\$661	\$576	\$1,237	53%
Transportation	\$876	\$862	\$1,738	50%
Finance, insurance, real estate*	\$1,390	\$1,936	\$3,327	42%
Other private sector services	\$2,814	\$3,477	\$6,291	45%
Public sector services	\$1,943	\$2,301	\$4,244	46%
Total	\$13,195	\$10,997	\$24,192	55%

* includes economic activity related to owner-occupied homes

Figure 2.11 Estimate of Rural/Northern GDP in 2001



The rural proportion of GDP is below 50% for four industry groups:

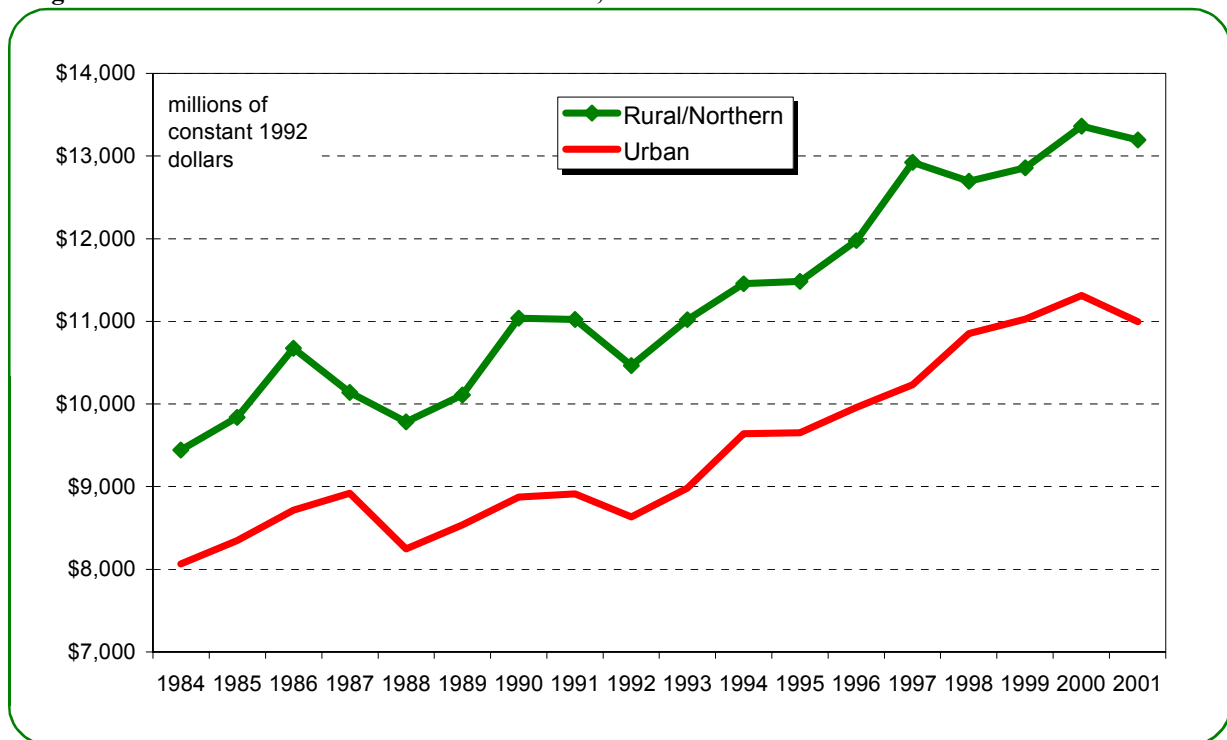
- manufacturing,
- finance, insurance, and real estate,
- public sector services, and
- "other" private sector services, a category that includes a variety of services such as wholesale and retail trade, recreation, information, accommodation, and business services.

Figure 2.11 shows the share of rural/northern GDP derived using this methodology.

This calculation suggests that the rural economy has grown significantly in recent history (see Figure 2.12). Over the seventeen years from 1984 to 2001, the rural/northern GDP has grown by an average of 2.0% per year. There were four periods of decline including 2001 and all of these coincided with periods when agricultural GDP was declining.

Urban GDP has grown more slowly over the period (1.8% per year) although the growth has been less volatile.

Figure 2.12 Urban and Rural/Northern GDP, 1984 to 2001



Sector Analysis

In the balance of this report, the rural economy is divided into four sectors. The industry groups and economic activities included in these four sectors are described below.

Primary Agriculture	This category includes "farming" as we know it, including non-traditional activities such as specialty livestock, greenhouse and nursery farms, wild rice harvesting, sod farms, and Christmas tree farms. It also includes activities directly in support of agriculture such as crop spraying, seed cleaning, custom harvesting, and breeding services. It does not include, however, marketing and transportation services (e.g. Sask Wheat Pool) or the processing of farm products after they leave the farm gate (e.g. canola crushing or pelleting plants).
Resources and utilities	This category is a wide ranging one that includes some smaller industries such as logging, commercial fishing, trapping, and quarries. The main industries are, however, mining – including uranium, potash, coal, and other mining – and the oil/gas industry – including oil and gas exploration, drilling, and extraction. Also included are utilities – water, natural gas, and electricity production and distribution – but telephones are included in the communication group rather than in the utility group.
Manufacturing and processing	This category includes the production of intermediate and finished goods from raw materials. There is a grey area between the agriculture and resource industries and the manufacturing industry. In the simplest terms, a raw material is considered as "manufactured" if there is some basic processing applied to it. "Traditional" manufactured items such as farm machinery, clothing, steel products, and electrical goods are included here but other processing industries are also included in the manufacturing sector such as the printing and publishing industries, bakeries, oil seed crushing, pelleting plants, fertilizer plants, oil refineries, beverage bottlers, redi-mix concrete plants, and slaughter houses.
Construction and Tertiary Sector	This is, in effect, the residual category that contains all other industries.

The first three of these sector groupings are goods-producing activities. The decision to include the construction industry with the tertiary or service sector was made even though the construction industry is also a goods-producing industry⁶ and is often combined with manufacturing as "secondary" industries. The authors felt that the construction industry often exhibited the characteristics of a service industry in the sense that⁷:

- investment by other industries is required before there is construction of commercial or industrial buildings or structures; and
- residential construction and some engineering construction (e.g. roads, water and sewer systems) tend to be driven by population growth or investment by government agencies.

There is considerable debate about which sectors of an economy are economic "drivers" and which sectors are driven by their spinoff effects. In the past, the "primary" sector - agriculture and resources - and the "secondary" sector - manufacturing and construction - were often considered as drivers whereas the "tertiary" or service sector was not. There have always been exceptions to this rule. Tourism is an economic driver for many economies in the world; transportation is an economic driver for port cities; financial services is an economic driver for some larger cities; government is an economic driver for capital cities.

The advent of the information economy has also had an impact on this kind of thinking. Silicon Valley in California and the biotechnology industry in Saskatoon are examples of service industries acting as economic drivers.

In spite of this gradual change in thinking, and some obvious exceptions, rural Saskatchewan's economic drivers are still the primary and secondary sectors and will probably remain that way for the foreseeable future. The province's strength has always been its resource base and until a good argument can be made to the contrary, the members of ACRE focussed on this traditional approach to economic development.

⁶ The Kultshreshtha study was critical of this division because i) construction is related to the investment phase of development whereas the tertiary sector is affected by both investment and operations, ii) construction impacts are short-lived whereas tertiary impacts are longer lasting, iii) compared to the tertiary sector, many construction inputs are imported, and iv) service industries tend to be more labour intensive.

⁷ The provincial government's Partnership for Prosperity also considered the Construction Industry in the tertiary sector.

Labour Productivity

The combination of an increasing GDP with no corresponding increase in employment is a familiar one. In essence, each employed person is able to produce more goods and services over time. This is one measure of labour productivity – GDP per person employed – although not the most reliable or the most comprehensive⁸.

By combining GDP figures with employment figures, we can arrive at an estimate of GDP per employed person for rural/northern Saskatchewan. Figure 2.13 shows the results.

In the late 1980s, each employed person in rural and northern Saskatchewan produced \$35,000 to \$40,000 of GDP measured in constant 1992 dollars. By 2000, that figure had increased to more than \$50,000. Over the fifteen years, the average increase in GDP per employed person was 2.3% per year.

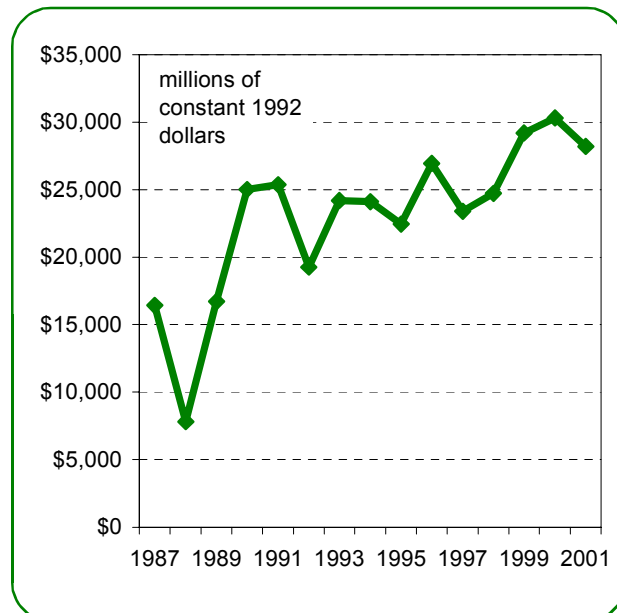
Productivity growth is especially pronounced in primary agriculture (see Figure 2.14). Although there are difficulties with measuring employment in agriculture, each person who reported their main job as agriculture produced nearly \$30,000 in real GDP compared with less than \$20,000 in 1987. The average increase over the period is 3.9% per year.

The researchers also researched capital productivity measures to help explain the growth in labour productivity. A lack of capital investment data in rural Saskatchewan precluded any meaningful conclusions.

Figure 2.13 GDP per Person Employed, Rural and Northern Saskatchewan



Figure 2.14 Agricultural GDP per Person Employed, Rural and Northern Saskatchewan



⁸ More accurate measures of labour productivity take hours worked into account, producing a measure of output per hour worked. Other measures of productivity (usually called total factor productivity) take capital investment into account and measure the combination of labour and capital productivity.

2.5 The Status Quo Scenario

It is possible to generate a picture of employment, population, and economic activity in rural Saskatchewan in the year 2020 by extrapolating the trends described earlier in this section. This is a very hypothetical exercise based on the assumption that trends evident in the last fifteen years will continue to hold for the next twenty years.

However, rural residents need to be able to compare the "growth strategy" with an alternative so the "status quo" scenario was developed as a reference point.

The methodology used for the forecast is as follows.

1. GDP for each of the four sectors - agriculture, resources, manufacturing, and construction/services - is extended to 2020 using historical growth rates. An exponential curve was fitted to the historical data to derive the trend line.
2. GDP per employee for each of the four sectors was assumed to grow at the same (linear) rate as it has in the past fifteen years.
3. Employment in each of the sectors was derived by dividing the GDP by the GDP per employee.
4. Population was derived by assuming the historical employment rate (for those 15 and older) of 60%.

The parameters derived from this methodology are summarized in Table 2.9. Results for each of the four sectors are shown graphically in Figures 2.15 to 2.19.

Table 2.9 Projected Growth Rates, Rural/Northern Saskatchewan, 2001 to 2020, Status Quo Scenario

Assumptions	Industry Sector				Total
	Primary agriculture	Resources/ utilities	Manufacturing	Construction/ Services	
Real GDP growth rate per year	1.8%	3.5%	4.5%	1.3%	2.2%
Average annual growth rate in GDP per employee	2.8%	1.8%	1.7%	0.7%	1.7%
Employment rate	60%

Figure 2.15 GDP and Employment Projection, Status Quo Scenario, Rural/Northern Primary Agriculture

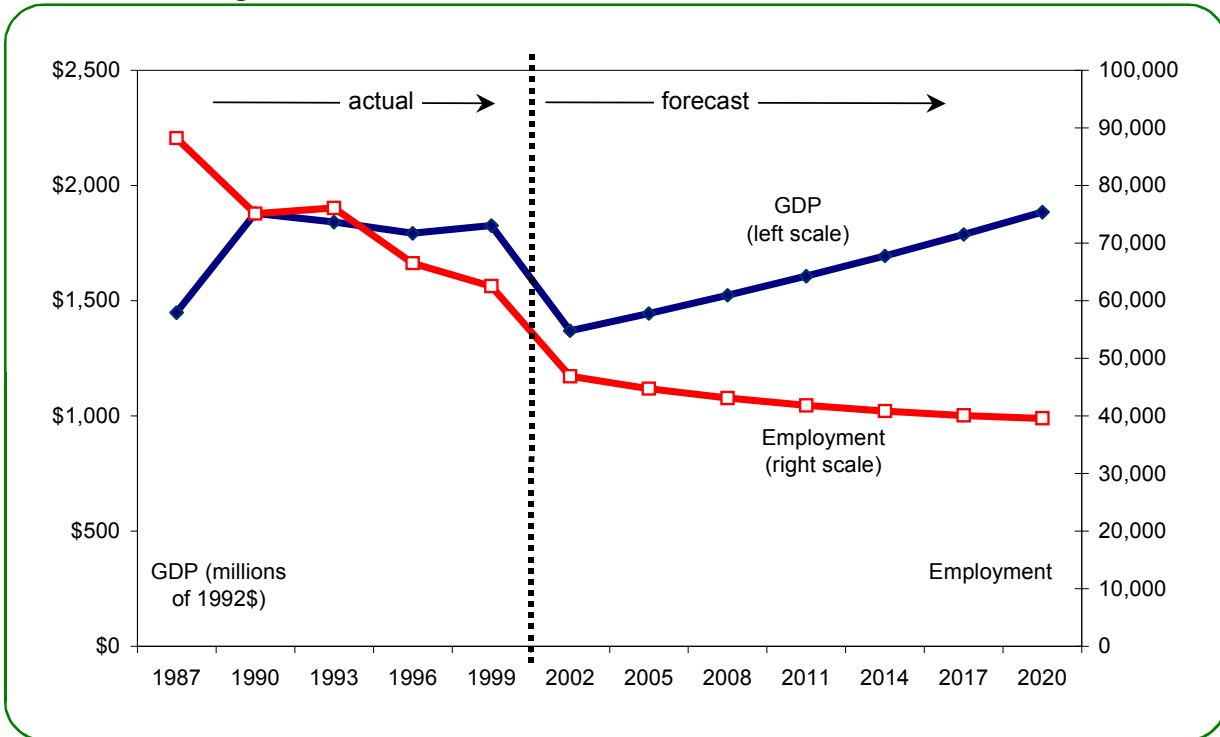


Figure 2.16 GDP and Employment Projection, Status Quo Scenario, Rural/Northern Resource Sector

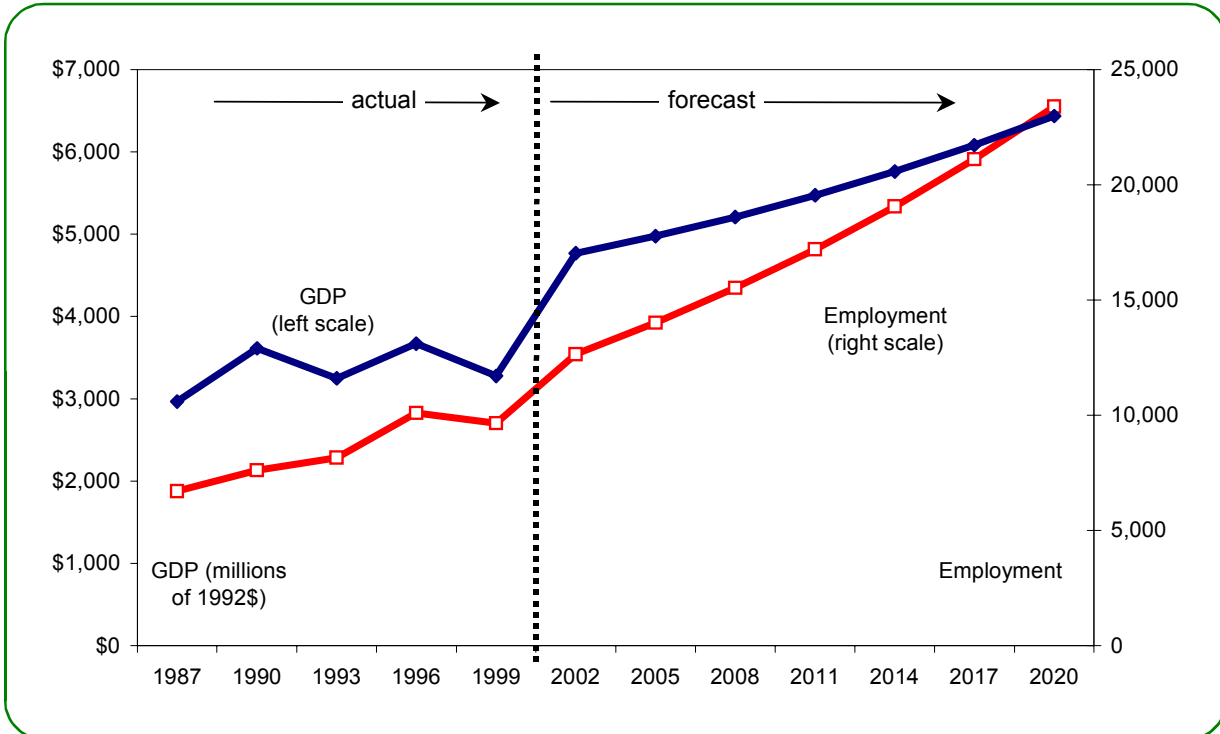


Figure 2.17 GDP and Employment Projection, Status Quo Scenario, Rural/Northern Manufacturing and Processing Sector

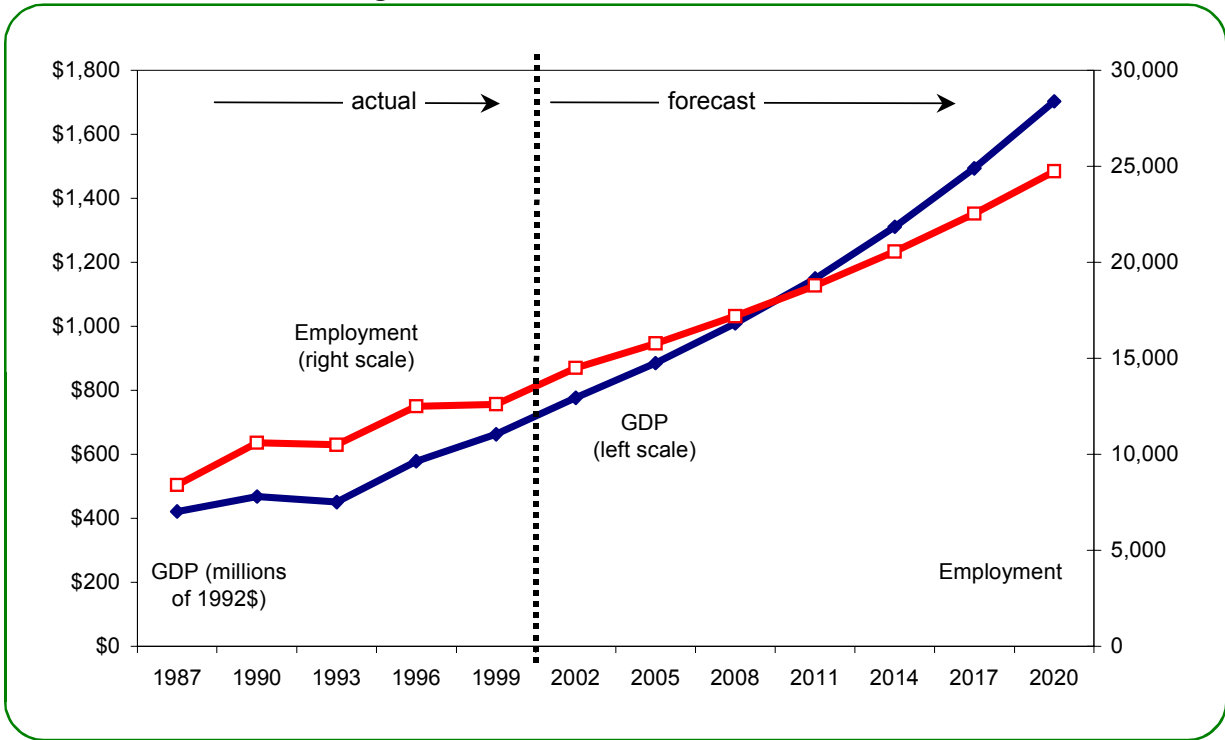


Figure 2.18 GDP and Employment Projection, Status Quo Scenario, Rural/Northern Construction and Tertiary Sectors

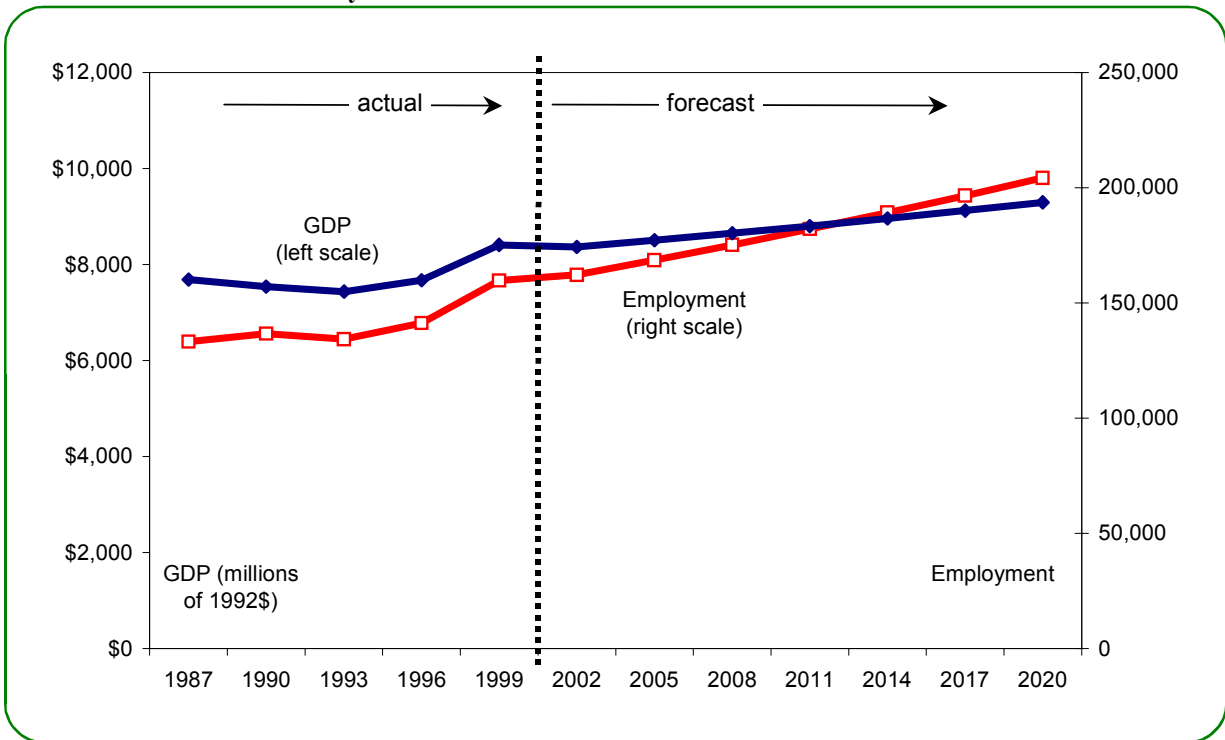
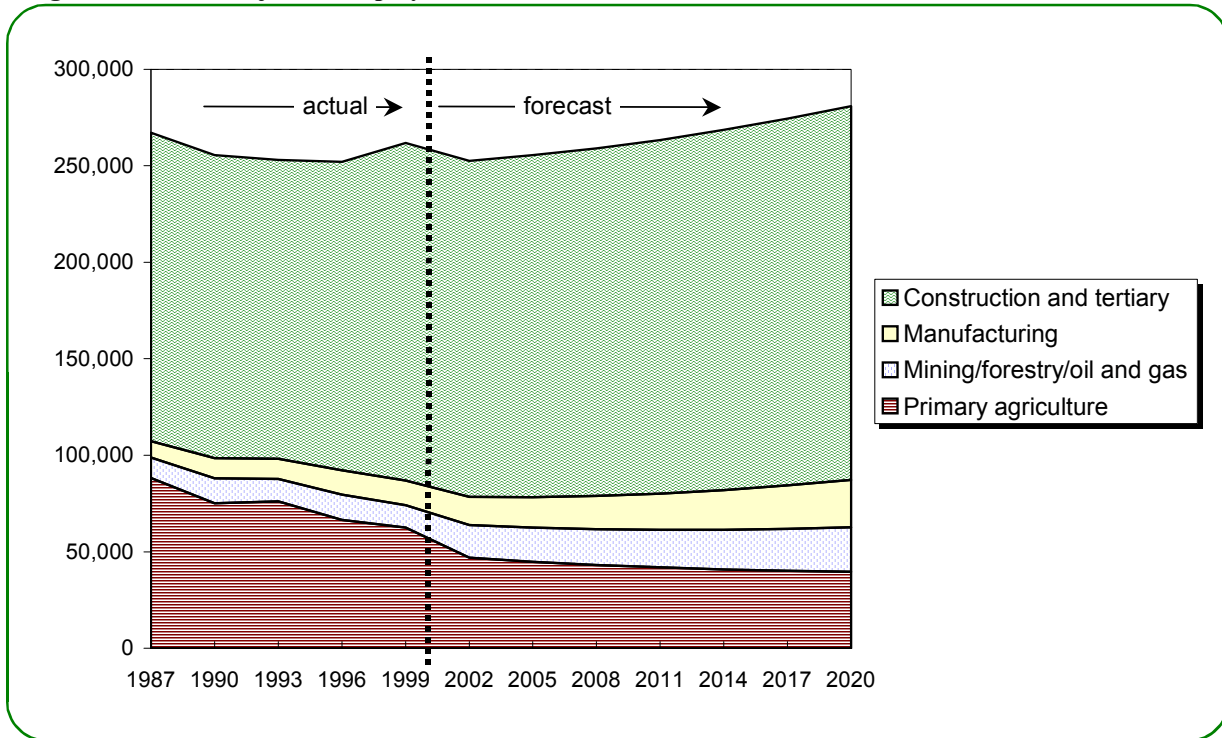


Figure 2.19 Projected Employment, Status Quo Scenario, Rural/Northern Saskatchewan

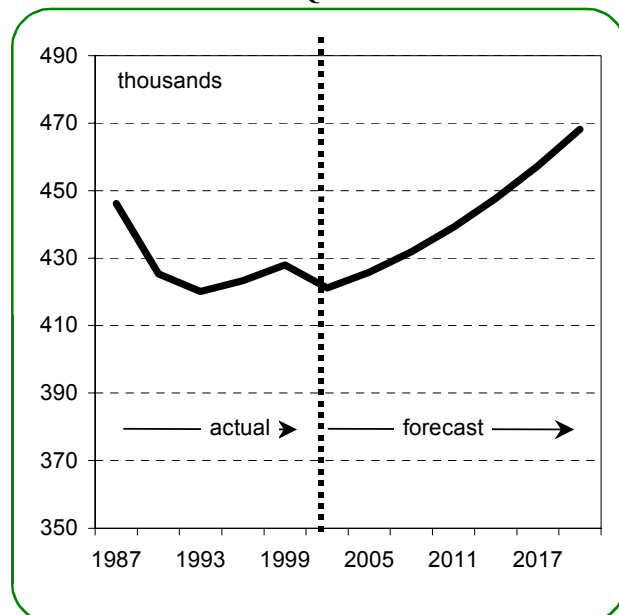


If the present trend of agriculture GDP per employee growing more quickly than GDP continues, then employment in primary agriculture will continue to decline. Measured in constant 1992 dollars, the GDP is projected to grow from its current \$1.4 billion to \$1.8 billion by 2020. Employment will drop to 40,000 and the number of farms will continue to decline.

In the other three sectors, both GDP and employment grow. The employment growth is relatively low, however, because much of the increase in GDP is offset by higher levels of GDP per employee. By the end of the period, employment in rural/northern Saskatchewan has increased from its current level of 252,000 persons to 281,000, an increase of about 1,500 persons per year.

The adult population required to generate that level of employment increases as well, by approximately 2,500 persons per year. If present trends continue, that population growth will occur in the fourteen largest communities, those with a population greater than 4,000 persons.

Figure 2.20 Projected Adult Population in Rural/Northern Saskatchewan, Status Quo Scenario



Assessment

The status quo scenario will surprise those who expect the rural population to continue to decline. Readers should keep in mind however that the scenario describes all of rural Saskatchewan, not just the farming community.

- The definition of "rural" includes the larger communities including Prince Albert and Moose Jaw.
- The status quo scenario effectively assumes that there will be continued employment growth in the rural service sector, a trend that may not be sustainable. As well, present trends suggest service sector growth will be limited to the larger urban centres.
- The recent growth in rural manufacturing and processing which has generated a good deal of economic growth and employment in rural Saskatchewan is forecast to continue under the status quo scenario.

Notwithstanding these qualifications, the status quo scenario presents what appears to be an overly optimistic view of rural Saskatchewan's future in light of past experience.

2.6 Summary

The findings in this section are summarized below in point form.

1. The population in rural Saskatchewan is declining with almost all of the decline accounted for by the drop in the number of farms.
2. Within rural Saskatchewan, the population is becoming more urban in the sense that larger communities are growing at the expense of smaller ones.
3. Employment in rural/northern Saskatchewan accounts for 53% of the provincial total, down from 58% in 1987.
4. In 2001, the rural/northern Gross Domestic Product (GDP) is estimated at \$13.2 billion measured in constant 1992 dollars, 55% of the provincial GDP. The rural/northern GDP has grown at an average rate of 2.0% per year since 1987 compared with 1.8% for the urban GDP.
5. If present trends continue, the rural/northern GDP will continue to grow steadily but employment and population will grow slowly and become more concentrated in the service sector in the larger communities.

SECTION 3 ELEMENTS OF A GROWTH STRATEGY

In this section, one approach to changing the status quo scenario is developed.

In Section 2 we looked at the provincial Gross Domestic Product (GDP), sometimes called the Gross Provincial Product or GPP, and estimated what proportion of these goods and services are produced in rural/northern Saskatchewan. The employment generated as a result of this activity was examined by looking at GDP per person employed, a crude measure of productivity.

The conclusion evident in the data was that rural GDP was growing at a respectable pace, higher in fact than the growth rate in urban GDP. Employment, and therefore population, was not growing as quickly. There are a number of inter-related reasons for this.

- In primary agriculture, labour productivity was growing more quickly than GDP, resulting in a net decline in employment over time.
- Both GDP and employment in the other goods-producing sectors – resources/utilities and manufacturing/processing – were increasing. The resource sector has, however, a very high GDP per employee and doesn't generate significant employment. The manufacturing and processing sector is simply too small to have much of an impact on overall employment.
- GDP growth in the construction/services sector is relatively low, largely because growth in this sector is driven by population and the rural/northern population is not increasing.

The essence of the strategy to grow rural Saskatchewan has two elements. The first is to assume that the rural economy can be restructured so that the rural GDP grows more quickly than productivity. By simple arithmetic, this will generate increased employment and population in rural Saskatchewan. The second element is to capture more of the spinoff effects of the goods-producing part of the economy in rural Saskatchewan. This element depends upon the success of the first element because a good deal of the spinoff effects would accrue to rural Saskatchewan if the population increases.⁹

Target levels for each of the four sectors were set as part of this research process but were based on instructions from the ACRE executive to model an "aggressive" growth rate in the rural economy. Analysis revealed that an overall growth rate of 3.5% per year for the rural/northern GDP would be very aggressive and generate significant employment and population growth. At the same time, further analysis (described in Section 5) indicated that this rate of growth was achievable.

⁹ The Kulshreshtha study was asked to comment on the fundamental premise of the strategy. It concluded that "...the study's basic premise that economic growth could be created by change in employment and change in labour productivity does not seem to have any theoretical underpinnings." but that "this does not mean that the historical rate of change in GDP has not equalled that in employment and in productivity".

The overall 3.5% growth rate was derived from targets for each of the four sectors. These are shown in Table 3.1. The rationale for these targets is described below.

If present trends continue, agricultural GDP will increase by 1.8% per year to \$1.9 billion by 2020. Maintaining primary agriculture's current share of 13% of rural economy will require a more aggressive growth rate of 3.6% per year in GDP growth. Primary agriculture's GDP would, under this scenario, increase to \$3.6 billion in 2020.

With no interventions, the resource sector will arguably grow at the 15 year trend line rate of 4.2% per year. This yields a target GDP of \$7 billion.

Rural manufacturing/processing has recently been increasing at 4.5% per year, increasing its share of the rural economy. A target of \$1.9 billion, the equivalent of an annual growth rate of 5.0% was chosen to achieve the overall target growth rate of 3.5% per year.

The revised data used in this report resulted in slightly different sector target growth rates than those used in the original analysis presented to ACRE members. The differences are as follows:

	<u>Original</u>	<u>This report</u>
Primary agriculture	3.8%	3.6%
Resource sector	4.0%	4.2%
Manufacturing	4.3%	5.0%
<u>Construction/services</u>	<u>3.0%</u>	<u>3.0%</u>
Total	3.5%	3.5%

With a target growth rate of 3.5% for the rural economy, the construction and tertiary services sector will arguably grow at 3.5% per year, driven by the growth rates in the other three sectors. A slightly lower (3.0%) growth rate was chosen to reflect leakages into urban areas. By 2020, the construction and tertiary services GDP would be \$14.1 billion. This may be the most difficult target to achieve because there is currently a good deal of leakage into the urban economies. Until there is evidence of sustained growth in the rural economy, many services will remain in the urban economy. There is

Table 3.1 Actual and Target GDP Growth Rates by Sector

	GDP (\$ millions of constant 1992\$)				Average annual growth rate		
	1985	1990	1995	2000	Average 1985-2000	Status quo scenario	Target 2000-2020
Primary agriculture	\$1,160	\$1,879	\$1,538	\$1,755	2.8%	2.4%	3.6%
Resources/ utilities	\$1,881	\$2,132	\$2,729	\$3,097	3.4%	4.2%	4.2%
Manufacturing and processing	\$365	\$468	\$492	\$723	4.7%	4.1%	5.0%
Construction/ services	\$6,429	\$6,561	\$6,724	\$7,785	1.3%	1.4%	3.0%
Total	\$9,835	\$11,040	\$11,483	\$13,359	2.1%	2.5%	3.5%

precedence – Alberta’s rural tertiary sector grew more quickly from 1987 to 2000 than the primary and secondary sectors.

In the next four sections each of the four sectors is examined in more detail to provide estimates of the capital and labour requirements to achieve these targets.

For each sector,

- labour productivity is projected (on a straight-line basis) for the next twenty years to derive an estimate of the employment required to achieve the target GDP growth rate; and
- the required level of capital investment in new plant and equipment is estimated.

3.1 Primary Agriculture

In the growth strategy, rural/northern GDP in primary agriculture is assumed to grow at a rate of 3.6% per year from 2001 to 2020. Figure 3.1 shows that this will be a dramatic departure from the experience in the 1990s when agricultural GDP was effectively constant.

Labour Required

If labour productivity in primary agriculture, as measured by GDP per person employed (main job) in agriculture, continues to grow at its current linear rate, output per employee will increase from \$30,000 per employed person to \$50,000 per person (see Figure 3.2).

Note that by projecting a continuation of the recent trend, we are assuming, in effect, that Saskatchewan farmers will continue to purchase labour-saving machinery and equipment in order to yield a higher output for each farm operation.

This implies that the number of persons employed in rural/northern primary agriculture will increase from the 2001 level of 48,000 to 72,000 by 2020 (see Figure 3.3). The projected employment in primary agriculture shows a dramatic reversal from the years of decline. Nevertheless, it takes twenty years before they return to the levels they were in the early 1990s.

Capital Required

Capital requirements for the growth strategy are more difficult to estimate. An attempt was made to find a relationship between historical GDP growth and capital investment levels (see Figure 3.4) but the exercise did not yield any apparent correlation. Part of the reason could be a lack of historical data on capital investment.

Figure 3.1 Rural/Northern GDP for Primary Agriculture, Actual and Projected

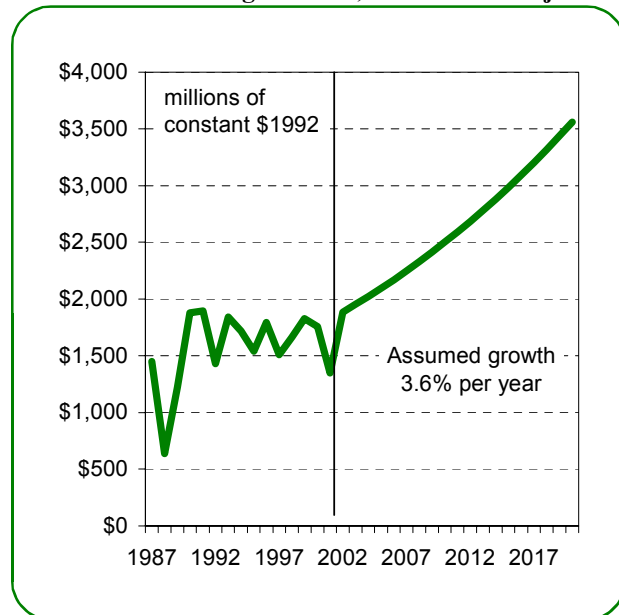
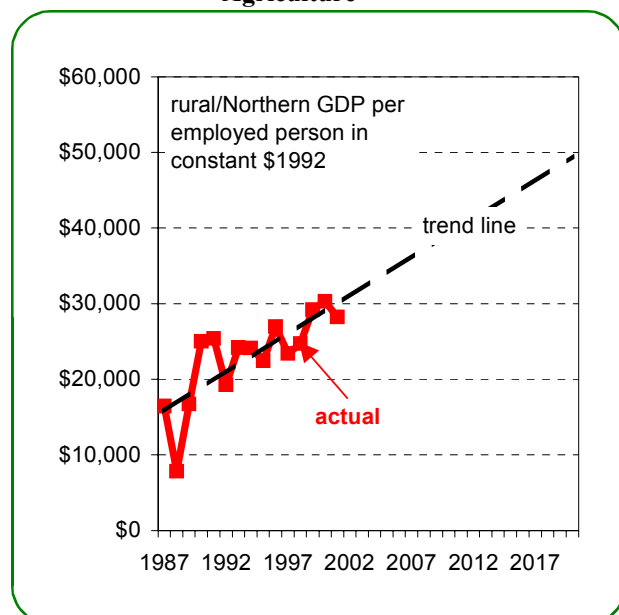


Figure 3.2 GDP per Employed Person, Rural/Northern Primary Agriculture



Instead, the data seems to indicate that Saskatchewan farmers tend to invest more in machinery and equipment when net cash income is high. In effect, the industry is self-financed from available cash. And new machinery and equipment is purchased as much to reduce labour requirements as it is to increase production.

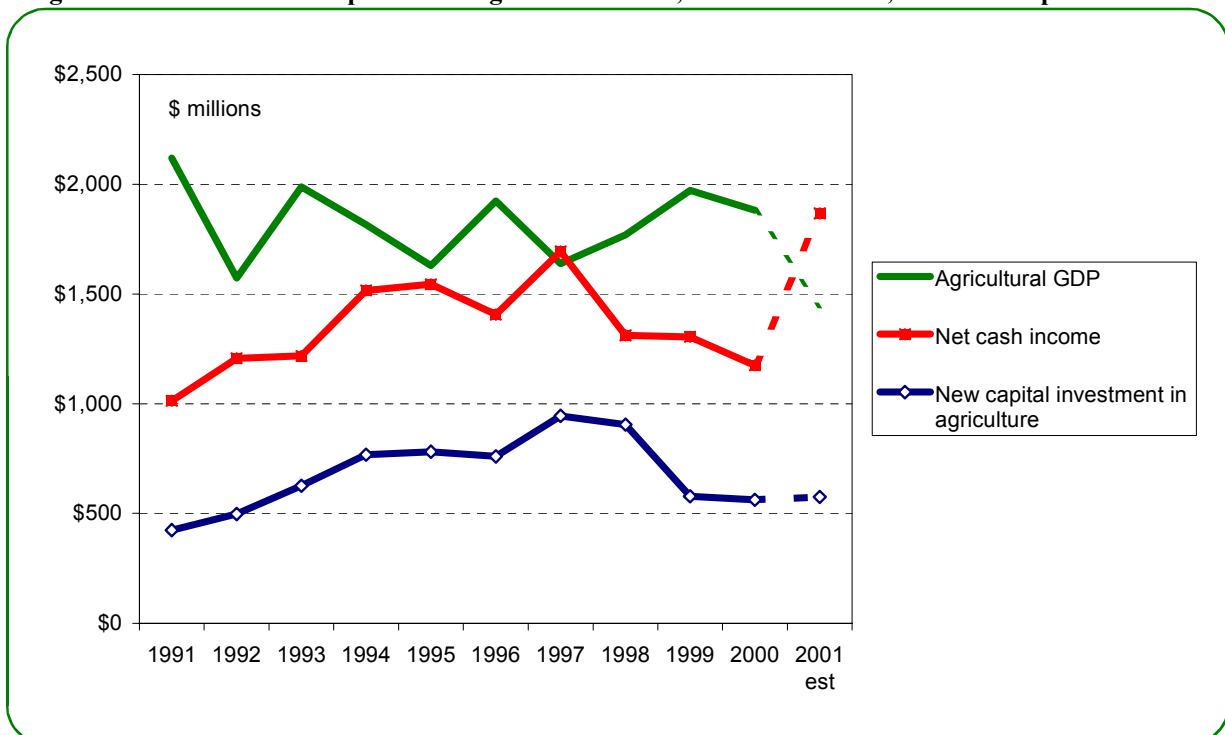
Capital requirements for the growth scenario were estimated using a different approach from the one used for labour.

1. New capital investment in rural/northern primary agriculture was assumed to be 92% of the provincial total – the proportion of Saskatchewan’s agricultural GDP assumed to occur in rural/northern Saskatchewan.
2. The ten year average new capital investment of \$623 million per year was assumed to continue. This investment would maintain the current capital base and generate the assumed level of productivity increase.
3. Total capital investment was assumed to grow at 3.6% per year, the same as the growth in the rural/northern primary agriculture GDP.

Figure 3.3 Employment in Rural/Northern Primary Agriculture, Actual and Projected



Figure 3.4 Relationship between Agricultural GDP, Net Cash Income, and New Capital Investment

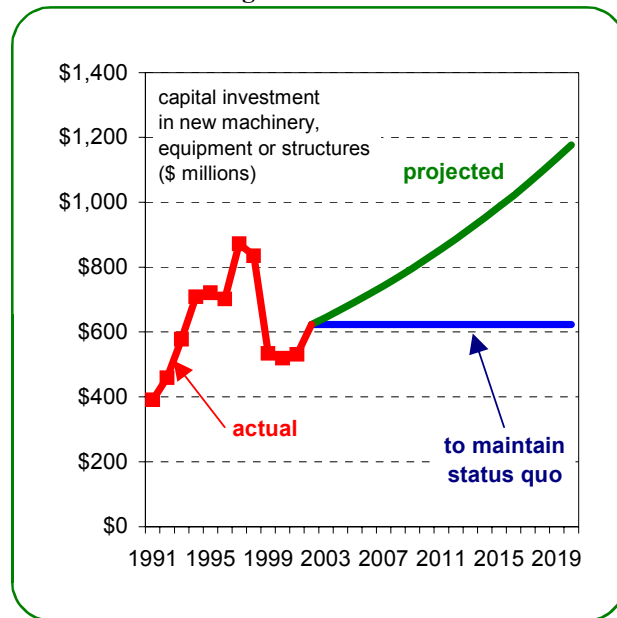


The net effect of these assumptions are shown in Figure 3.5. Capital investment in rural/northern primary agriculture would double from the current average of just over \$600 million per year to just under \$1,200 million per year by 2020.

Note that these investment figures are in constant 1992 dollars. Although the "inflation" rate for capital investment is low¹⁰, the nominal investment required would be slightly higher.

Aggregated over the twenty years, incremental capital investment of \$4.7 billion will be required in addition to the \$11.8 billion required to maintain the status quo. Some but not all of this \$16 billion could come from existing farm operations, as it has in the past, but outside investment will be required.

Figure 3.5 New Capital Investment Requirements for Primary Agriculture



The capital and labour requirements for primary agriculture under the growth scenario are summarized in Table 3.2.

Table 3.2 Actual and Projected Capital and Labour Requirements, Primary Agriculture

	Actual			Projected			
	1990	1995	2000	2005	2010	2015	2020
GDP in millions of \$1992	\$1,879	\$1,538	\$1,755	\$2,094	\$2,499	\$2,983	\$3,560
Employment in thousands	75	69	58	61	64	67	72
Capital investment in new buildings and machinery/equipment (\$000,000)	n/a	\$721	\$519	\$692	\$826	\$986	\$1,177

¹⁰ The price change for investment in new capital equipment and machinery from 1991 to 2001 averaged 0.5% per year in Saskatchewan. The low rate is largely because of the declining price of computer equipment; the inflation rate for farm machinery and equipment, while not part of the research, is probably higher.

3.2 Resource and Utility Sector

In the growth strategy, rural/northern GDP in the resource and utility sector is assumed to grow at its historical rate of 4.2% per year from 2001 to 2020. Figure 3.6 shows that this will be a continuation of the trend in the 1990s. This assumption implicitly assumes that there will continue to be new oil and gas developments in the province as well as the discovery of new mineral resources.

Labour Required

If labour productivity in the resource sector, as measured by GDP per person employed, continues to grow at its current linear rate, output per employee will increase from \$200,000 per employed person to over \$300,000 per person (see Figure 3.7) by 2020.

The number of persons employed in rural/northern resources will increase from the 2001 level of 17,000 to 25,000 by 2020 (see Figure 3.8). The projected employment growth rate is strong but, in effect, only 8,000 new jobs are created over the course of the twenty year time frame.

Capital Required

Capital requirements for the resource and utility are extensive. From 1991 to 2001, the average investment at the provincial level was \$1.75 billion per year. The growth rate in capital investment, 7.4% per year on average, exceeded the growth rate in GDP for the sector. Nevertheless, the assumption for the growth strategy is that capital investment will grow at 4.2%, the same rate as the growth in GDP.

The net effect is shown in Figure 3.9. Capital investment in the rural/northern resource sector

Figure 3.6 Rural/Northern GDP for the Resource/Utility Sector

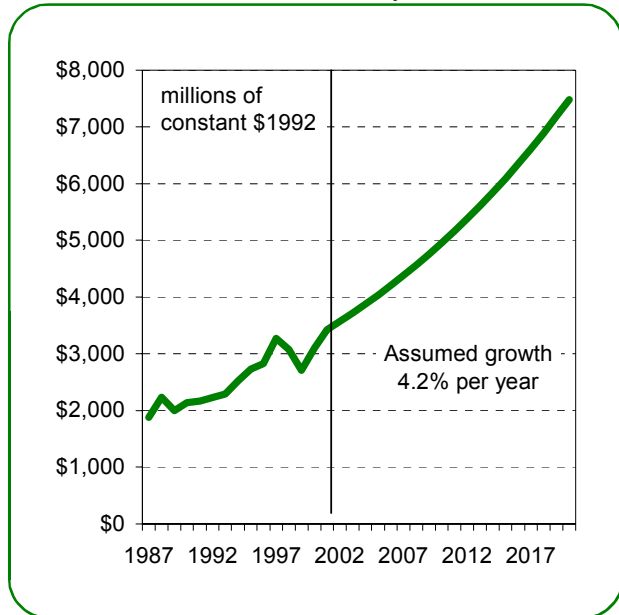


Figure 3.7 Actual and Assumed GDP per Employed Person, Resource/Utility Sector

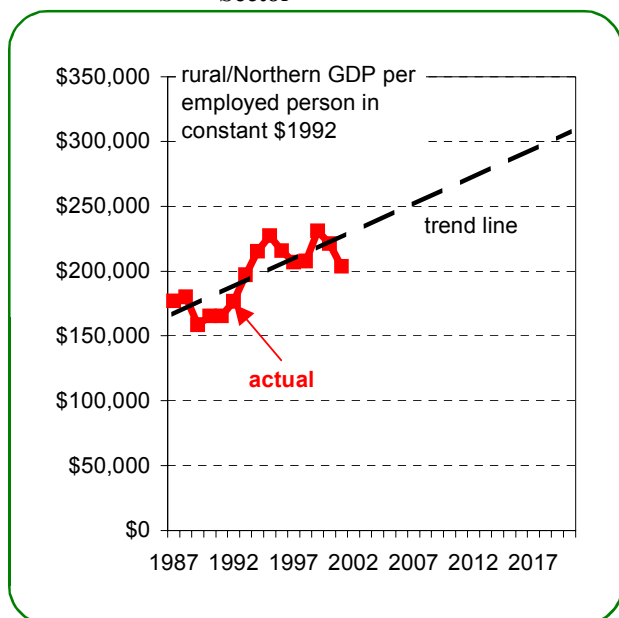


Figure 3.8 Actual and Projected Employment, Rural/Northern Resource/Utility Sector

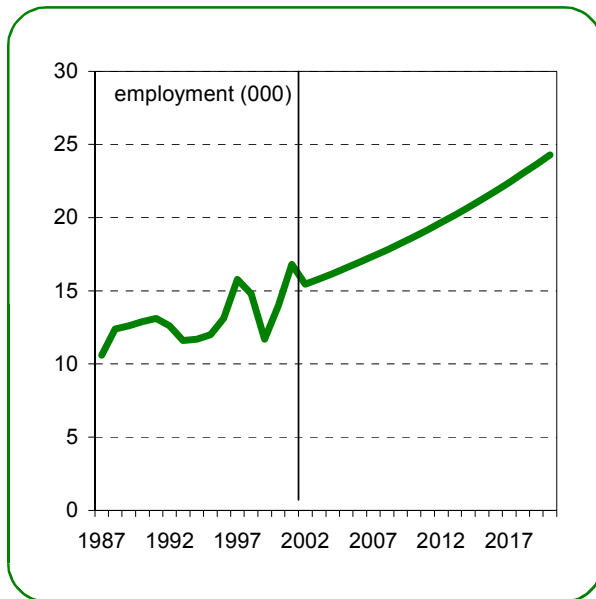
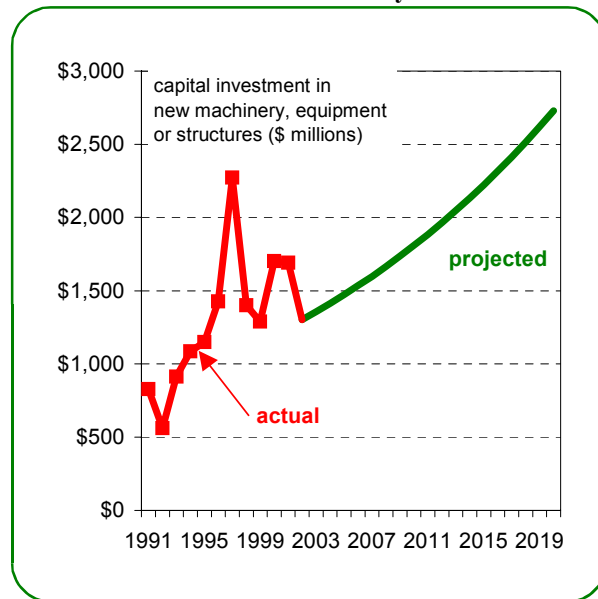


Figure 3.9 Actual and Projected Capital Investment, Rural/Northern Resource/Utility Sector



would increase from the estimated value of \$1.3 billion in 2001 to \$2.7 billion by 2020.

The capital and labour requirements for the resource sector under the growth scenario are summarized in Table 3.3.

Table 3.3 Actual and Projected Capital and Labour Requirements, Resource and Utility Sector

	Actual			Projected			
	1990	1995	2000	2005	2010	2015	2020
GDP in millions of \$1992	\$2,132	\$2,729	\$3,097	\$4,034	\$4,956	\$6,087	\$7,478
Employment in thousands	13	12	14	17	19	21	24
Capital investment in new buildings and machinery/equipment (\$000,000)	n/a	\$1,149	\$1,702	\$1,472	\$1,809	\$2,222	\$2,729

3.3 Manufacturing and Processing Sector

In the growth strategy, rural/northern GDP in the manufacturing and processing sector is assumed to grow at 5.0% per year, slightly above its historical growth rate of 4.7% per year from 1985-2000. Figure 3.10 shows that this will more than double the size of the sector over the twenty year time frame.

Labour Required

Labour productivity in the manufacturing and processing, as measured by GDP per person employed, is growing more slowly than in other sectors. The growth strategy assumes that this rate of growth continues, yielding GDP per employed person near \$70,000 in 2020 compared with just over \$50,000 in 2001.

The rate of growth in the sector implies that the number of persons employed in rural/northern manufacturing and processing will increase from the 2001 level of 14,000 to 27,500 by 2020 (see Figure 3.12).

Capital Required

Because capital investment in the processing and manufacturing sector has been very low in the 1990s, the rate of increase for the growth strategy was assumed to be double the rate of growth in GDP (10% instead of 5%) for the first ten years. Thereafter the annual increase was assumed to be 5% per year.

The net effect is shown in Figure 3.13. Capital investment in the rural/northern manufacturing and processing sector would increase from the estimated value of \$175 million in 2001 to \$680 million by 2020.

Figure 3.10 Rural/Northern Manufacturing and Processing GDP, Actual and Projected



Figure 3.11 Rural/Northern GDP per Employed Person, Manufacturing and Processing Sector

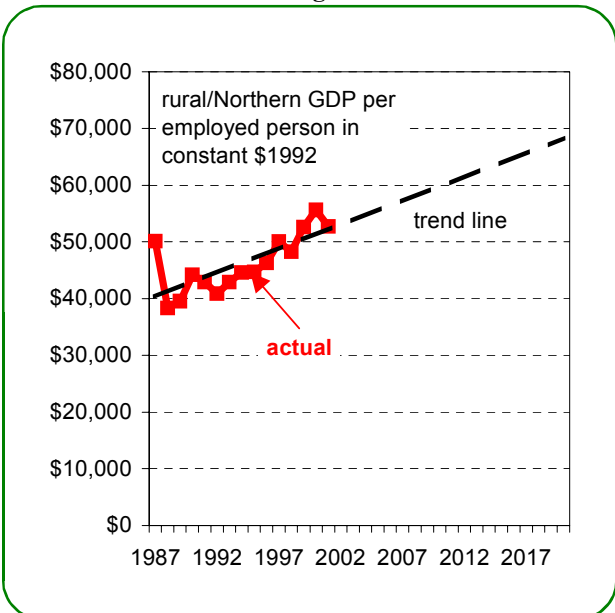
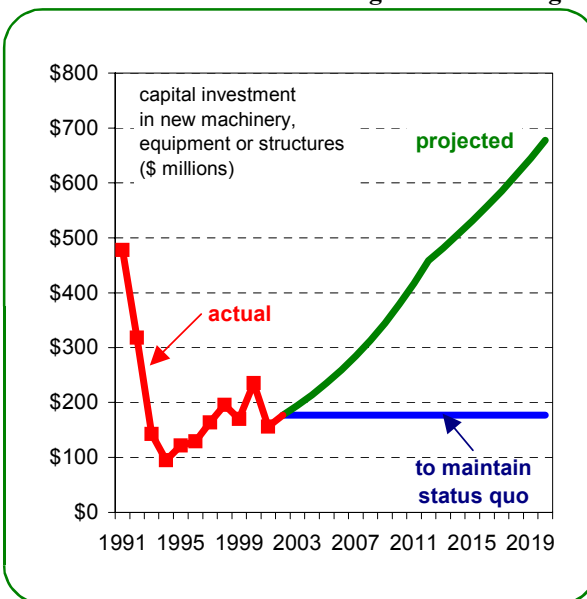


Figure 3.12 Actual and Projected Employment, Rural/Northern Manufacturing and Processing



Figure 3.13 Actual and Projected New Capital Investment, Rural/Northern Manufacturing and Processing



The capital and labour requirements for the manufacturing sector under the growth scenario are summarized in Table 3.4.

Table 3.4 Actual and Projected Capital and Labour Requirements, Resource and Utility Sector

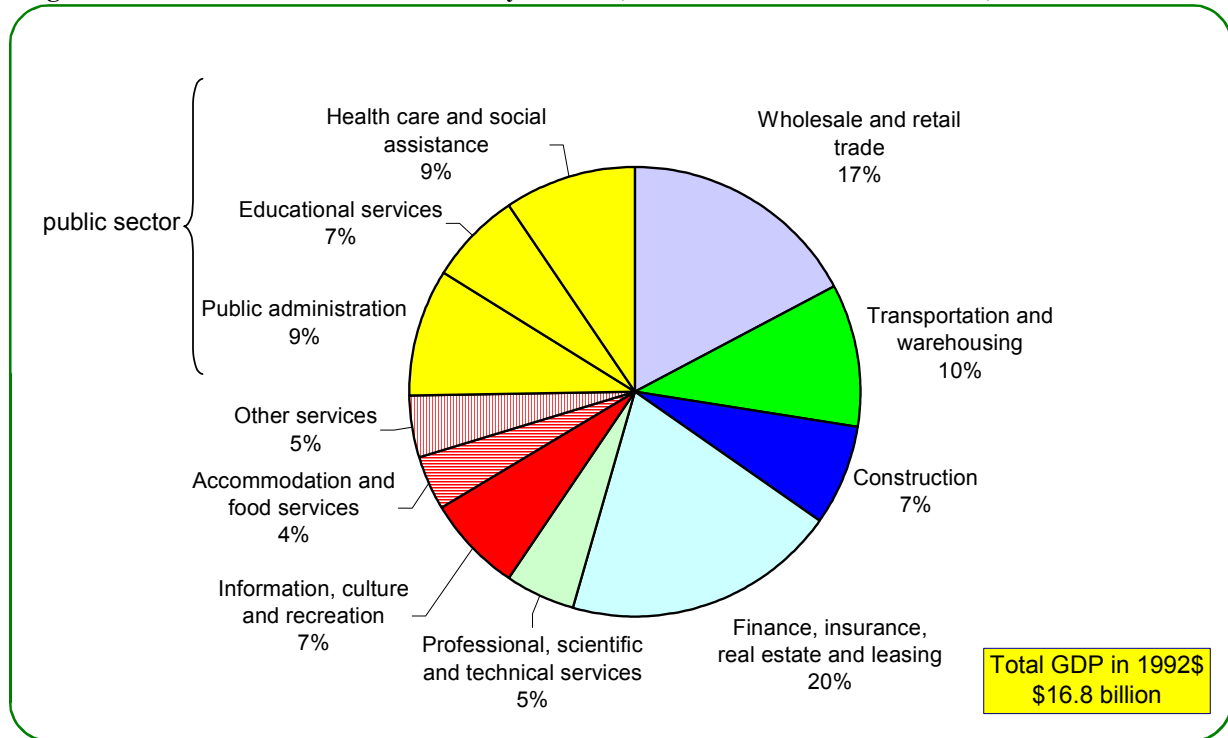
	Actual			Projected			
	1990	1995	2000	2005	2010	2015	2020
GDP in millions of \$1992	\$468	\$492	\$723	\$903	\$1,153	\$1,471	\$1,878
Employment in thousands	11	11	13	16	19	23	28
Capital investment in new buildings and machinery/equipment (\$000,000)	n/a	\$100	\$210	\$235	\$379	\$531	\$678

3.4 Construction and Tertiary Services Sector

In the growth strategy, rural/northern GDP in the construction and tertiary services sector is assumed to grow at 3.0% per year, well above its historical growth rate of 1.3% per year from 1985-2000. Implicit in this target is the belief that more of the spinoff effects of economic growth can be captured in rural Saskatchewan.

Figure 3.14 shows the current distribution of GDP in rural/northern Saskatchewan for this sector, providing some indication of what the challenges will be. One quarter of the 2001 GDP is accounted for by public sector services – health, education, social services, as well as provincial and local government services. These are largely population driven. Another 10% to 15% is comprised of accommodation and food services, other services¹¹, and culture and recreation services. These also tend to be driven by population although accommodation and food services and some recreation services are also affected by tourism. Construction, transportation, and warehousing tend to be location specific; benefits will accrue to rural Saskatchewan as long as these services are available locally.

Figure 3.14 Construction and Tertiary Services, Rural/Northern Saskatchewan, Distribution of GDP



¹¹ The "other services" category includes, for example, personal services such as haircuts, religious and other organizations, household services such as lawn care, funeral services, and laundry services.

The benefits in three of the subcategories, which together account for 42% of GDP, are more at risk of going to urban centres.

- Wholesale and retail trade are becoming more concentrated in urban areas as rural residents spend an increasing share of their income in city stores.
- Finance and insurance services are also becoming concentrated in urban centres and this trend will probably continue or even accelerated as electronic banking becomes more common.
- The professional, scientific, and technical services group includes lawyers, architects, and other consultants. Some of these services are driven by population but recent trends suggest that most of these services will be provided from large firms in Regina and Saskatoon.

In summary, approximately one half of this sector will "automatically" grow as the population in rural Saskatchewan increases and one quarter of the sector is probably permanently lost to urban centres. The challenge facing rural Saskatchewan is to retain more of the remaining quarter, largely construction and retail/wholesale trade, in rural areas.

Figure 3.15 shows that the assumed growth rate of 3% per year will increase the size of the construction/service sector from \$8 billion to \$14 billion over the twenty year time frame.

Labour Required

Labour productivity in the service sector does not change quickly. This is partly because of the difficulty in determining the "value" of services performed. In several sectors, government services for example, the GDP is calculated as simply the value of the salaries paid. This eliminates the possibility of productivity growth. Nevertheless, the GDP per employee in this sector is increasing (see Figure 3.16). The

Figure 3.15 Actual and Projected Rural/Northern Construction/Service Sector GDP

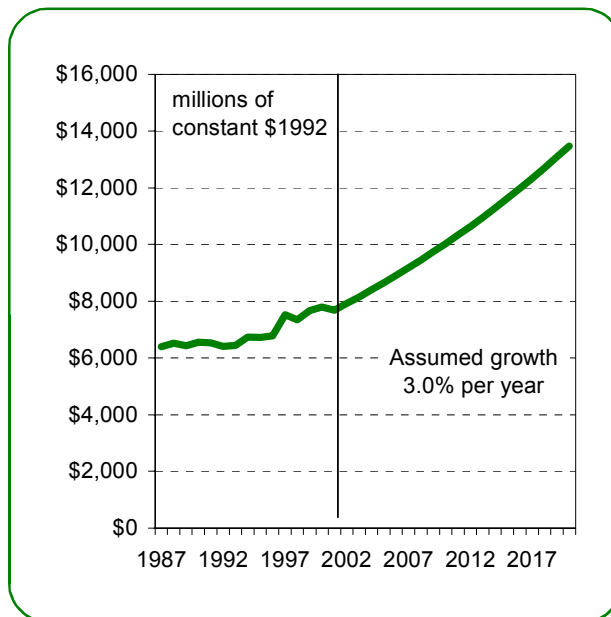
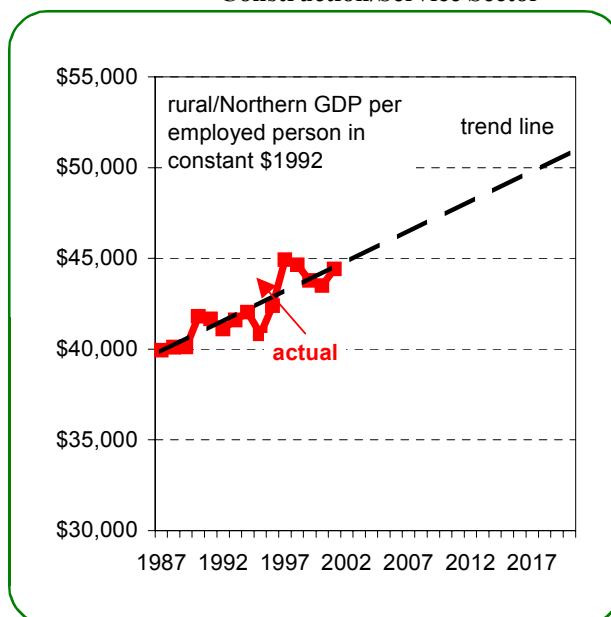


Figure 3.16 Actual and Projected GDP per Employed Person, Construction/Service Sector



growth strategy assumes that this rate of growth continues, yielding GDP per employed person near \$50,000 in 2020 compared with less than \$45,000 in 2001.

The aggressive rate of growth in this sector implies that the number of persons employed in rural/northern construction/service sector will increase from the 2001 level of 173,000 to 265,000 by 2020 (see Figure 3.17).

Capital Required

Some parts of the construction/service require extensive capital investment – transportation and engineering construction for instance – while others such as consulting services and government services do not. Recent trends in capital investment are strongly influenced by the construction of inland grain terminals and pipelines so a forecast of capital requirements is difficult to make.

The annual increase in new capital investment in the growth scenario is assumed to be 3% per year, the same rate as the growth in GDP.

The net effect is shown in Figure 3.18. Capital investment in the rural/northern construction/services sector would increase from the ten year average of \$1.25 billion \$2.1 billion by 2020.

The capital and labour requirements for the construction/services sector under the growth scenario are summarized in Table 3.5.

Figure 3.17 Employment in Rural Construction/Service Sector

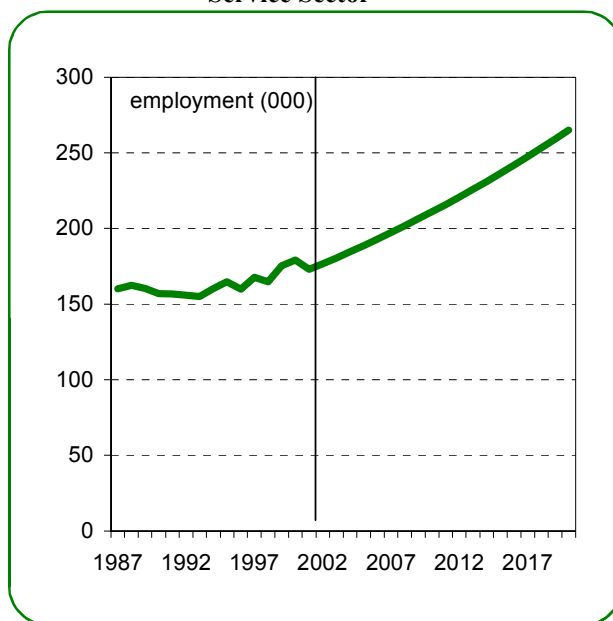


Figure 3.18 New Capital Investment

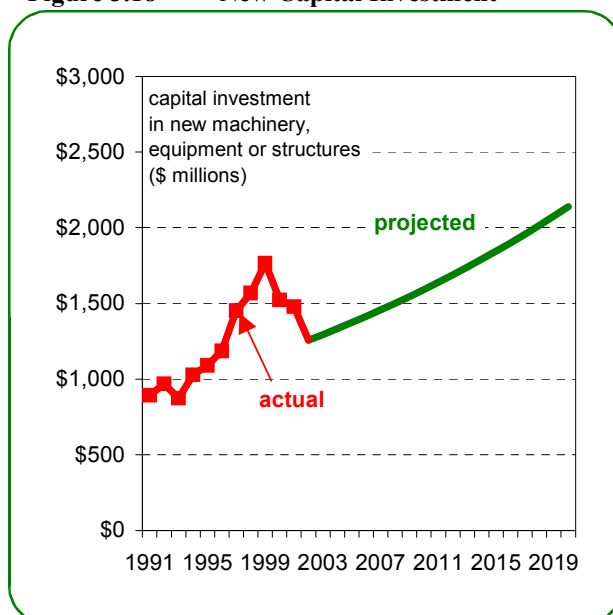


Table 3.5 Actual and Projected Capital and Labour Requirements, Construction/Services Sector

	Actual			Projected			
	1990	1995	2000	2005	2010	2015	2020
GDP in millions of \$1992	\$6,561	\$6,724	\$7,785	\$8,649	\$10,026	\$11,623	\$13,475
Employment in thousands	157	165	179	189	211	236	265
Capital investment in new buildings and machinery/ equipment (\$000,000)	n/a	\$1,091	\$1,522	\$1,373	\$1,592	\$1,845	\$2,139

SECTION 4 SUMMARY OF THE GROWTH SCENARIO

The findings from the previous sector-specific analysis are aggregated below in terms of the rural/northern GDP, the capital and labour requirements, and the impact on the population.

Over the long term the effect of compound interest is quite dramatic. Although the difference in GDP growth between the status quo scenario (2.1%) and the growth strategy scenario (3.5%) is "only" 1.4%, the long term effect over twenty years is substantial. Figure 4.1 shows that under the growth strategy scenario, GDP reaches \$26 billion by 2020 compared with \$20 billion in the status quo scenario.

And yet the rural/northern economy will not look that much different in 2020 than it does now (see Figure 4.2). Agriculture's share increases from 10% to 13% of the economy and there are small increases in the shares for the manufacturing/processing sector and the resource sector. The construction/tertiary sector share declines from 58% to 51% of the rural/northern economy. The main difference is in the size rather than the makeup of the rural economy.

The requirements for capital and labour (Figures 4.3 and 4.4 respectively) are equally dramatic. Under the status quo scenario, employment in 2020 is 280,000 compared with 390,000 under the growth scenario. The long term average investment in rural/northern Saskatchewan will have to increase from its current level of \$3.4 billion per year to \$6.7 billion.

Figure 4.1 Gross Domestic Product in 1992 Dollars, Status Quo and Growth Strategy Comparison

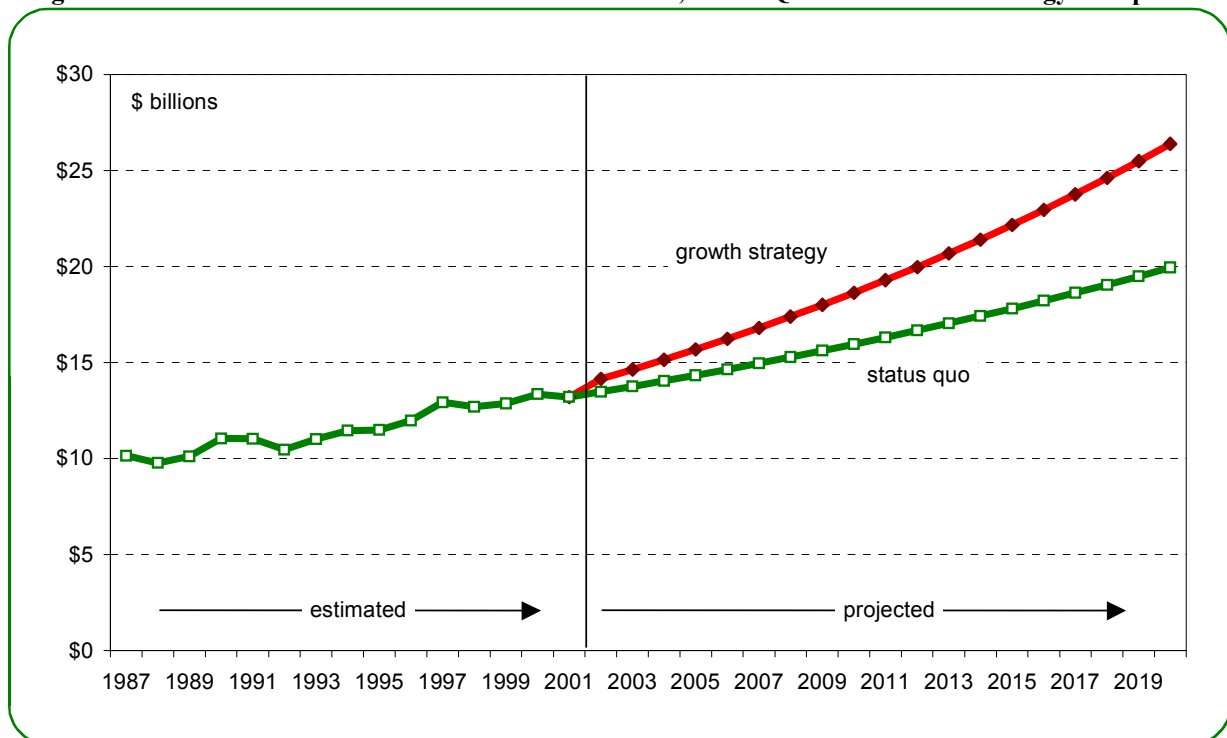


Figure 4.2 Components of the Rural/Northern Economy Under the Growth Scenario, 2001 Compared with 2020

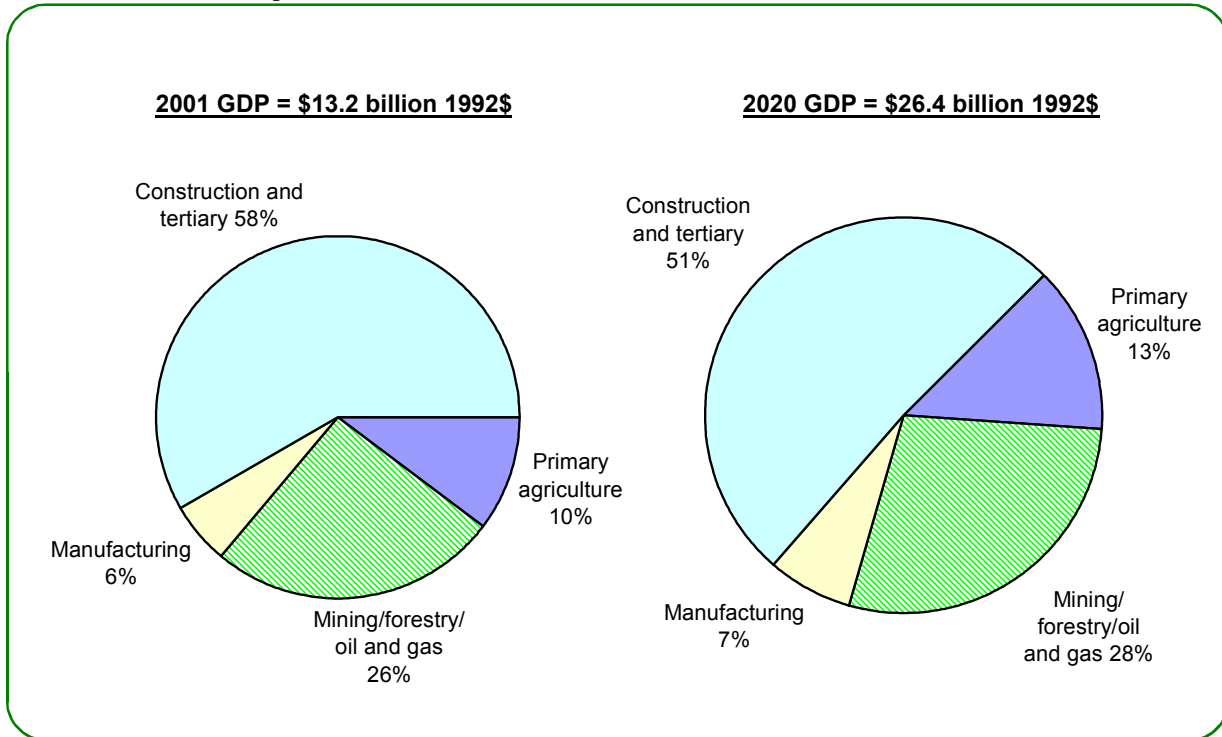


Figure 4.3 Employment, Status Quo and Growth Strategy Scenarios

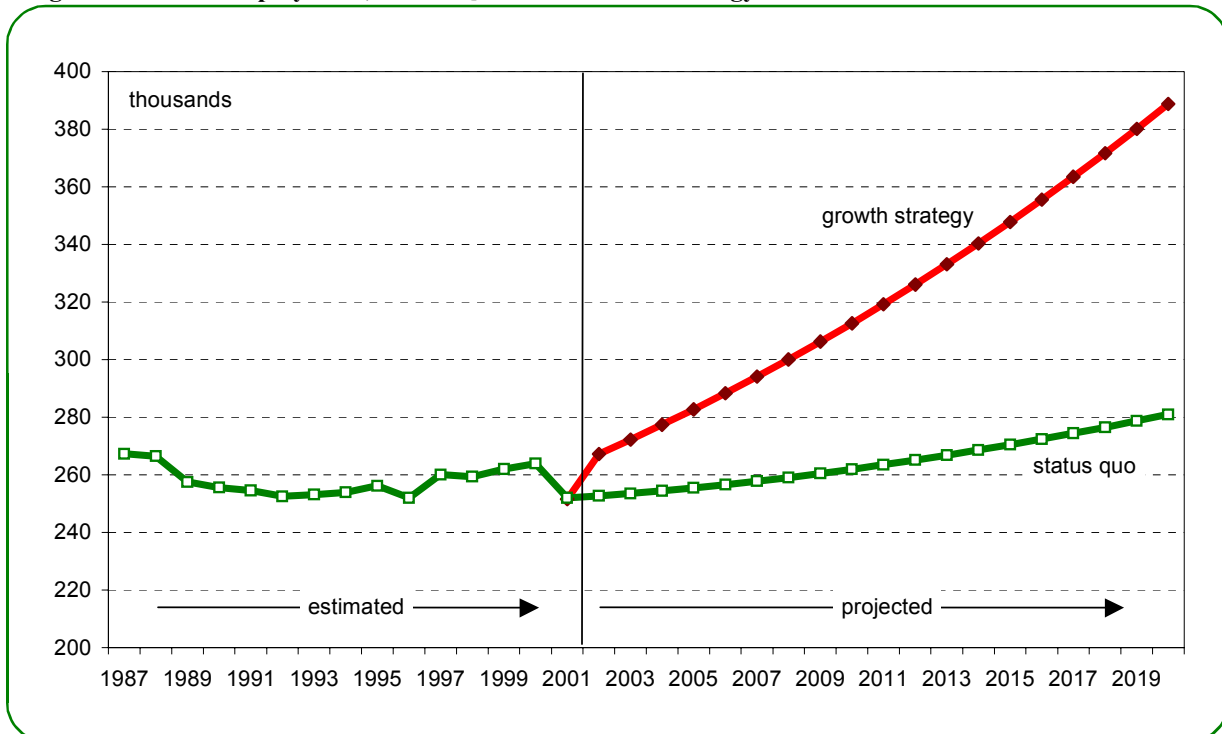


Figure 4.4 New Capital Investment Requirements, Status Quo and Growth Strategy Scenarios

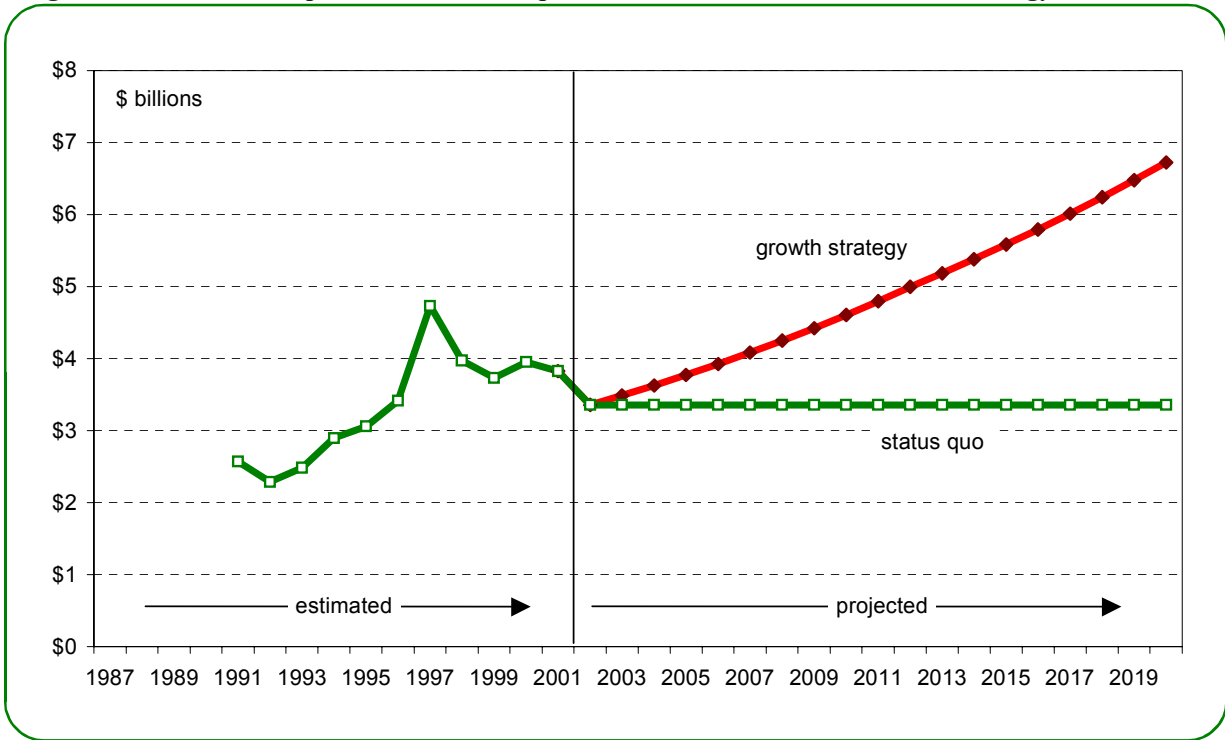
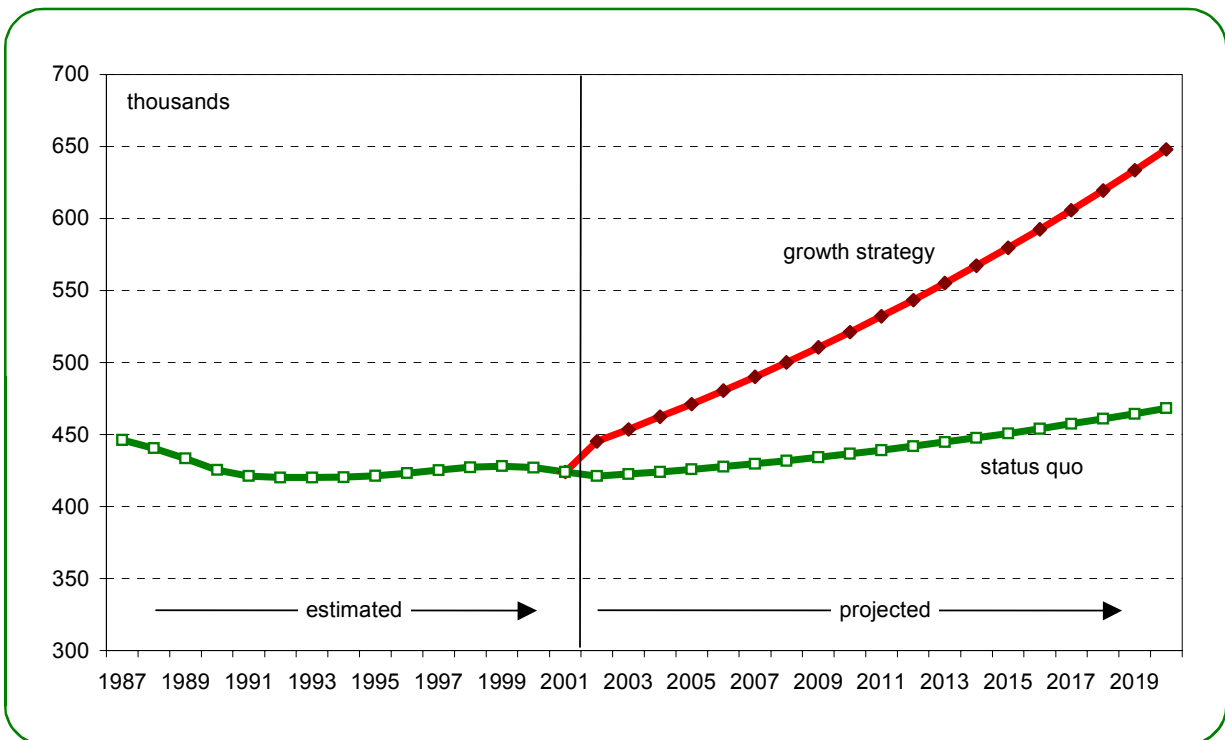


Figure 4.5 Rural/Northern Adult (15 & older) Population, Status Quo and Growth Strategy Scenarios



The population effect of the increase in employment is significant. Under the status quo scenario, the adult population was expected to remain near 450,000 for the foreseeable future. Under the growth strategy scenario, the adult population grows by an average of 2.1% per year to reach 650,000 by the year 2020. Although it is impossible to forecast where these people will choose to live, it is probable that much of the growth will be in the larger towns and small cities in rural Saskatchewan.¹²

If the ratio of children to adults and rural to urban residents holds, this means that the total adult population in Saskatchewan will approach 1.5 million persons and the total population will be just under 2 million.

¹² The Kulshreshtha study also suggested that although "rural Saskatchewan" would grow it may be at the expense of smaller communities.

SECTION 5 SAMPLE PROJECTS AND DEVELOPMENTS

The growth strategy is predicated on the notion that if the size of the rural economy (as measured by the gross domestic product) can grow more quickly than labour productivity (as measured by GDP per employee) then the rural economy will thrive. That is a consequence of simple arithmetic. The question remains – can the rural economy grow at 3.5% per year for the next twenty years? In particular, can primary agriculture grow at an annual rate of 3.6% per year and can the construction/tertiary sector grow at 3% per year. What magnitude of change in the structure of the rural economy would be required.

In this section, an attempt to answer these questions is made by looking at specific projects and developments that could occur in rural Saskatchewan. It is important to emphasize that the set of sample projects and developments be seen as samples – they are simply a method to determine whether the goals outlined in Section 4 are achievable. And if so, what order of magnitude of investment and labour would be required? The projects are not prescriptive; they are not a model of how the rural economy would or even should develop. They are only examples of economic development projects that could yield the desired growth rate in GDP.

As a final cautionary note, the assumptions used to model the sample projects/developments are not intended to represent a business plan for their development. Although industry experts were consulted about their feasibility and the parameters associated with them, only orders of magnitude were required and the authors made a number of simplifying assumptions. All of these assumptions would need to be tested and detailed feasibility studies conducted before any of the projects or developments were actually undertaken.

1. Markets for all of the products are assumed to exist. We assumed, for example, that the Saskatchewan cattle herd could double with no impact on the world market demand or price.
2. In general, a few large projects are modelled rather than a number of smaller ones, ethanol plants, for example.
3. The negative impacts on other sectors of the economy were not considered. A massive switch to livestock production, for example, could have a negative impact on the existing grain handling system. Other displacement effects were also ignored.
4. The feasibility of the projects, from an infrastructure point of view, was considered but not quantified. Water supply and waste management for hog barns, for example, would be a constraint.
5. The spin off effects of the developments were not modelled.
6. The GDP contribution of the projects was estimated as simply the wages paid plus the profit generated. That is, the impact of taxes, subsidies, and capital cost allowances were not factored into the calculation.

5.1 Beef Cattle Expansion

Most ACRE members felt that Saskatchewan could significantly increase the size of its beef cattle herd, provide more finishing in the province with local feedlots and, over the long term, generate sufficient supply to justify large scale beef packing plants.

To model this initiative, the existing beef cattle herd in Saskatchewan (currently at just over 1 million breeding cows) was increased at an aggressive rate. The assumptions underlying the scenario are as follows.

- Each year 70% of heifers born were retained to increase the breeding herd size. This enables an additional 250 herds of 300 head each to be added to the province's herd each year. This has the effect of increasing the number of breeding cows in the province from just over one million to 2.5 million (see Figure 5.1).
- Each incremental 300-head herd would require a capital investment of \$48,000 for plant and equipment and would employ one person per year. The contribution to GDP is estimated at \$30,000 per herd.
- Feedlots were sized to process 20,000 feeder cattle per year and the number of cattle finished in Saskatchewan increases by 3 million over the twenty year period (see Figure 5.2), the equivalent of 150 new feedlots.
- Each feedlot would require a capital investment of \$29 million and provide employment of 21 full-time equivalents. The contribution to GDP is estimated at \$1 million per feedlot.

Figure 5.1 Breeding Beef Cows in Saskatchewan, Actual (as of January 1st) and Projected

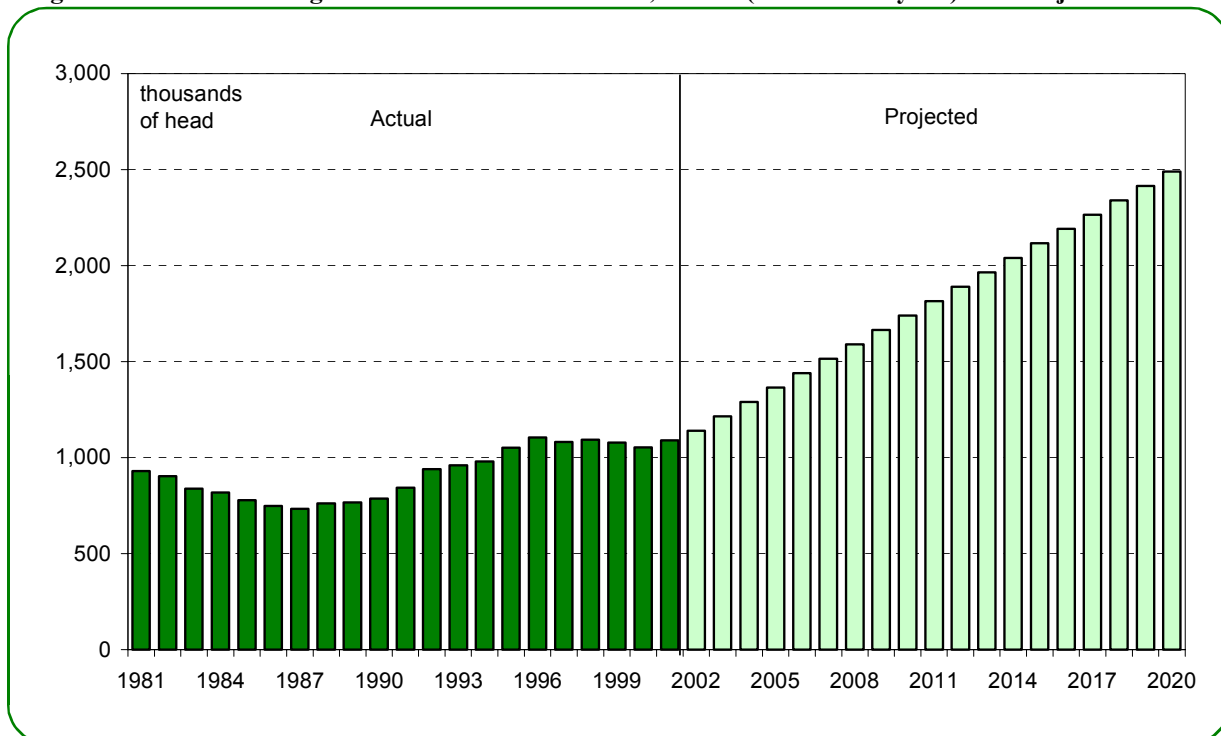
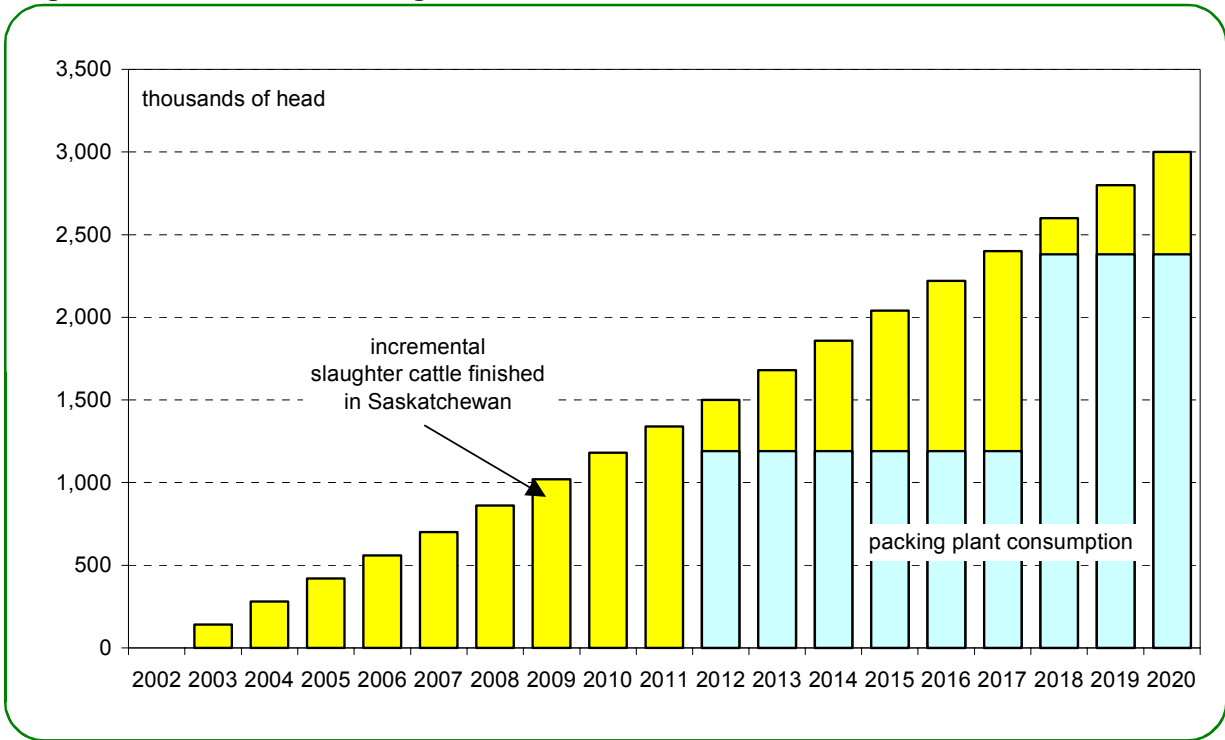


Figure 5.2 Incremental Slaughter Cattle Finished and Packed in Saskatchewan



The additional supply of slaughter cattle would trigger the construction of slaughter plants, small scale specialty operations, expansion of existing operations, and the construction of large "world class" plants. Only the large plants were modelled as follows.

- When the incremental slaughter cattle reaches one million and two million, in approximately ten years and fifteen years respectively, large (4,500 head per day) slaughter plants are built in rural Saskatchewan, probably near larger communities.
- The slaughter plants each require \$100 million in capital investment, increase employment by 1,500 persons, and generate \$45 million in GDP per year.

Table 5.1 shows the impact of this development on primary agriculture (the herd expansion and feedlots) and the manufacturing/processing sector (the packing plants).

Table 5.1 Impact of Cattle Expansion

Primary agriculture	Total capital investment required over 20 years	\$4,566 million
	Employment increase by 2020	7,650
	Contribution to GDP by 2020	\$285 million
Manufacturing and processing	Total capital investment required over 20 years	\$200 million
	Employment increase by 2020	3,000
	Contribution to GDP by 2020	\$90 million

5.2 Hog Barn Expansion

There has been a significant increase in the number of hog barns in Saskatchewan over the past few years. The number of breeding sows, for example, has increased from 75,000 in 1996 to 110,000 in 2002. Many observers feel that the province has the capacity to increase hog production much more quickly. If the number of barns increases more rapidly, there will be sufficient supply of slaughter hogs to justify large scale hog packing plants in the province.

To model this kind of development, the existing number of breeding sows in Saskatchewan was increased at an aggressive rate. The assumptions underlying the scenario are as follows.

- The number of breeding sows is increased by 30,000 per year in 5,000 sow barn units, that is, six new barns per year in addition to the "normal" growth rate evident in the past ten years.
- Every 5,000 sow barn requires \$23 million in capital investment, increases employment by 41 persons, and increases GDP by an estimated \$3.3 million each.

By the end of the twenty years, the province would have the equivalent of 120 hog barns and 650,000 breeding sows.

Figure 5.3 Breeding Sows in Saskatchewan, Actual and Projected

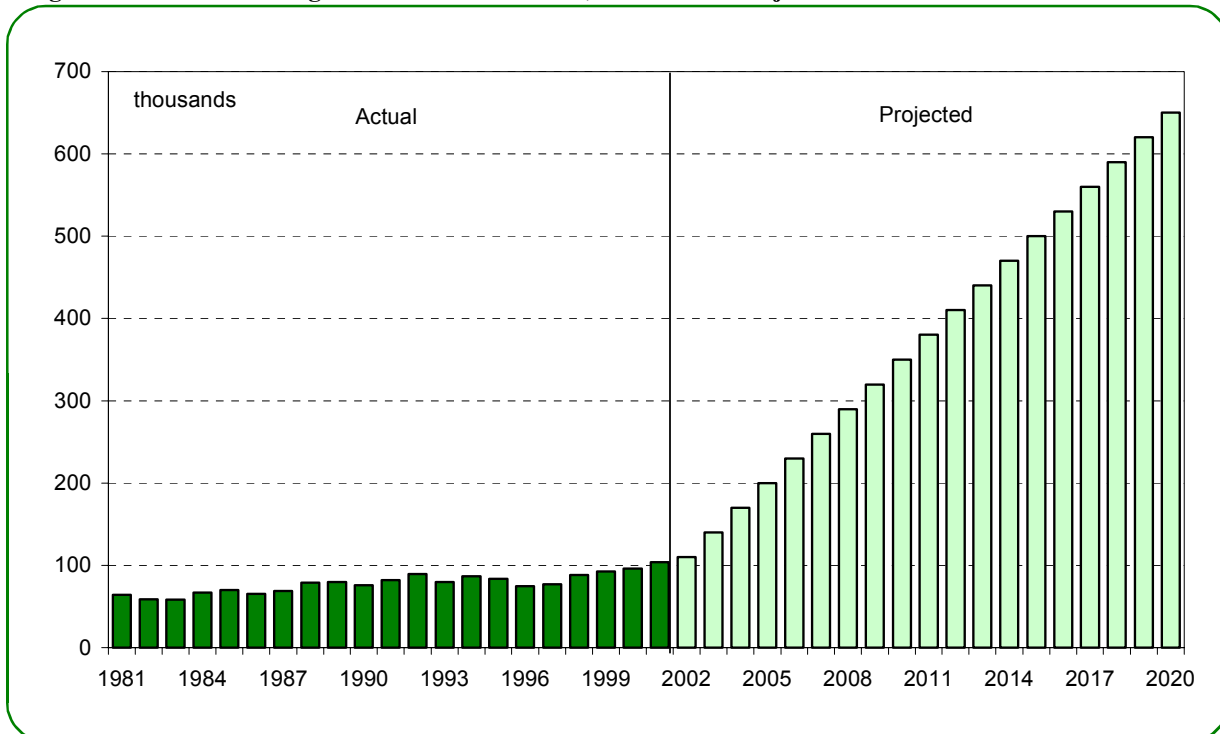
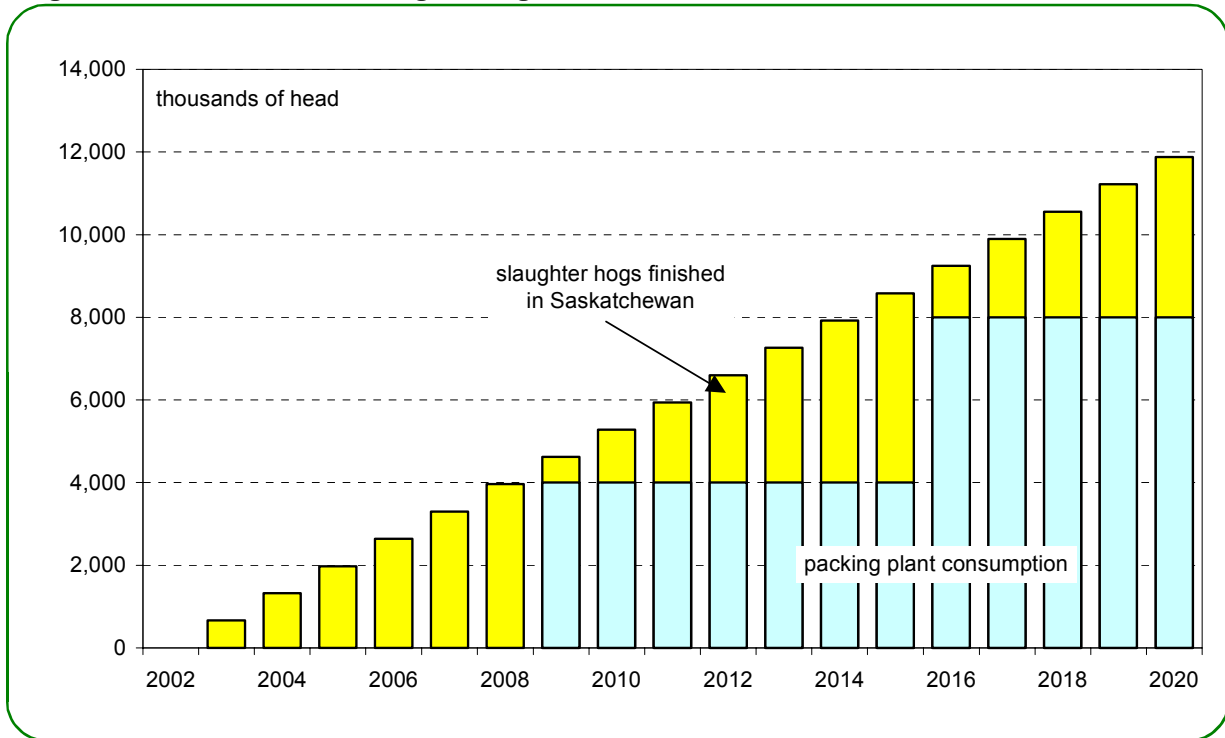


Figure 5.4 Incremental Slaughter Hogs Produced and Packed in Saskatchewan



The additional supply of slaughter hogs would trigger the construction of slaughter plants, small scale specialty operations, expansion of existing operations, and the construction of large "world class" plants. Only the large plants were modelled as follows.

- When the incremental slaughter hogs reach one million and two million, in approximately ten years and fifteen years respectively, large (4 million head per year) slaughter plants are built in rural Saskatchewan, probably near larger communities.
- The slaughter plants each require \$100 million in capital investment, increase employment by 1,500 persons, and generate an estimated \$45 million in GDP per year.

Table 5.2 shows the impact of this development on primary agriculture (the expansion in hog barns) and the manufacturing/processing sector (the packing plants).

Table 5.2 Impact of Hog Barn Expansion

Primary agriculture	Capital investment required over 20 years	\$2,484 million
	Employment increase by 2020	4,400
	Contribution to GDP by 2020	\$356 million
Manufacturing and processing	Capital investment required over 20 years	\$200 million
	Employment increase by 2020	3,000
	Contribution to GDP by 2020	\$90 million

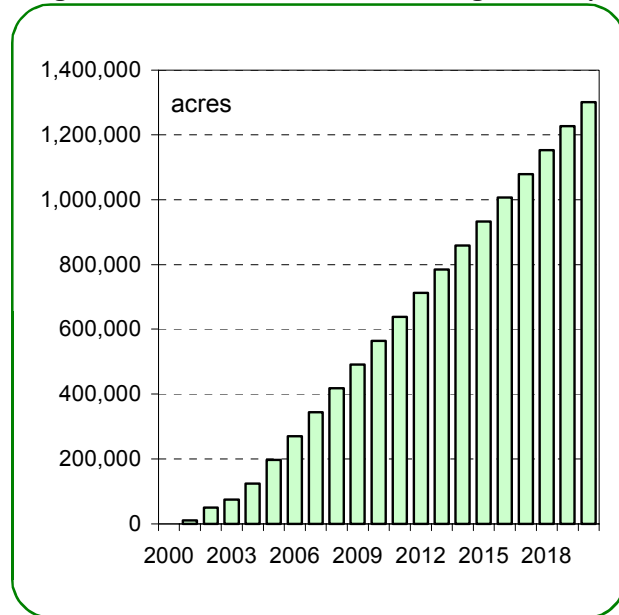
5.3 Agro Forestry

The provincial government has recently passed regulations that require 10% of the feedstock to lumber mills to be harvested from non-crown land. Conversion of private holdings along the northern fringe of the grain belt from crop land to tree farms could provide feedstock to existing mills and could, in the long term, provide an opportunity for one or more fibre plants to process the raw materials into finished products.

To model the impact of such a development, every section (640 acres) of tree farm development was assumed to require a capital investment of \$600,000, increase employment by 2 persons, and increase GDP by \$120,000. Over the course of the twenty years, 1.3 million acres of non-forested crop land or about 2% of Saskatchewan’s farm land was converted to agroforestry production in the model (see Figure 5.5).

Near the end of the twenty-year period, production from these acres is sufficient for a fibre plant. The plant would require a \$200 million investment, employ 260 people, and contribute \$50 million to GDP.

Figure 5.5 Acres Converted to Agroforestry



Agroforestry is properly considered as part of the resource sector. Table 5.3 shows the impact of this development on that sector and on the manufacturing/processing sector (the fibre plant).

Table 5.3 Impact of Agroforestry Expansion

Resources	Capital investment required over 20 years	\$1,219 million
	Employment increase by 2020	4,060
	Contribution to GDP by 2020	\$244 million*
Manufacturing and processing	Capital investment required over 20 years	\$200 million
	Employment increase by 2020	260
	Contribution to GDP by 2020	\$50 million

* this would increase dramatically if a Kyoto-style emissions trading scheme was in place

5.4 Organic Crop Production/Neutraceuticals

Organic Production

The 2001 Census of Agriculture found that there were 720 Saskatchewan farms producing certified organic field crops although the number of acres was not published. A systematic conversion of nine million acres of Saskatchewan's wheat, flax, and field pea production (about one quarter of the current acreage) to certified organic status was modelled.

There is very little incremental capital or labour cost involved in the conversion; the primary GDP was assumed to increase by \$145 million by the end of the twenty-year period on the basis of higher profitability because of the assumed price premium for organic products.

Neutraceuticals

The market for neutraceuticals is untested and there are conflicting reports about the profitability of the industry and the way it could be developed. In the model, the development is modelled by assuming establishment of:

- 15 small holdings producing supplements;
- 57 small holdings producing herbs and botanicals; and
- 42 small holdings producing natural care products.

This will require an initial \$2 million in capital investment to reach 200,000 acres. The contribution to GDP will be \$5 million. Employment will increase by 160 persons. A processing plant is established in 2010. The plant will require \$24 million in capital investment, employ 60 persons, and generate \$12 million in GDP.

Table 5.4 shows the impact of these developments on the primary agriculture and manufacturing/processing sectors.

Table 5.4 Impact of Organic and Neutraceuticals Production

Primary agriculture	Capital investment required over 20 years	\$2 million
	Employment increase by 2020	160
	Contribution to GDP by 2020	\$150 million
Manufacturing and processing	Capital investment required over 20 years	\$24 million
	Employment increase by 2020	60
	Contribution to GDP by 2020	\$12 million

5.5 Wind Farms

Saskatchewan has an opportunity to take advantage of the wide open spaces and above-average wind regimes by generating wind power in rural areas. The growth strategy assumes that a large number of wind turbines could be placed in clusters in southern Saskatchewan. The assumptions for each of the towers are¹³:

- each tower produces 0.66 megawatt hours of electricity;
- the capital cost per tower is \$1.2 million; and
- each tower would generate .3 person years of employment.

A total of 5,000 units phased in over twenty years would ultimately generate over 3,000 megawatt hours of electricity – 20% of current electrical consumption. Assuming that the electricity generated is priced at cost, the contribution to GDP was estimated to be \$83 million by the end of the twenty-year period but this would increase substantially if tradeable Kyoto-style carbon credits were in place.

Although not part of the model, a large number of wind turbines installed in the province could provide spinoff benefits to the provincial manufacturing and processing sector which would build the towers, the turbines themselves, or other related infrastructure.

Figure 5.6 Impact of Wind Farms, Electricity Generated

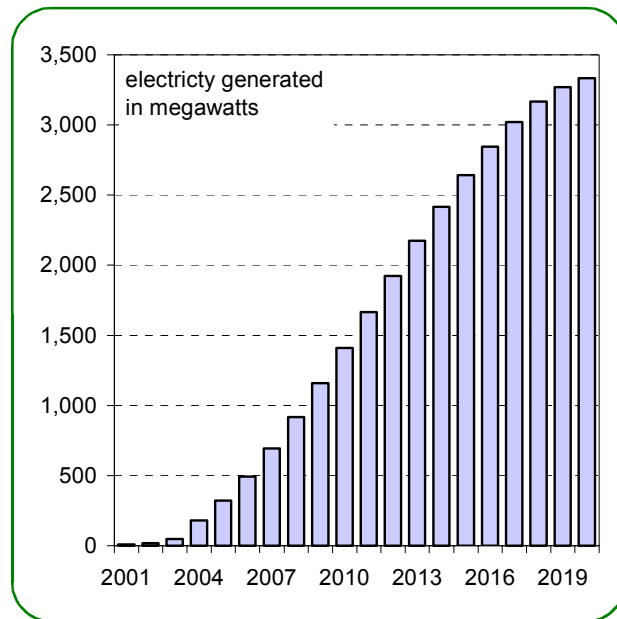


Table 5.5 shows the impact of this development on the resource/utility sector.

Table 5.5 Impact of Wind Farm Development

Resource/utilities	Capital investment required over 20 years	\$6,000 million
	Employment increase by 2020	1,665
	Contribution to GDP by 2020	\$83 million

* this would increase dramatically if a Kyoto-style emissions trading scheme was in place

¹³ These figures were based on SaskPower's 17 wind turbines at Gull Lake Saskatchewan.

5.6 Ethanol Plants

Ethanol plants have long been considered for the province and one is already operational. Although there is some disagreement about their configurations, most observers feel that additional ethanol plants would be viable.

In the model two large-scale plants (200 million litres per year) are assumed in the model - one in 2005 and one in 2010. Each plant would require \$100 million in investment, employ 40 people and generate \$16.2 million of GDP.

When both plants are in place, a total of 400 million litres of ethanol per year would be produced. Motor gasoline sales in Saskatchewan are approximately 1,700 million litres so a 90:10 gasoline:ethanol blend in the province's fuel pumps would use the output from the first plant. Production from the second plant would have to be sold outside the province.

Figure 5.7 Ethanol Production

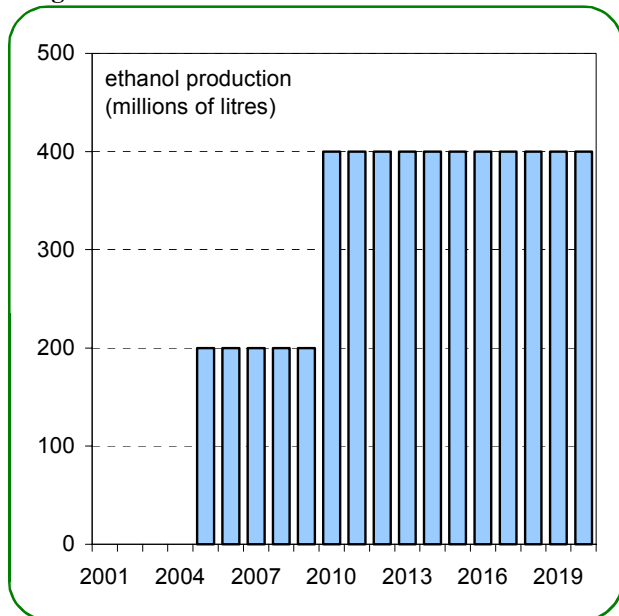


Table 5.6 Impact of Ethanol Plant Development

Manufacturing and processing	Capital investment required over 20 years	\$200 million
	Employment increase by 2020	80
	Contribution to GDP by 2020	\$32 million*

* this would increase dramatically if a Kyoto-style emissions trading scheme was in place

5.7 Summary

Although the sample projects/developments were not intended to "implement" the growth strategy, it is instructive to see what impact the combination of the seven projects would have on the rural/northern economy if they were all put in place.

In the growth strategy for primary agriculture, the target GDP in 2020 was \$3,560 million, an additional \$1,676 million more than in the status quo scenario. The sum of the sample projects, namely

- the cattle herd expansion and feedlots,
- the increase in hog barns, and
- the organic and neutraceutical production,

add only \$791 million to the rural/northern primary agricultural GDP over the twenty-year period.

This is in spite of the fact that more than \$7 billion was invested over the period, half again as much as the estimated requirements. Labour requirements for the sample projects are, on the other hand, somewhat lower than estimated. This suggests that the estimates for new capital investment required for the growth strategy scenario may be too low.

The strategy for the resource sector was not significantly different from the status quo scenario; investment and GDP growth would continue much the same as they had in the past. The addition of the agroforestry and wind farm projects would contribute \$377 million out of the \$929 million in growth required over the next twenty years.

As with primary agriculture, the level of new capital investment assumed in the growth strategy

Table 5.7 Impact of Sample Projects/Developments on Targets

		Status quo scenario	Growth strategy	Incremental requirements	Sample project total
Primary agriculture	GDP in 2020 (\$ billions)	\$1,884	\$3,560	\$1,676	\$791
	Capital investment over twenty years (\$ millions)	\$11,831	\$16,571	\$4,741	\$7,052
	Labour requirements by 2020 (000)	40	72	32	12
Resources	GDP in 2020 (\$ billions)	\$6,549	\$7,478	\$929	\$377
	Capital investment over twenty years (\$ millions)	\$24,725	\$36,722	\$11,996	\$7,418
	Labour requirements by 2020 (000)	23	24	1	6
Manufacturing and processing	GDP in 2020 (\$ billions)	\$1,702	\$1,878	\$176	\$274
	Capital investment over twenty years (\$ millions)	\$3,360	\$7,876	\$4,516	\$824
	Labour requirements by 2020 (000)	25	28	3	6

scenario may be too low – 62% of the estimated capital investment requirements are required for the sample projects/developments but this yields only 40% of the target GDP growth. Labour requirements for the sample projects are, on the other hand, much higher than estimated.

A different picture arises in the manufacturing and processing sectors. The sample projects/developments, namely

- the beef and pork packing plants,
- the forest fibre plant,
- the ethanol plants, and
- the nutraceutical processing plant

generate more than the required GDP growth with only 20% of the capital investment. Labour requirements for the sample projects are, on the other hand, double the estimated value.

If these sample projects/developments are representative of the kinds of development that would generated the growth strategy scenario, then it appears that, on balance, we may have underestimated the capital and labour requirements somewhat. Labour and capital productivity growth was not considered in the sample projects – they were sized according to current principles – and this may account for some of the difference.

In spite of these difficulties, the sample projects do provide an answer to the fundamental question of whether or not the 3.5% growth rate is achievable. That answer is a qualified yes in the sense that it is possible if agriculture in rural Saskatchewan undergoes a fundamental change.

Each of the sample projects/developments are large enough to fundamentally change the nature of the rural economy in some regions of the province. Each would move a significant portion of the land base away from grain-based production. And yet all rather than some of these projects would have to be implemented in order to achieve the projected growth rate. Rural Saskatchewan would become much more industrialized.

SECTION 6 SUMMARY AND IMPLICATIONS

In this section, some of the issues and concerns raised during the ACRE consultation process are discussed. Collectively, these tend to be suggestions for further study.

We start, however, with an overview of the implications of this research.

Implications

The implications of the strategy are more profound than they first appear. Some of the key issues are discussed below.

1. The focus of the strategy is on GDP growth rather than employment growth. Employment is a desirable spinoff effect of economic growth rather than a target in and of itself. This is a completely different approach than is currently in place where community and government leaders emphasize the jobs that will be created by new initiatives rather than their profitability and value added.
2. By assuming that productivity continues to grow at its current rate, the strategy implicitly assumes that the provincial economy will remain competitive. Creating employment by lowering productivity will ensure that, over the long term, the businesses and the strategy will fail.
3. Based on recent experience, the way to increase GDP more quickly is to move the focus of the rural/northern economy from primary agriculture to manufacturing and processing. This will require a large amount of capital investment both to restructure the economy and to provide continuing productivity growth. The implications for primary agriculture in Saskatchewan are profound.
4. The labour required to effect this kind of change cannot come from within the province. The province's natural population growth rate (births less deaths) is less than 3,000 persons per year. Even reduced interprovincial out-migration will not provide the 5,000 to 10,000 employees per year required to work in rural/northern Saskatchewan.
5. The capital requirements are also beyond the capacity of rural residents and also beyond the public sector. Investment from outside the province will be required.

Further Research Suggested

One of the main issues that arose during the discussions with ACRE members was the feasibility of the 3% growth rate in the rural/northern construction/tertiary service sector. It was routinely suggested that a more sophisticated economic model and/or a comparison with other provinces would help quantify the spinoff effects of the sample projects into the rural tertiary sector and to the overall provincial economy.

The role of the public sector in facilitating the sample projects/developments was also discussed. Although there was some disagreement, most members felt that the provincial government would require all its available resources to provide the necessary infrastructure without getting directly involved in the project financing.

ACRE members suggested a number of other initiatives that could be added to the sample of projects/developments. These included

- irrigation (probably in conjunction with horticulture)
- aquaculture
- tourism development
- small-scale manufacturing
- wind power turbine manufacturing
- poultry/milk production
- sheep herd expansion (for meat)

There was also some interest in modelling smaller scale meat packing plants and ethanol plants rather than the large ones used in the growth strategy scenario.

Appendix

**Presentation made to ACRE members
Fall, 2000**

Growing the Rural Economy

Version 2
September, 2001

Background

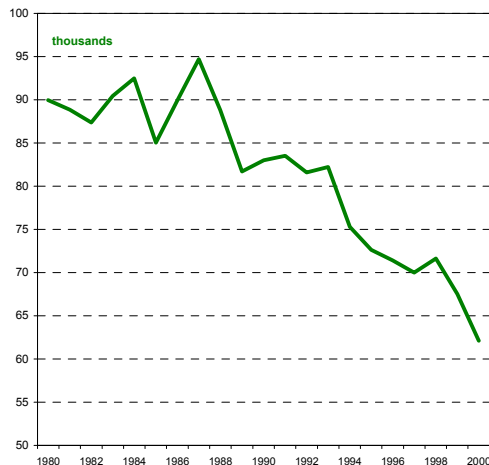
- This research was commissioned by the Saskatchewan Department of Agriculture and Food for the Action Committee on the Rural Economy (ACRE).
- The research will:
 - describe the current state of the rural economy in Saskatchewan;
 - develop a scenario for a growing rural economy, comparing it with the status quo; and
 - estimate the impact of several rural economic development initiatives proposed by the ACRE Executive.
- The research is being undertaken jointly by Ken Perlich of ECONEX and Doug Elliott of *Sask Trends Monitor*.
- This is a "work in progress".

Outline and Methodology

- The size of the current rural economy is estimated and an aggressive but achievable target for economic growth is set for twenty years in the future. Targets are chosen for the four individual sectors:
 - primary agriculture;
 - manufacturing and processing;
 - resources;
 - construction and tertiary services.
- For each sector, the capital and labour required to reach the target growth rates are estimated.
- The implications for the rural economy - population and employment, for example - are examined.
- Sample projects and development opportunities are examined to illustrate how the target can be achieved.
- *Note: "Rural" is defined as the part of the province outside the Census Metropolitan Areas of Regina and Saskatoon. Data limitations mean that the far North is also included as a rural area for the analysis which follows.*

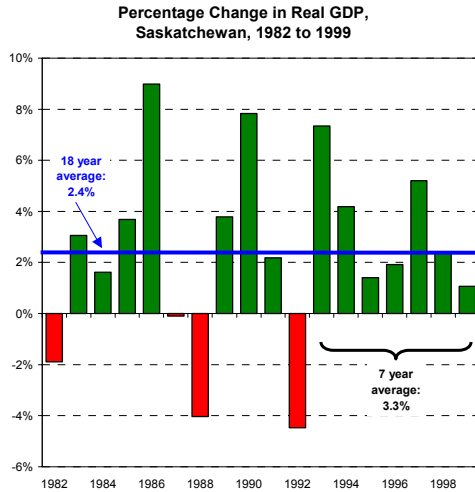
Context - Farms, Farmers, and Rural Depopulation

Employment in Agriculture (main job)



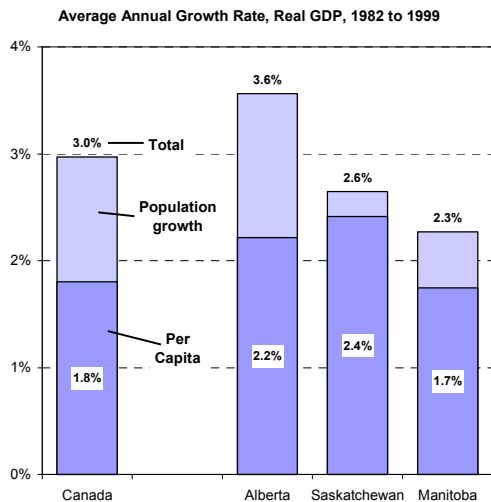
- Since 1961, the number of farm operations has declined from over 90,000 to 55,000. Off-farm income is a necessary supplement for most of these 55,000 farms.
- The number of people who report their main job as farming has fallen from 90,000 in the early 1980s to less than 62,000 in 2000. It will drop to just over 50,000 in 2001.
- As the number of farms declined, the farm population declined as well, dropping from 300,000 in 1961 to 145,000 in 1996.

Context - The Provincial Gross Domestic Product



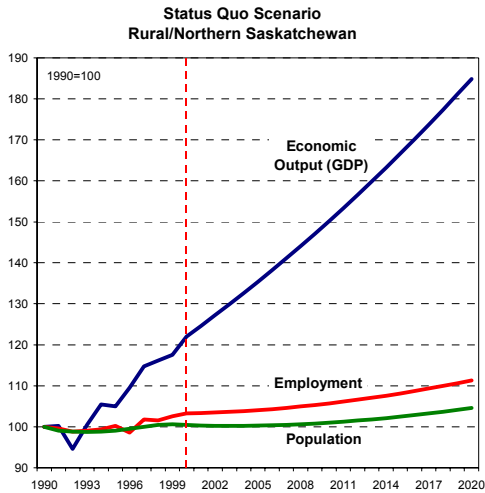
- The Gross Domestic Product or GDP is a measure of the value of all goods and services produced in an economy. Real GDP, measured in constant 1992 dollars, can also be interpreted as the "value added" by an economy. It is the measure used most often as an indicator of economic well being.
- The Saskatchewan GDP, measured in real terms, has been growing at an average of 2.4% per year since the early 1980s. The growth rate since the last recession in 1992 has averaged 3.3% per year.
- The use of GDP as an indicator of economic well being is not without difficulties. We also need to examine the impact on the population and the labour force.

Context - Economic Growth



- Economies grow by virtue of an increase in the value of all goods and services produced. A significant portion of economic growth, from housing to haircuts, can be generated by the simple increase in the population.
- Saskatchewan's economy in the 1980s and 1990s has outperformed both the national and the other prairie economies on a per capita basis.
- The province lacks the element of growth driven by population. The overall economy has grown by an average of 2.6% per year compared with
 - 3.0% in Canada as a whole,
 - 3.6% in Alberta; and
 - 2.3% in Manitoba.

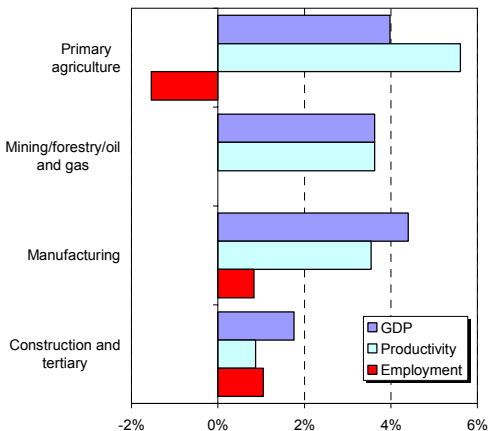
Context - Status Quo Outlook



- From 1990 to 1999, the rural economy grew by 18% but employment increased by only 3%. In contrast the urban economy grew by 23% and employment grew by 11%.
- If the present pattern continues, the size of the rural economy will continue to grow but the population and employment levels will remain near their current levels.
- The projected growth rate for the rural GDP is 2.1% per year in this "status quo" scenario.

The Productivity Issue

Average Annual Growth Rates, 1989 to 1999, Rural Saskatchewan



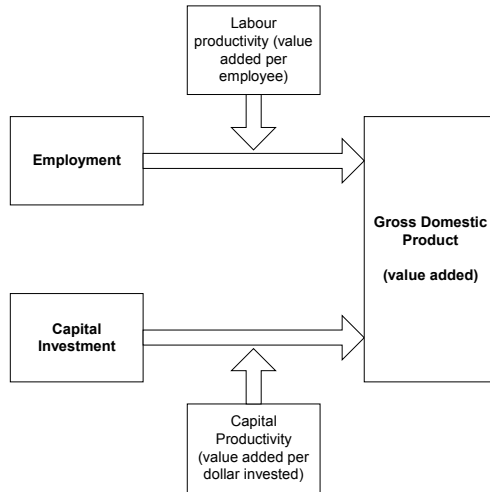
- The "productivity issue" can be summed up by the simple relationship between economic growth, employment growth, and labour productivity growth*.

$$\text{Employment} = \text{GDP} - \text{productivity}$$

- When labour productivity grows more quickly than GDP, employment declines (e.g. primary agriculture). When GDP growth more quickly than productivity, employment increases (e.g. manufacturing).
- To generate employment we "simply" need GDP growth rates in excess of labour productivity growth rates.

* labour productivity is defined in simple terms as GDP per person employed

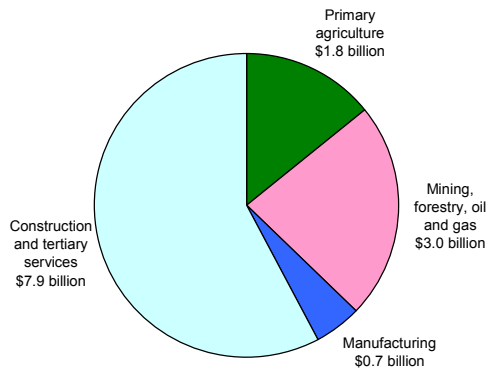
The Approach



- Lowering labour productivity is not the way to create employment. If the goods and services produced in rural Saskatchewan are to remain competitive in the Canadian and world markets, the value added per employee must continue to grow.
- The strategy has, therefore, two components:
 - increase GDP fast enough so that even with productivity increases, employment (and therefore population) grows; and
 - capture more of the spillover benefits in rural Saskatchewan.

The Rural Economy in 2000

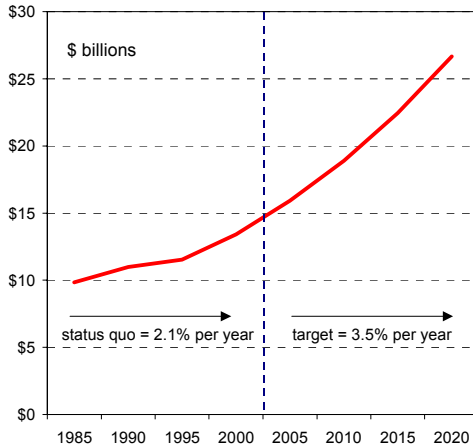
Rural/Northern GDP in 2000
\$13.4 Billion



- Accurate data on the size of the rural economy are not available. This estimate for 2000 was obtained by allocating a proportion of the provincial GDP to rural Saskatchewan based on employment figures. The far North is included in the "rural" employment numbers; Regina and Saskatoon are excluded.
- This calculation suggests that 55% of Saskatchewan's GDP is in the rural and northern parts of the province. As a percentage of the provincial GDP, the rural/northern economy has:
 - 93% of agriculture;
 - 78% of the resource sector;
 - 43% of manufacturing; and
 - 46% of construction and tertiary services.
- The current composition of the rural economy is:
 - agriculture 14%
 - resources 22%
 - manufacturing 5%
 - construction and tertiary services 59%.

Target for the Rural Economy in 2020

Rural GDP Target Growth



- A 3½% annual growth rate in the rural GDP (rather than the 2.1% status quo scenario) would effectively double the size of the rural economy over 20 years:
 - from \$13.4 billion in 2000
 - to \$27 billion in 2020.
- The spinoff effects into urban economies are difficult to measure but they would be substantial and may take a number of years to materialize.
- With a rural economy growing at 3½% per year, the overall provincial economy could easily grow at 4% to 5% per year, well above the long term trend.

Target Composition for the Rural Economy in 2020

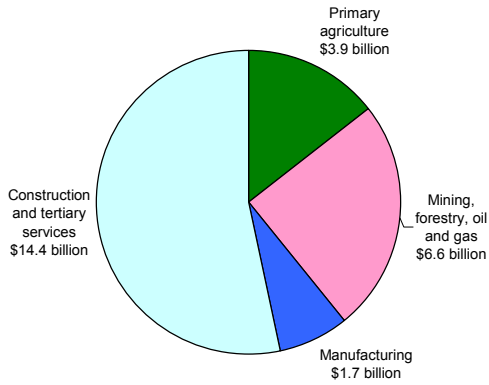
	Gross Domestic Product (billions of 1992 dollars)			Average Annual Growth Rate	
	1985	2000	2020	1985-2000	2000-2020 target
Primary agriculture	\$1.2	\$1.8	\$3.9	3.1%	3.8%
Mining/forestry/oil and gas	\$1.7	\$3.0	\$6.6	4.0%	4.0%
Manufacturing/processing	\$0.4	\$0.7	\$1.7	4.1%	4.3%
Construction and tertiary	\$6.6	\$7.9	\$14.4	1.1%	3.0%
Total rural economy	\$9.8	\$13.4	\$26.6	2.1%	3.5%

- If present trends continue, agricultural GDP will increase to \$2.5 billion by 2020. Maintaining primary agriculture's share of the current rural economy will require a doubling of agricultural GDP over the next twenty years to \$3.7 billion in 2020. Returning to a 15% share of the rural GDP from its current 14% share would require a GDP of \$3.9 billion in 2020 and this is the target chosen.
- With no interventions, the resource sector will arguably grow at the 15 year trend line rate of 4% per year. This yields a target GDP of \$6.6 billion.
- Rural manufacturing/processing has recently increased at 4.1% per year, increasing its share of the rural economy. A target of \$1.7 billion, the equivalent of an annual growth rate of 4.3% was chosen to achieve the overall target growth rate of 3.5% per year.
- With a target growth rate of 3½% for the rural economy, the construction and tertiary services sector will arguably grow at 3.5% per year, driven by the growth rates in the other three sectors*. A slightly lower (3.0%) growth rate was chosen to reflect leakages into urban areas. By 2020, the construction and tertiary services GDP would be \$14.4 billion.

* In Alberta, the rural tertiary sector increased more quickly from 1987 to 2000 than the other three sectors

The Target Rural Economy in 2020

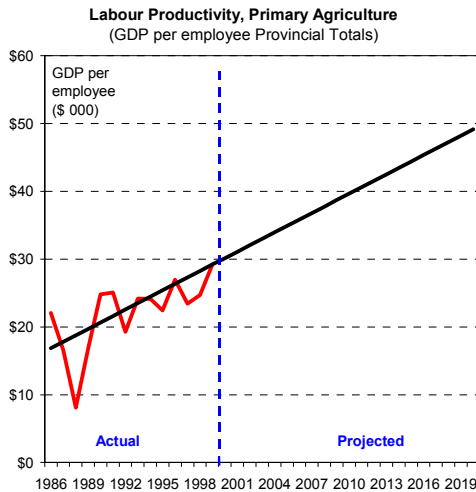
Rural/Northern GDP in 2020
\$27 Billion



- With the chosen targets, the rural GDP will not look dramatically different than it does now although the "pie" will be much larger.
- All three of the goods producing sectors will have a slightly larger share, the construction and tertiary services sector a slightly smaller one.

Sector by Sector Analysis

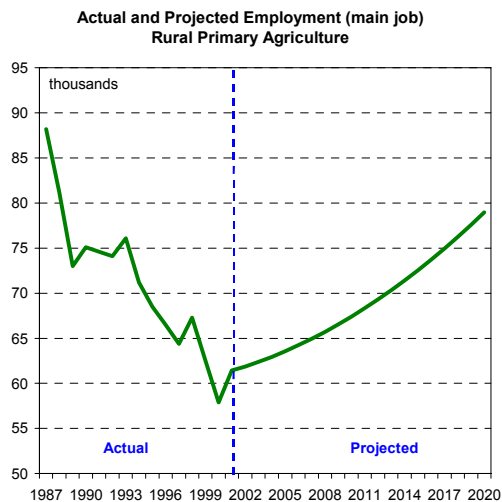
Implications for Primary Agriculture - Employment



Note: GDP per employee in Alberta has, until recently, averaged \$30,000.

- Doubling GDP in rural agriculture will require a change in the way we do business. There will be, at most, the same number of acres under cultivation in 2020 as there is in 2000, value added per acre will have to double.
- The ratio of GDP and employment (a measure of labour productivity) is used to project employment requirements into the future.
- This methodology is hampered somewhat by the difficulty in measuring farm employment. The ratio on the chart is based on the number of persons who report their main job as agriculture. The figures have been adjusted to reflect a move from grain-based to livestock-based agriculture.
- GDP per employee is forecast to grow at an average rate of 2.5% per year, reaching \$50,000 per employee by 2020.

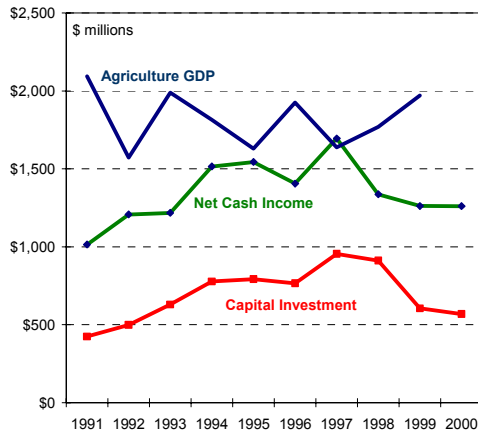
Implications for Primary Agriculture - Employment



- With the 3.8% growth in GDP and the 2.5% increase in labour productivity, the incremental employment requirements in rural agriculture will be 20,000 persons over the next twenty years.
- Total employment reaches 80,000 by 2020.
- This will effectively reverse the decline evident since the mid 1980s.

Implications for Primary Agriculture - Investment

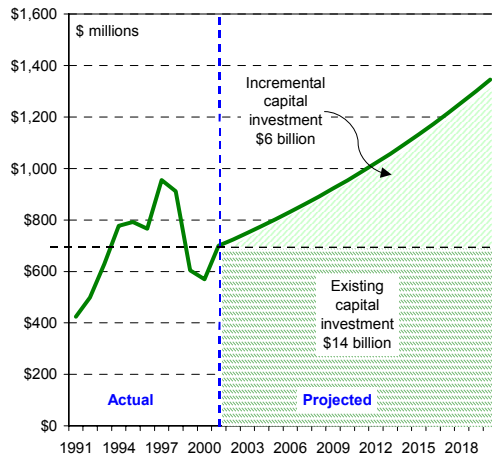
Relationship between Investment in Agriculture and Farm Income



- Capital investment in agriculture tends to track net cash at just under a ratio of 1:2. The investment in new buildings, equipment, and machinery during the 1990s was done as cash flow permitted.
- In other words, primary agriculture is self-financed in the sense that investment is made from cash flow.
- The capital requirements in the future are estimated on the assumption that the average capital investment in the 1990s - \$700 million per year - will have to grow at 3.8% per year, the same rate as the growth in agricultural GDP.
- Self-financing is not possible under this scenario.

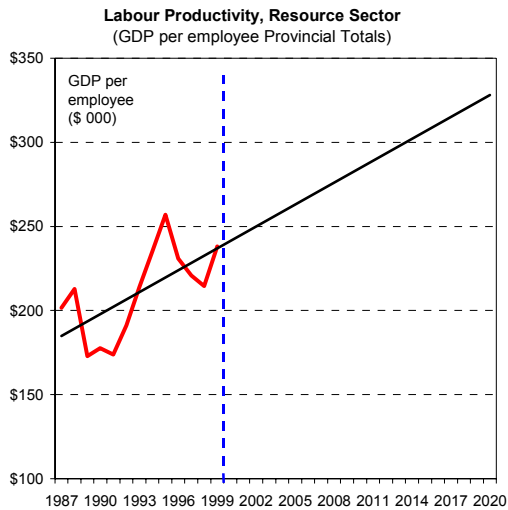
Implications for Primary Agriculture - Investment

Actual and Projected Capital Investment Rural Primary Agriculture



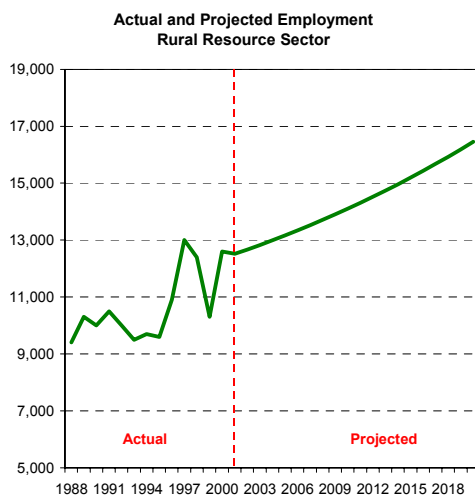
- New growth will require new capital investment which is assumed to increase at 3.8% per year, totaling \$6 billion over the next twenty years.
- Total capital investment required for rural primary agriculture over the next twenty years is \$20 billion or an average of \$1 billion per year.
- The nature of the existing \$700 million per year of capital investment will probably change as well.

Implications for the Resource Sector - Employment



- The resource sector is capital rather than labour intensive. This is evident in the fact that GDP per employee is ten times the ratio for manufacturing or agriculture.
- Assuming a "status quo" growth rate in the resource sector implies steady growth of approximately 1.5% per year in GDP per employee.

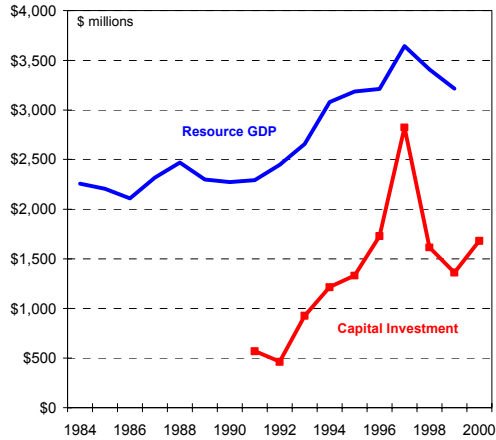
Implications for the Resource Sector - Employment



- With the assumed 4% annual growth rate in GDP for the resource sector and a 1.5% growth rate for labour productivity, resource employment in rural Saskatchewan increases from 13,000 to nearly 17,000 over the forecast period.
- Total employment reaches 17,000 by 2020.
- This is effectively a continuation of the trend line in the 1990s.

Implications for the Resource Sector - Capital Investment

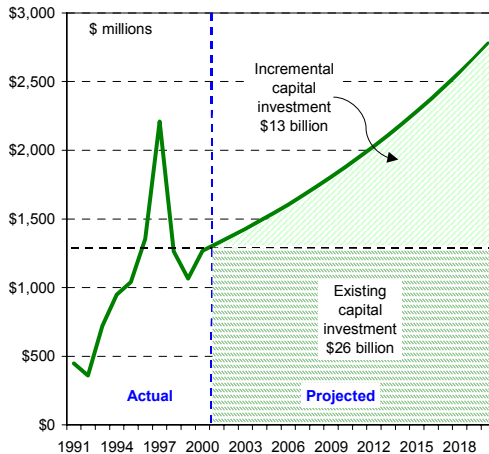
Relationship between GDP and Investment in the Resource Sector



- The relationship between capital investment and resource sector GDP is strong and consistent with very little lag time between investment and increases in GDP.
- The 500% growth in capital investment between 1992 and 1997 led to a 50% increase in resource sector GDP. Over the longer term the \$1.3 billion annual investment yielded a 4.3% growth rate in GDP.

Implications for the Resource Sector - Capital Investment

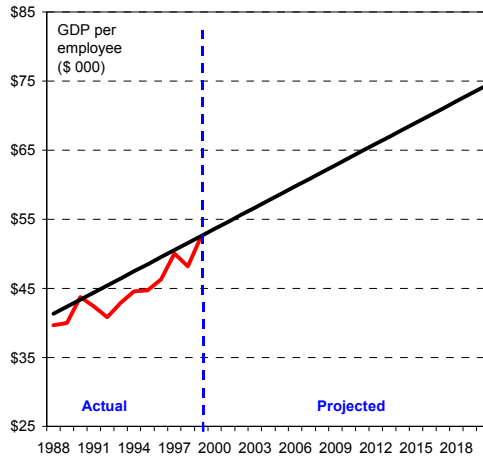
Actual and Projected Capital Investment Rural Resource Sector



- To sustain the assumed 4% growth rate in resource sector GDP, we assume that capital investment will have to grow at annual rate of 4% as well.
- For the rural component of the resource sector, this implies a total of \$13 billion in incremental capital investment. Capital investment in the rural resource sector increases from its current estimated level of \$1.3 billion to \$2.8 billion by 2020.
- Total investment in the rural resource sector is \$39 billion over the twenty years.

Implications for Manufacturing and Processing - Employment

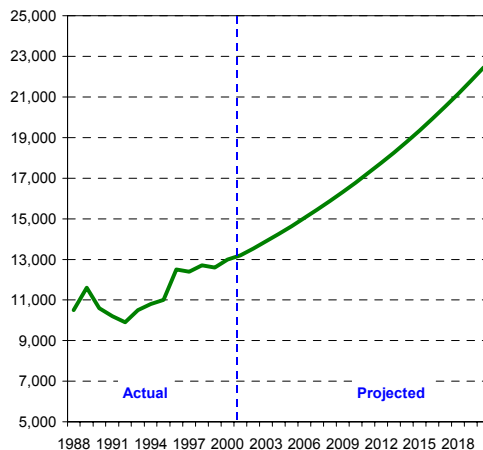
Labour Productivity, Manufacturing & Processing
(GDP per employee: provincial totals)



- Output per employed person in manufacturing and processing is affected by the kind of products manufactured. Productivity is much higher in "high technology" production environments such as motor vehicles than in, for example, clothing.
- The assumption for the model is that output per employed person will continue to grow at the current trend line, increasing by an average of 1.6% per year from its current level of \$53,000 per employee to almost \$75,000 per employee in 2020.

Implications for Manufacturing and Processing - Employment

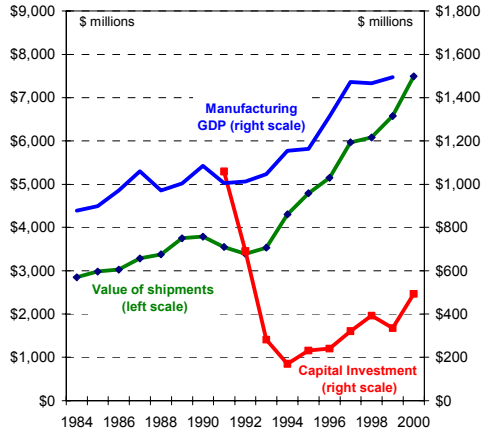
Actual and Projected Employment
Rural Manufacturing and Processing



- With the 4.3% growth in GDP and the 1.6% increase in labour productivity, incremental employment requirements in rural manufacturing and processing will be 9,000 over the next 20 years.
- Total employment reaches 22,000 persons by 2020.
- This is effectively a continuation of the trend line in the 1990s.

Implications for Manufacturing and Processing - Investment

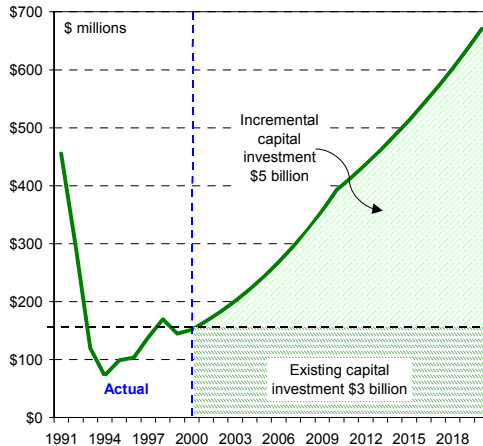
Relationship between Investment in Manufacturing, Output, and GDP



- The relationship between capital investment in manufacturing and processing and increases in output or GDP is complex.
- The lack of capital investment data prior to 1990 makes analysis difficult but the increase in output from 1993 to 1997 appears to be a consequence of the high levels of capital investment in 1991 and 1992.
- Manufacturing GDP tends to follow output relatively closely.

Implications for Manufacturing and Processing - Investment

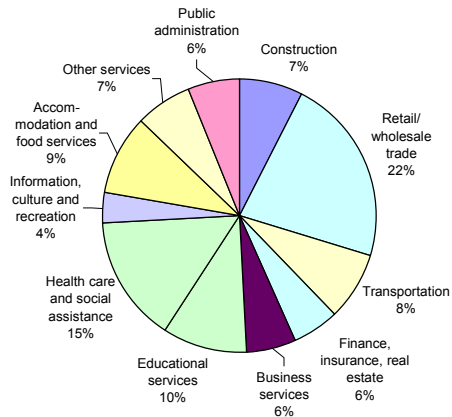
Actual and Projected Capital Investment Rural Manufacturing and Processing



- It seems clear that, at least over the short term, capital investment will have to increase in order to yield the 5.5% annual rate of growth in rural manufacturing and processing.
- The chart shows the assumed rate of growth in investment from the current estimated level of \$150 million per year:
 - 10% growth rate for 2000 to 2010;
 - 5.5% growth rate from 2011 to 2020.
- With those assumptions, the incremental investment required is \$5 billion, approximately \$250 million per year.
- Capital investment in rural manufacturing and processing totals \$8 billion or an average of \$400 million per year.

Construction/Tertiary Sector - What it is

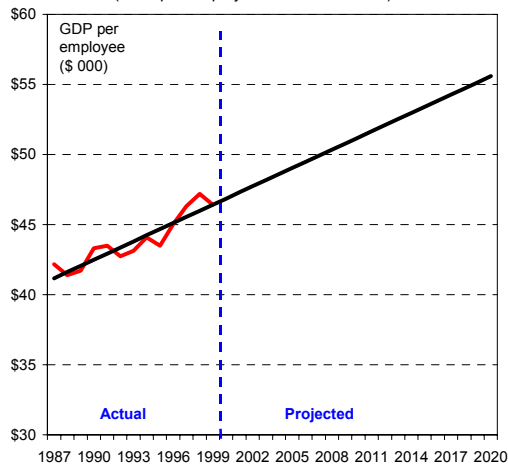
Employment in the Rural Construction/Tertiary Sector, Saskatchewan, 2000



- With a growing rural economy, much of the employment growth in the rural construction/tertiary sector will occur in:
 - construction;
 - accommodation and food services;
 - educational services;
 - transportation; and
 - retail/wholesale trade.
- Most of the indirect (spinoff) effects into business services and the finance/insurance industry will accrue to Regina and Saskatoon.

Implications for the Tertiary Sector - Employment

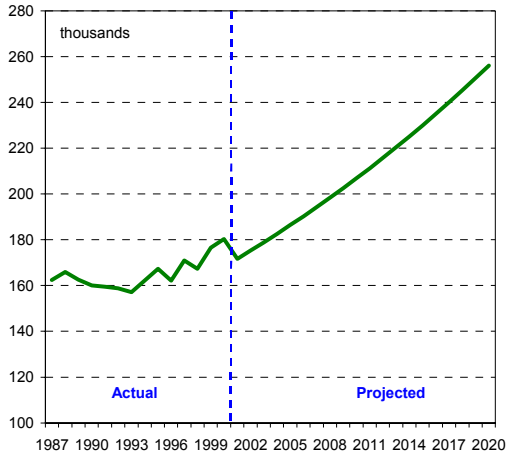
Labour Productivity, Construction/Tertiary Sector
(GDP per employee Provincial Totals)



- Output per employed person in the tertiary sector is currently near \$46,000 per person.
- The assumption for the model is that output per employed person will continue to grow at the current trend line, increasing by an average of 0.9% per year from its current level of \$46,000 per employee to \$56,000 per employee in 2020.

Implications for the Tertiary Sector - Employment

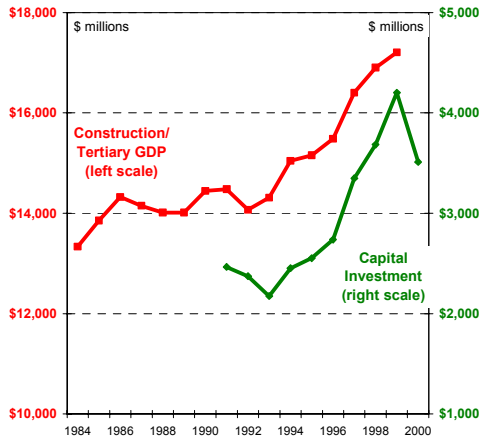
Actual and Projected Employment
Rural Construction/Tertiary Sector



- With the growth in GDP and the increase in labour productivity, employment requirements in the rural tertiary sector processing will increase substantially, from 170,000 people to 260,000 by the end of the forecast period.

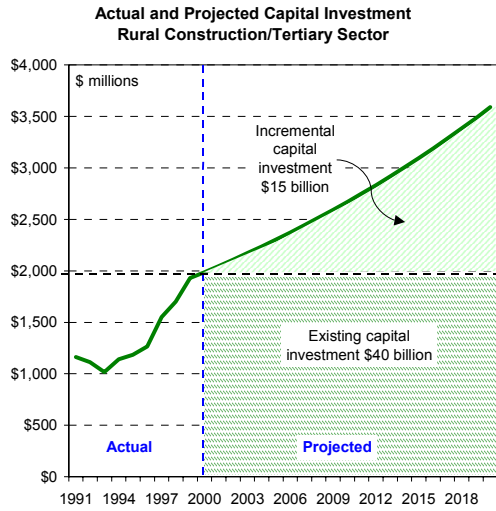
Implications for the Tertiary Sector - Investment

Relationship between Investment in the
Construction/Tertiary Sector and GDP



- The relationship between capital investment in the tertiary sector and GDP is linear and consistent.
- The model assumes a growth rate of 3.0% per year in new capital investment.

Implications for the Tertiary Sector - Investment

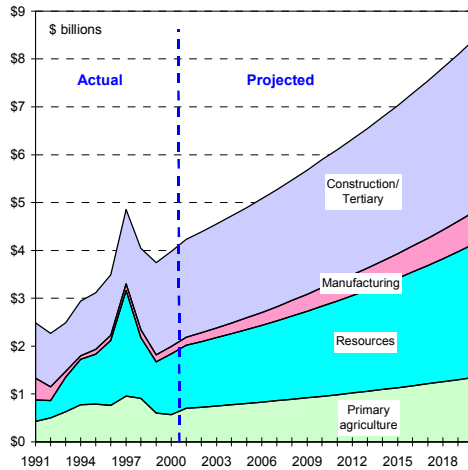


- With those assumptions, the incremental investment required is \$15 billion, approximately \$750 million per year.
- Capital investment in the rural tertiary sector totals \$55 billion or \$2.75 billion per year.

Aggregate Impacts

Required Investment - Aggregate of the Four Sectors

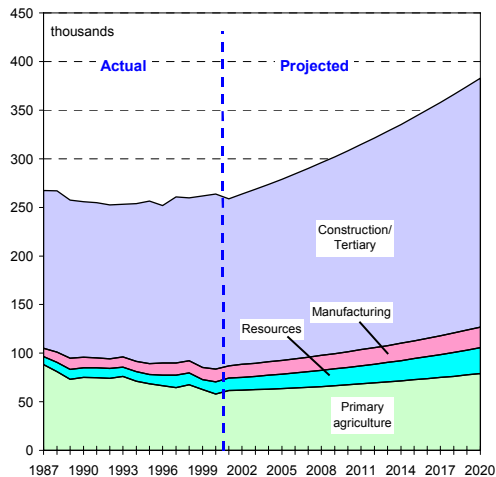
Total Rural Capital Investment



- The projection suggests that, in order to achieve a 3½% growth rate over the next twenty years, \$220 million per year of incremental capital investment will be required, doubling the current rate of capital investment over the course of the twenty years from \$4 billion to over \$8 billion per year.
- Although the graph shows a linear increase, in actual practise there may be a need to significantly "front-end" load the capital investment.
- Total incremental capital investment required over the twenty years is \$40 billion.

Impact on Employment - Aggregate of the Four Sectors

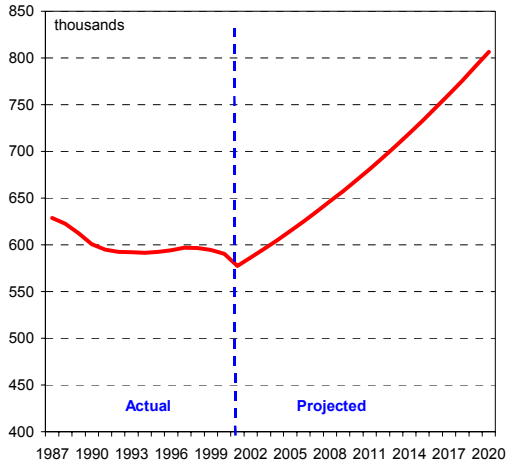
Total Rural Employment



- Employment will begin to increase as new projects are implemented. Most of the employment growth is in the (labour-intensive) construction/tertiary sector.

Impact on Population

Rural Population

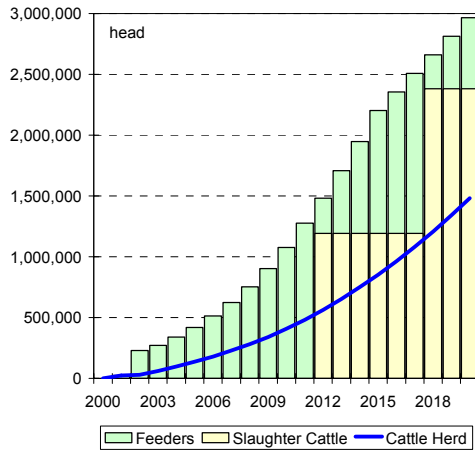


- Assuming a constant employment rate at its current level of 62%, the population in rural Saskatchewan will need to grow from 575,000 to 800,000 over the twenty years in order to provide an adequate labour force.
- This kind of growth rate implies a significant increase in international and inter-provincial migration to the province.

Getting to There from Here: Sample Projects/Developments

Project/Development #1: Cattle

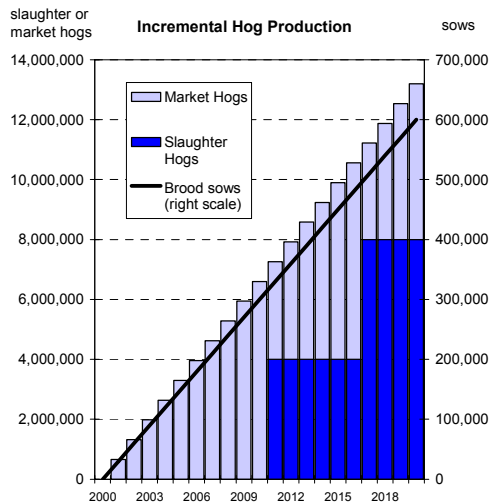
Incremental Cattle Production



- Saskatchewan currently has approximately one million beef cattle. Increasing the herd size to 2.5 million will provide development opportunities for feedlots and, in the longer term, two beef packers. The growth rate is based on the addition of 250 new 300 cow herds per year.
- For every herd of 300 cow/calf pairs:
 - capital investment of \$48,000;
 - employment increases by one person;
 - GDP grows by \$30,000.
- For every 20,000 feedlot feeders:
 - GDP grows by \$1 million;
 - employment increases by 21;
 - capital investment increases by \$29 million
- Each packing house processes 4,500 cattle per day, requires \$100 million in investment and increases employment by 1,500 and GDP by \$45 million.

Project/Development #2: Hogs

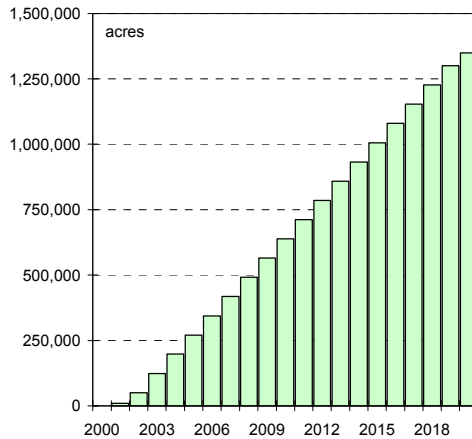
Incremental Hog Production



- Saskatchewan currently has approximately 100,000 sows. Increasing the number by 30,000 sows per year will provide, over the forecast period, the opportunity for two hog packers.
- Every 5,000 sow barn:
 - requires \$23 million in capital investment;
 - increases employment by 41 persons; and
 - increases GDP by \$3.3 million.
- The packing house requires \$100 million in investment and increases employment by 1,500 and GDP by \$45 million.

Project/Development #3: Agroforestry

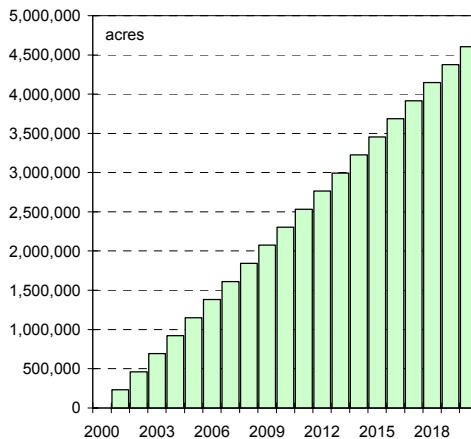
Incremental Tree Farm Development



- Conversion of crop acreage along the northern fringe of the grain belt to tree farms will, in the long term, provide an opportunity for one or more fibre plants.
- Every section of tree farm development:
 - requires a capital investment of \$600,000;
 - increases employment by 2 persons; and
 - increases GDP by \$120,000.
- Near the end of the forecast period, production is sufficient for a fibre plant. The plant will require a \$200 million investment,
 - employ 260 people, and
 - contribute \$50 million to GDP.

Project/Development #4 - Organic Crop Production

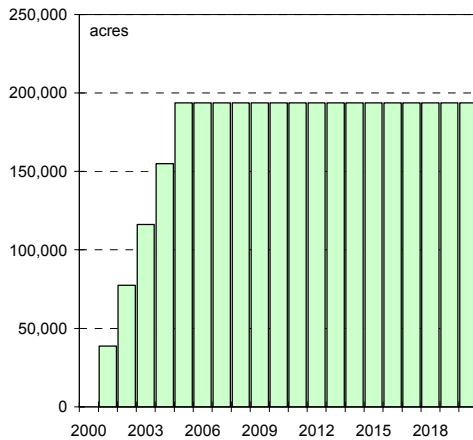
Incremental Organic Crop Development



- Conversion of 1/4 of the current production of field peas, wheat, and flax into certified organic products will generate \$145 million in GDP.
- No incremental capital or labour is required for this conversion.

Project/Development #5 - Nutraceuticals

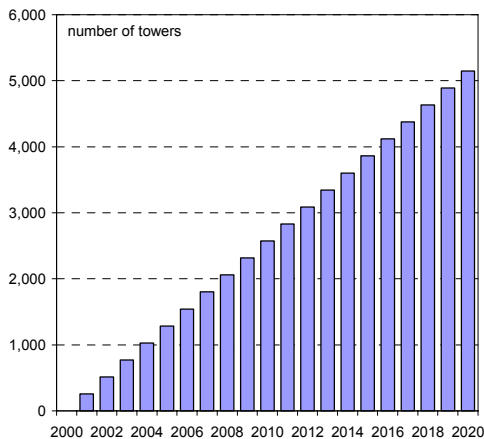
Incremental Nutraceutical Development



- The model assumes establishment of:
 - 15 plants producing supplements;
 - 57 plants producing herbs and botanicals; and
 - 42 plants producing natural care products.
- The farms are phased in over the first five years. This will require an initial \$2 million in capital investment to reach 200,000 acres. The contribution to GDP will be \$5 million. Employment will increase by 160 persons
- A processing plant is established in 2010. The plant will:
 - require \$24 million in capital investment;
 - employ 60 persons; and
 - generate \$11.5 million in GDP.

Project/Development #6 - Wind Farms

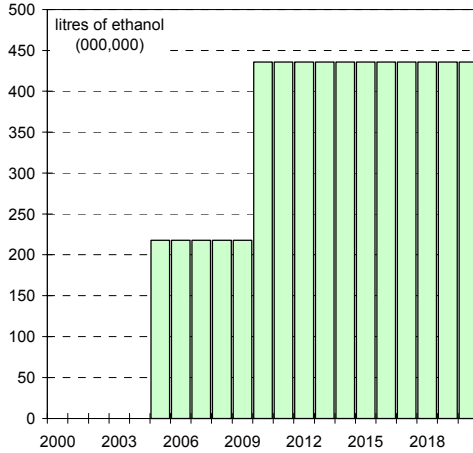
Wind Power Development



- Each tower produces 0.66 megawatt hours. A total of 5,000 units phased in over twenty years would ultimately generate 20% of today's current electrical consumption - 3.4 gigawatt hours.
- Capital required is \$1.2 million per turbine.
- Employment required is 1,500 persons at the end of the twenty years.
- Contribution to GDP depends on Kyoto agreement but is assumed to be \$3.3 million by the end of the forecast period.

Project/Development #7 - Ethanol Plants

Incremental Ethanol Development



- Two \$100 million ethanol plants are assumed in the model - one in 2005 and one in 2010.
- Each plant has 40 employees and generates \$16.2 million of GDP.
- Each plant produces 218 million litres of ethanol. (Motor gasoline sales in Saskatchewan are approximately 1,700 million litres.)

Summary

	Rural GDP in billions of 1992 dollars			
	Current (2000)	Status Quo (2020)	Target (2020)	Modelled (2020)
Primary Agriculture	\$1.8	\$2.8	\$3.9	\$3.9
Resource Sector	\$3.0	\$6.6	\$6.6	\$6.6
Manufacturing and Processing	\$0.7	\$1.0	\$1.7	\$1.5
<u>Construction/Tertiary</u>	<u>\$8.0</u>	<u>\$12.0</u>	<u>\$14.4</u>	<u>\$14.4</u>
Total	\$13.5	\$22.4	\$26.5	\$26.3

	Rural Employment (000)			
	Current (2000)	Status Quo (2020)	Target (2020)	Modelled (2020)
Primary Agriculture	58	57	79	74
Resource Sector	13	20	20	20
Manufacturing and Processing	13	14	22	21
<u>Construction/Tertiary</u>	<u>180</u>	<u>217</u>	<u>259</u>	<u>259</u>
Total	264	308	380	373

	Average Annual Capital Investment (\$ millions)			
	Current (2000)	Status Quo (2020)	Target (2020)	Modelled (2020)
Primary Agriculture	\$570	\$570	\$990	\$964
Resource Sector	\$1,268	\$1,964	\$1,964	\$1,964
Manufacturing and Processing	\$155	\$408	\$408	\$259
<u>Construction/Tertiary</u>	<u>\$1,963</u>	<u>\$1,963</u>	<u>\$2,716</u>	<u>\$2,716</u>
Total	\$3,955	\$4,905	\$6,078	\$5,904

Next Steps

- Fine tune some of the existing sample projects/developments and add others that are currently being studied - e.g. irrigation, tourism development, enhanced CO₂ oil recovery.
- Using a more sophisticated economic model and/or a comparison with other provinces, justify/quantify the spinoff effects into the rural tertiary sector and to the overall provincial economy.
- Quantify current investment capital available from Saskatchewan residents and businesses.
- Examine the changes in land use implied by these developments.
- Prepare a written report documenting the model.