

An Environmental Scan of Issues facing the Nova Scotia Economy

Working Document – May 2005



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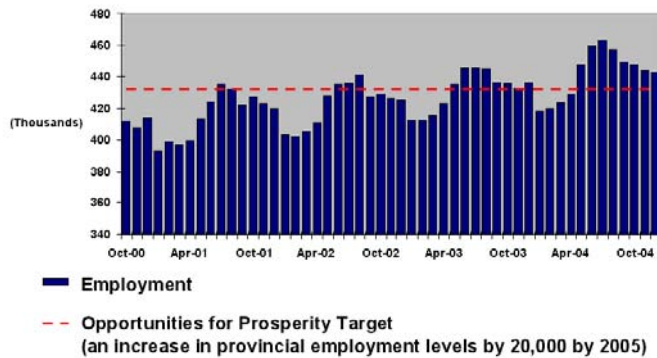
Introduction

Released in October 2000, Nova Scotia's Economic Growth Strategy, *Opportunities for Prosperity* sets out the following objectives:

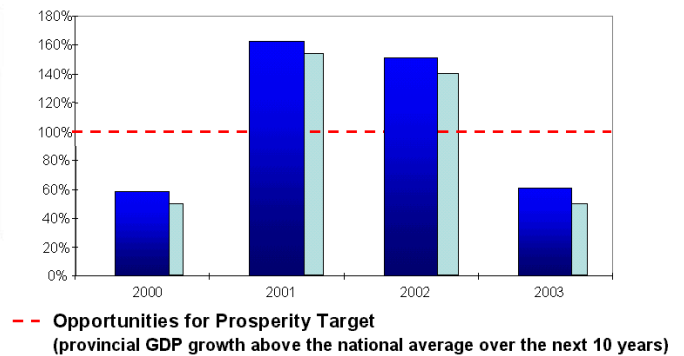
- a balanced budget by 2002–03;
- an increase in provincial employment levels by 20,000 by 2005;
- investment per person above the national average by 2005;
- export expansion by \$2 billion, or about 40 per cent, between 1999 and 2005; and exports per person above the national average by 2010;
- provincial GDP growth above the national average over the next 10 years; and
- consistent net in-migration through to 2010.

Since October 2000, employment growth in Nova Scotia has been steady and on par with the national average. Four years after the release of the strategy, full-time employment has increased by over 26,000 and part-time employment has increased by approximately 10,000. Furthermore, growth in GDP has been above the national average in both 2001 and 2002.

Monthly Employment Estimates, Nova Scotia
Source: Statistics Canada

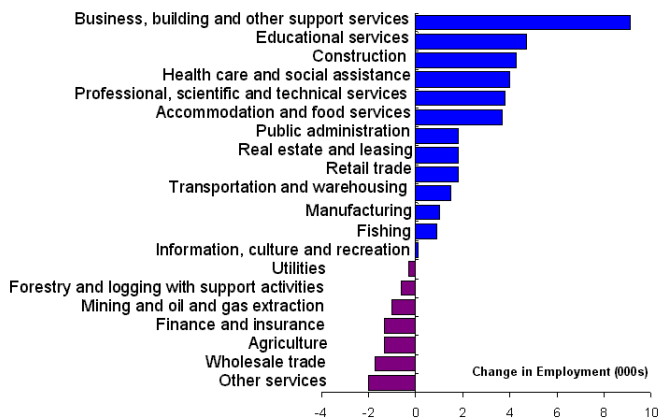


GDP Growth for Nova Scotia as a percentage of the national average
Source: Statistics Canada

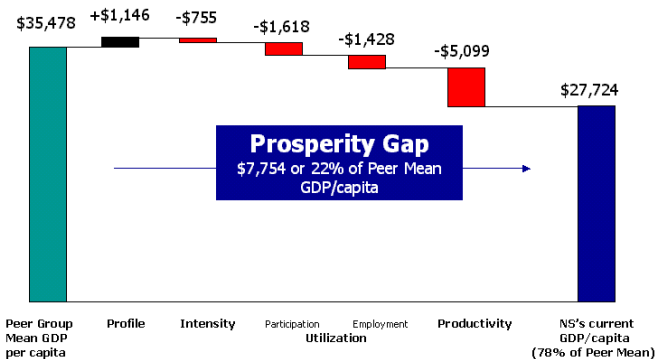


The employment and participation rate has improved throughout the province. However, the majority of employment growth has not occurred in high-value added sectors of the economy and there still remains a considerable gap between Nova Scotia's GDP per capita and similar jurisdictions in North America.

Employment Growth by Sector, 2000-2004, Nova Scotia
Source: Statistics Canada



Prosperity Gap Nova Scotia and Mean of Peer Group 2002
Source: Voluntary Planning



Moving forward, Nova Scotia's economy must continue to adjust to new challenges and opportunities. Changing demographics, such as an aging population, will require greater attention within the province. Finding skilled workers is already frequently reported as an obstacle to business growth. Furthermore, major transformations are also underway in the global economy. Nova Scotia faces both intense competition and new market prospects from the growth of economies such as China, India and Brazil.

Population Change by County, Nova Scotia				
	1981-1986	1986-1991	1991-1996	1996-2001
Shelburne County	1.1	-1	-2	-4.5
Yarmouth County	3	3	-2.1	-1.7
Digby County	0.8	-2.8	-3.5	-4.6
Queens County	0	-1.5	-3.9	-5.6
Annapolis County	4.7	0.2	-5.6	-2.5
Lunenburg County	1.6	2.5	-0.2	0.1
Kings County	7.1	5.7	5.1	-0.6
Hants County	10.3	3.5	4.3	2.6
Halifax County	6.3	8	3.7	4.7
Colchester County	4.3	5.7	3.3	0.1
Cumberland County	-1	-1.5	-1.4	-3.5
Pictou County	-0.9	-0.2	-1.9	-3.6
Guysborough County	-0.2	-6.7	-6.9	-10
Antigonish County	3.7	1.6	1.7	0.1
Inverness County	-1.7	-1.5	-3.2	-4.7
Richmond County	-3.7	-4.9	-2.1	-7.2
Cape Breton County	-2.7	-2.9	-1.9	-7.2
Victoria County	3.2	0	-2.6	-6.1

The first section of this report outlines a number of trends that will likely have a significant impact on the Nova Scotia economy in the next few years. In examining these trends, several points should be kept in mind. No single issue or trend will dominate the future. Each trend will have varying impacts in different sectors and regions of the province. The trends are not necessarily mutually reinforcing; in some cases, they will work at cross-purposes. Furthermore, some of the trends emphasized will have staying power and others will be less enduring and may change in the short-term. Taken together, these trends intersect to create a number of possible future scenarios that will embody various challenges and opportunities. The second section provides an overview of Nova Scotia's industrial structure. For the purpose of this analysis, a major portion of the provincial economy is segmented into five product-based clusters and five technology or knowledge-based clusters. An overview is also provided of the tourism and social sectors. The last section discusses new drivers of competitiveness required to be successful in today's global economy.

1.0 Environmental Scan

Nations such as China, India and Brazil have begun to play a larger role in the global economy. China's GDP has recently grown at an average annual rate of over 9 percent and will likely continue to experience substantial growth in the foreseeable future. The nation's rapidly rising imports have already boosted the global performance of many industrial sectors. Between 1993-2003, Canadian exports to China have increased substantially in products such as fish, chemicals, nickel, auto parts and wood pulp. China imports a growing share of the worldwide production of many commodities. This trend has triggered a sharp increase in commodity prices during the past couple of years, providing a healthy boost to Canada's resource-based industries: oil and gas surged 135%, forest products increased 37%, metals & minerals climbed 42%, and agricultural products rose 20%.¹ Higher commodity prices have been very important to sustaining economic growth in Canada in a period of adverse developments such as SARS, rising global terrorism, mad cow disease, and extreme weather.

The majority of Nova Scotia's exports to China are comprised of unprocessed fish products, notably frozen shrimp and crab, as well as materials such as scrap iron, copper and aluminum. In terms of Chinese imports, seafood processing in Nova Scotia faces the largest competition. Currently, Nova Scotia does not compete head-to-head with China in the U.S. market or with the U.S. in the Chinese market in terms of those countries top exports. However, over the longer term Nova Scotia may face increased competition from China in many of the province's value-added exports such as tires, transportation equipment and wood products.

The success of India's software and services industry, which is projected to grow from US\$12 billion in 2003 to \$62 billion in 2009, is a product of the growing trend of offshore outsourcing. Forester Research estimates that 3.3 million U.S. service jobs will be relocated abroad between 2003 and 2018. Gartner Inc. predicts a quarter of all U.S. information technology jobs will move offshore by 2010. A widely agreed rule of thumb is that, on average 30% of IT staff must be onsite or close to the users; the remaining 70% can be offshore. In recent years, offshore outsourcing in Canada has lagged the United States. However, a study by PricewaterhouseCoopers warns that although most Canadian-based establishments will remain the best alternative to serve local markets or provide a nearshore venue for the U.S. customer; Canada is poised for a dramatic take off in outsourcing for some lines of IT services.

Figure 1.1 Nova Scotia's Rising Imports of Goods from Growing Economies

Sources: IMF, Statistics Canada, 2003

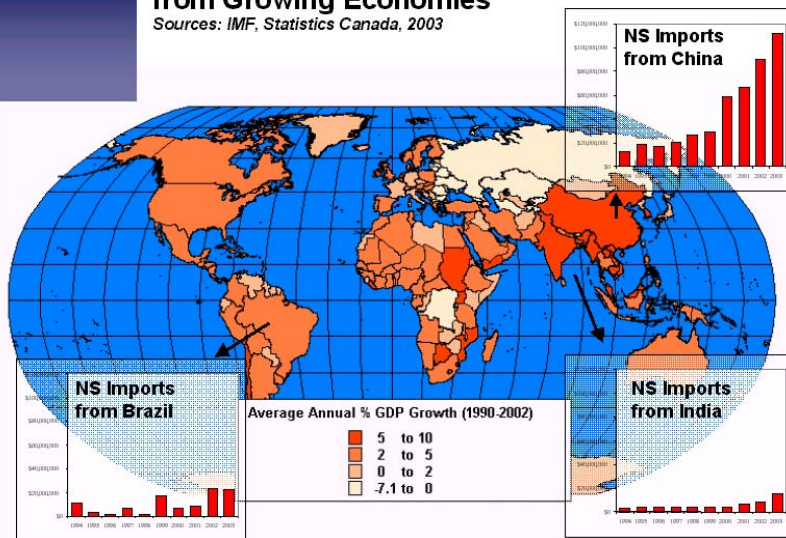


Figure 1.2 China's Major Goods Exports and Commodity Imports

Source: IMF

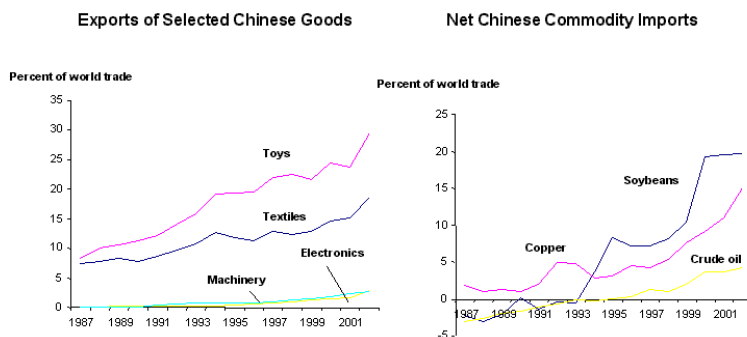
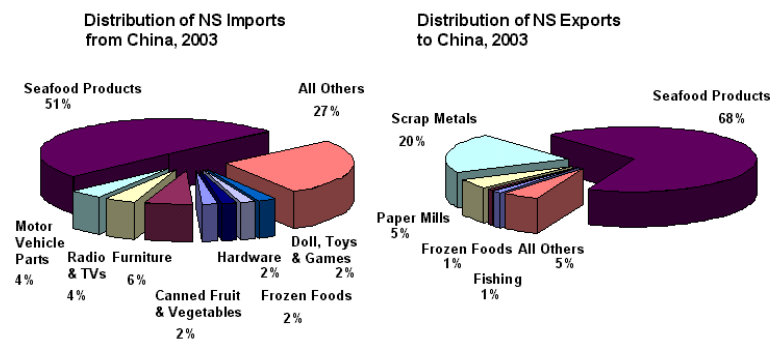


Figure 1.3 Nova Scotia's Trade with China

Source: Statistics Canada, 2003



¹ BMO, Sectoral Outlook, August 2004
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Between 1992 and 2000, the U.S. economy experienced a strong performance which in turn propelled the global economy. From mid-2000, however, the U.S. and global economy weakened significantly, following one of the largest stock market declines in the postwar period, the terrorist attacks of September 11, 2001, major corporate failures, and the war in Iraq. Expansionary fiscal policies by the federal government to help restart the U.S. economy, together with extraordinary military and security-related spending linked to the war on terror, have resulted in a dramatic deterioration in the U.S. ratio of budget deficit to GDP.

The United States is currently running an extremely large current account deficit which many believe is unsustainable. The resolution of this situation could take different paths. A hard-landing scenario would involve a sharp reduction in domestic demand. Given the large trade deficit and low domestic savings, the U.S. economy is vulnerable to loss of international confidence that could lead to an abrupt economic downturn and depreciation of currency. Key trading partners would suffer as the world's largest market contracted, and international financial markets might face profound instability. However, many have a more optimistic view and believe the situation will be resolved through a dramatic increase in U.S. exports due to gains in productivity and foreign demand. The deficit could also be resolved over the longer term through both the gradual increase in exports and decrease in imports.

The United States may continue to resort to forms of protectionism, such as trade restrictions on Canadian beef and softwood lumber, to suppress imports. A lower U.S. dollar is also expected to remain low in the near future. A further and sharper than expected appreciation of the Canadian dollar against its United States counterpart, would have varied impacts for different industries in Nova Scotia depending on exposure to trade, current and prospective market conditions, financial position, and investment and productivity performance. Analysis by the Bank of Montreal suggests that firms in the following sectors would be most susceptible: sawmills and other wood products; pulp and paper; computer and electronic products; electrical equipment and appliances; primary and fabricated metals; motor vehicle parts; other transportation equipment, including aircraft; rubber products; textiles and clothing; furniture; and machinery.²

Figure 1.4

Current Account Balances in 2004

Source: OECD Estimates

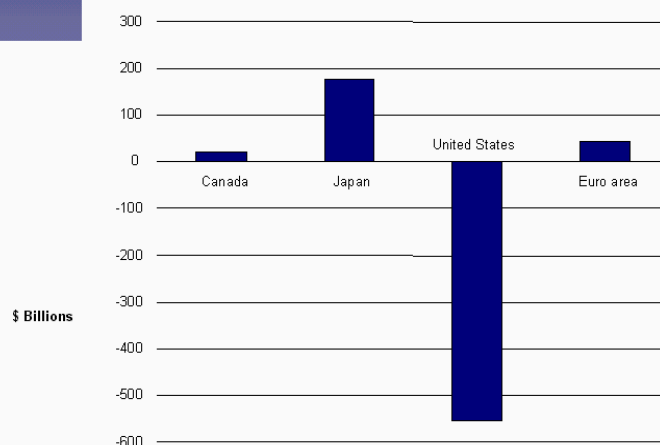


Figure 1.5

U.S. Fiscal and Trade Deficit

Source: OECD Estimates

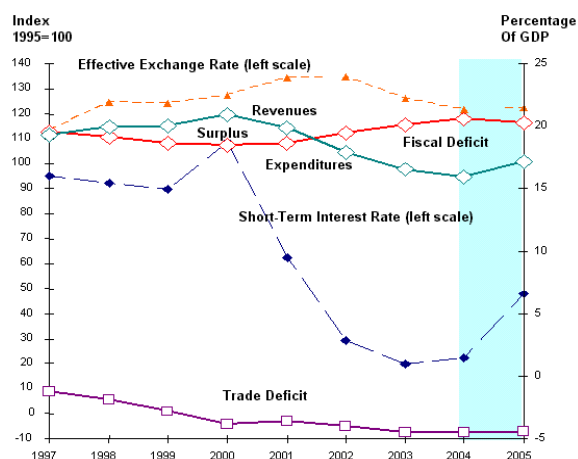
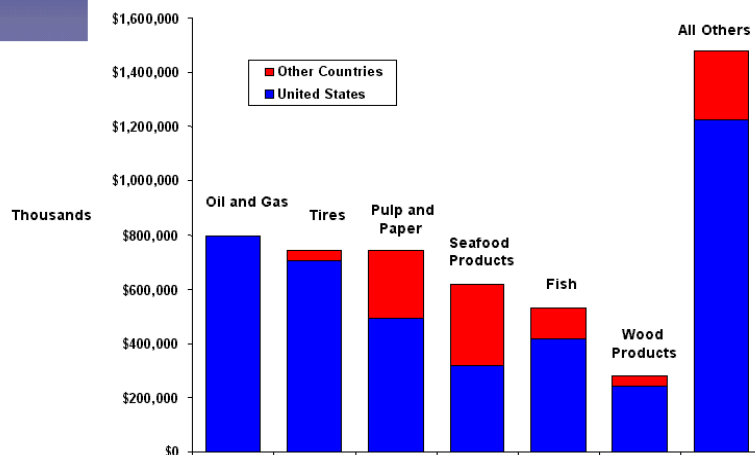


Figure 1.6

Nova Scotia's International Exports of Goods, Average 1999-2003

Source: Statistics Canada



² BMO, Sectoral Outlook, August 2004
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Demographics

Population size, rate of change, distribution, age structure and migration are all critical aspects of demography. Population size to a great extent governs demand for resources and material flows. A greater distribution of the population in urban areas means large changes in lifestyle, consumption patterns, infrastructure development and service delivery. Population structure – the relative proportions of children, persons of working age and elderly people within a population – has important repercussions for future population growth as well as for matching the provision of education, healthcare, incomes and pensions, to predicted needs. Finally, internal and international migration, can sometimes ease and sometimes worsen the pressures that other demographic factors and other forces place on society and the environment.

In the advanced economies, and a growing number of emerging market countries, declining birthrates and aging are beginning to combine to increase healthcare and pension costs while reducing the relative size of the working population, straining social services, and leaving significant shortfalls in the size and capacity of the workforce. Looking forward, the United Nations' current population projections (which extend to 2050) envisage that the world's population will grow at an even slower rate and in most countries people will continue to live longer.

Around the world, urbanization is taking place at a rapid rate. By 2015 more than half of the world's population will be urban. The number of people living in mega-cities, those containing more than 10 million inhabitants, will double to more than 400 million. Many believe these mega-cities will be the engines that drive global innovation and economic growth.

In terms of Nova Scotia, one of the greatest challenges that rural communities are faced with is the out-migration of young people. This trend shows no sign of abating in the near term as young people are moving to larger centers to take advantage of educational opportunities as well as work opportunities. As a result, many employers in both foundation and growth industries are now reporting significant challenges in recruiting suitable workforces. The potential of increased skill shortages in the future is a significant obstacle to economic growth in Nova Scotia.

Figure 1.7

Global Demographic Trends

Source: United Nations

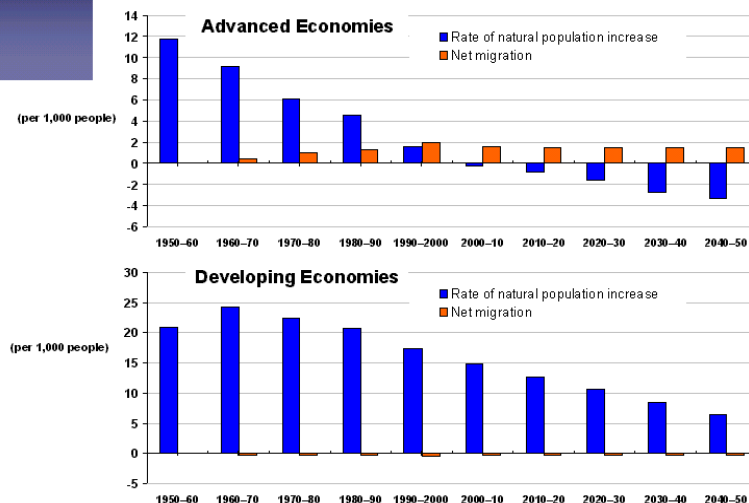


Figure 1.8

Global Urbanization

Source: US Central Intelligence Agency

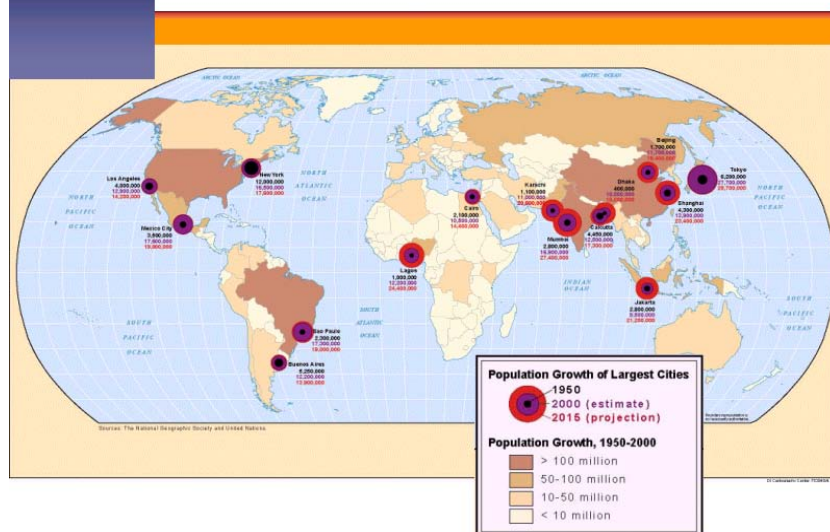
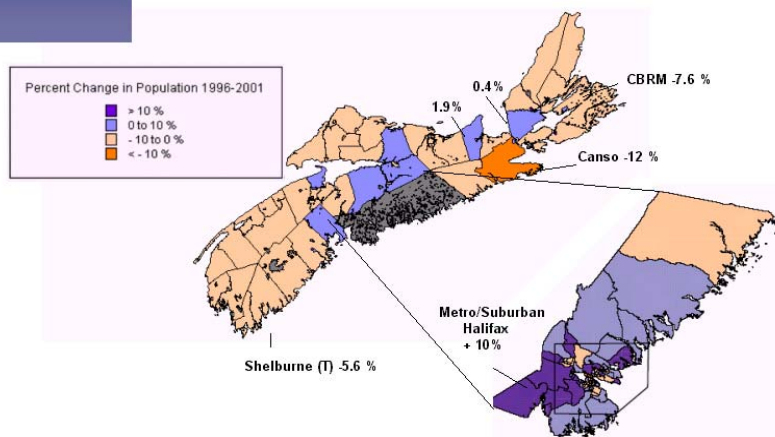


Figure 1.9

Change in Population, 1996-2001

Source: Statistics Canada



Life in 2015 will be revolutionized by the growing effect of technology across all dimensions of life. Biotechnology will enable us to identify, understand, manipulate, improve and control living organisms. Smart materials, agile manufacturing and nanotechnology will change the way we produce devices while expanding their capabilities to be far lighter, stronger, and more efficient. The revolution of information availability and utility will continue as remarkable increases in processing speeds are realized. The results of all these technological advancements could be astonishing. Effects may include longer life spans, changing impacts on the environment, high rates of industrial turnover, lifetime worker training, shifts in power from nation states to corporations and individuals, improvements in human quality of life with accompanying prosperity, reduced tension, and the possibility of human eugenics and cloning.

Overall, three major trends will continue in the area of science and technology:

- The integration of existing disciplines to form new ones. The integration of information technology, biotechnology, and nanotechnology will have a profound effect on business and commerce, public health and safety.
- The lateral development of technology. Older established technologies will continue "sidewise" development into new markets and applications, for example, developing innovative applications for "old" computer chips.
- The speed of technology adoption. The time between the discovery and the application of scientific advances will continue to shorten.

Industries that do not keep up with advances in new technology may be threatened in two ways. New technology may threaten an industry's core activities (the recurring activities a company performs that attract and retain suppliers and buyers) through introducing new ways of carrying out those activities (i.e. the introduction of e-business replacing traditional marketing channels). New technology may also threaten an industry's core assets (the durable resources, including intangibles, that make a company more efficient at performing core activities).

The actual realization of various technological developments will depend on a number of factors, including local acceptance of technology change, levels of technology and infrastructure investments, market drivers and limitations, and technology breakthroughs and advancements. Since these factors vary across the globe, the implementation and effects of technology will also vary from one jurisdiction to another.

Figure 1.10 Technology Convergence & Integration

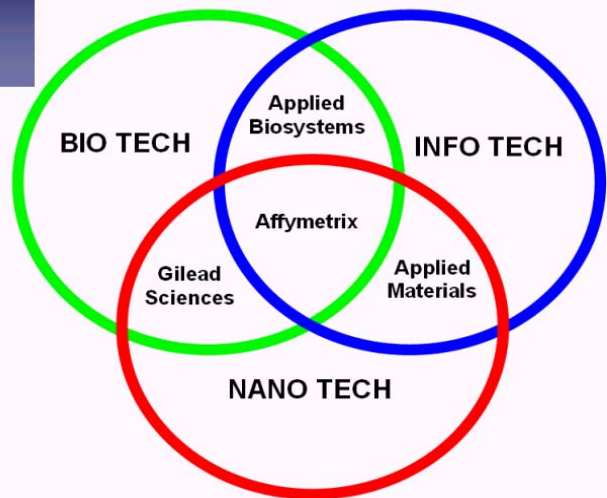


Figure 1.11 Technology Diffusion
Percentage of Computer & Information Systems Occupations in the Manufacturing Sector
 Source: Statistics Canada

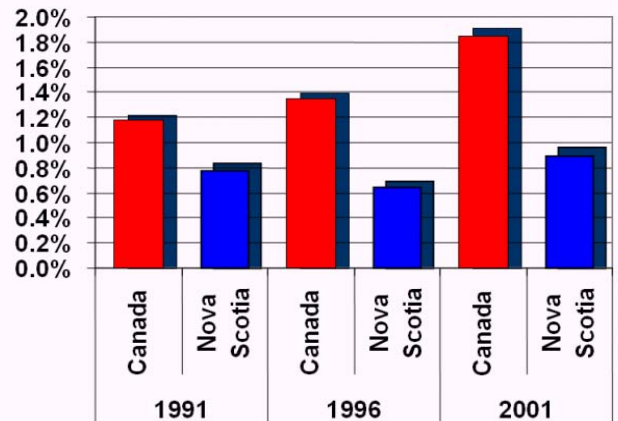
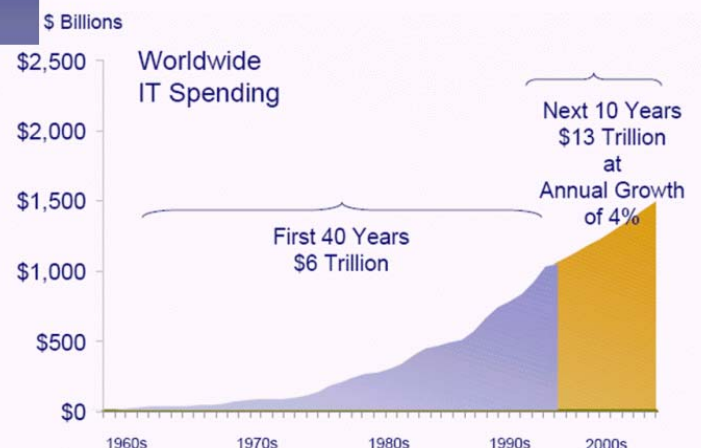


Figure 1.12 The Speed of Technology Adoption
 Source: IDC 2002



Tight market conditions for crude oil and products and for natural gas have raised energy prices to very high levels. Despite the benefit of high oil and natural gas prices to Nova Scotia's energy sector, such high prices also pose a risk for the overall economy. Although the world is less vulnerable to energy price swings than in the 1970s, a major disruption in global energy supplies would have a devastating effect.

Sustained high oil prices would reduce discretionary expenditures by business and consumers. A weaker overall North American economy would adversely affect a wide range of industries, including transportation equipment, rubber and plastic products, chemicals, furniture, metals, machinery, building materials, business services, wholesaling, and tourism. There could be even more serious adverse implications for industries for which oil and gas are important inputs, depending on producers' ability to pass price increases on to final consumers. This aspect would reinforce the adverse impact of higher fuel prices on producers of metal products, chemicals, transportation services (trucking, rail, air, transport) and tourism.

Natural gas prices which are expected to increase by 25% by 2020, are driven by supply and demand fundamentals. On the demand side, gas prices are driven mainly by weather, economic growth and fuel competition. On the supply side, key factors include production, drilling rates, storage and export pipeline capacity contribute to changes in natural gas prices. It is expected that LNG imports will increasingly be relied upon to serve growing demand from industrial and electric power generation. In 2020, LNG imports are expected to account for more than 13% of total North American natural gas supply.

The Energy Information Administration suggests most demand for energy over the next 20 years will continue to be met by the conventional sources of fuel. Oil will likely remain the most important energy source. Natural gas will be second and will be the fastest growing energy source. The demand for coal could grow if clean coal technologies emerge. Renewables are predicted to grow quite fast even though the projections do not contemplate policies that support renewables. Pollution Probe predicts the share of renewables of Canada's electricity generation is predicted to grow from around 3 percent today to 13 percent in 2010 and over 23 percent in 2020.

Figure 1.13 Average Cost Increases for Canadian Manufacturers: 1997-2003
Source: Canadian Manufacturers & Exporters, 2004

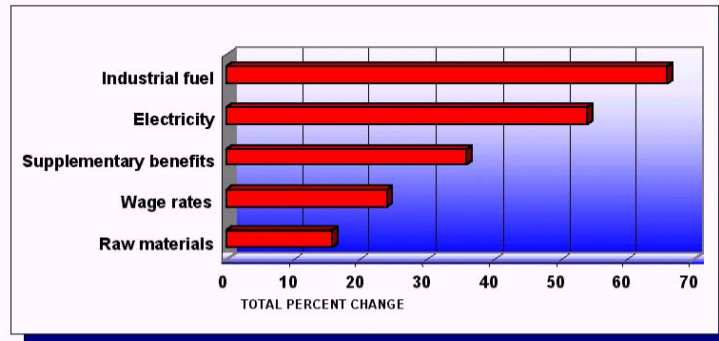


Figure 1.14 Electricity Costs, 2000
Source: Nova Scotia Business Climate Index, Statistics Canada

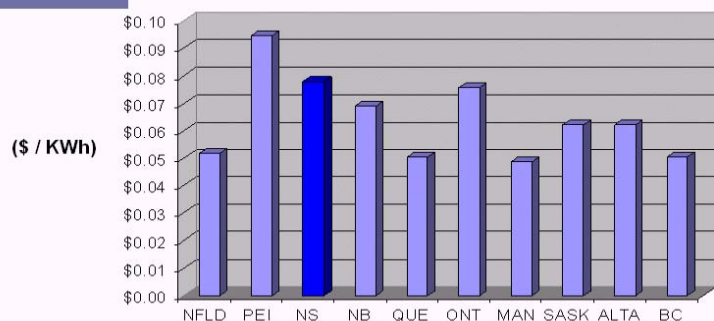
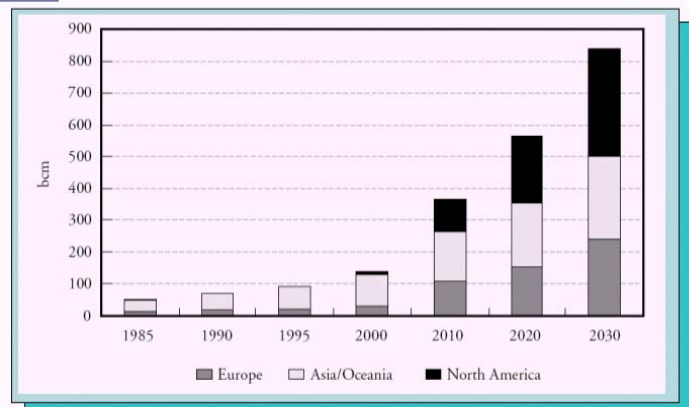


Figure 1.15 International LNG trade, evolution & outlook
Source: Cedigaz, WEIO 2003



Climate change will continue to receive the attention and focus of international governments as indicators of a warming climate – such as meltbacks of polar ice, sea level rise, and increasing frequency of major storms – occur.

Growth in both population and wealth, along with demographic shifts to storm-prone areas, has made North America more vulnerable to weather assaults. Total US federal relief payments for weather-caused disasters from 1990 through 1997 hit \$12 billion. Costs are expected to soar if extreme weather intensifies over the next century. Extreme events have intensified during the past century and are expected to escalate over the next as carbon dioxide and other greenhouse gases shake up the earth's climate.

From an economic, environmental and social perspective, Nova Scotia's coastal zone is of paramount importance. The province's coast line is also particularly vulnerable to changing sea levels which could rise by 70 cm by 2100 according to recent research. Impacts of sea level rise could include greater risk of floods; coastal erosion; coastal sedimentation; and reductions in sea and river ice. Other potential impacts include the loss of fish habitat and changes in ice-free days, which could affect marine transportation and offshore oil and gas. For Nova Scotia, extreme weather events pose a risk to public safety, shoreline properties and coastal infrastructure which is essential for trade, transportation, and tourism, and is the lifeblood of many coastal communities.

Given the nature of the risks associated with climate change, Canada and other nations have committed to reducing greenhouse gases. Preliminary estimates of one plan of action would result in Nova Scotia's GDP growing to a level in 2010 that would be 0.30% less than a business as usual scenario. Growth in new jobs would slow by approximately 0.4 percent. The impact on personal disposable income would be approximately 0.22 percent less than business as usual.³ More than 92 per cent of Nova Scotia's Greenhouse gas (GHG) emissions, primarily CO₂ and methane, are created by fossil fuel production, distribution, and consumption. The three largest contributors are electricity generation (38%), transportation (27%), and industrial activity (10%).

Figure 1.16 Economic costs of great natural disasters (US \$billion) 1950-2000

Source: Munich Re 2001

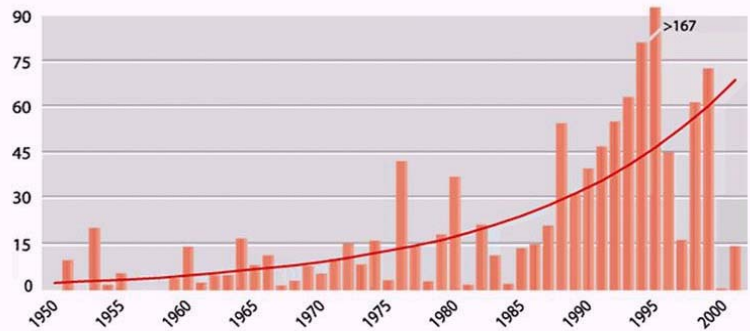


Figure 1.17 Projected Regional Changes in Sea Level

Source: Environmental Canada, 2000

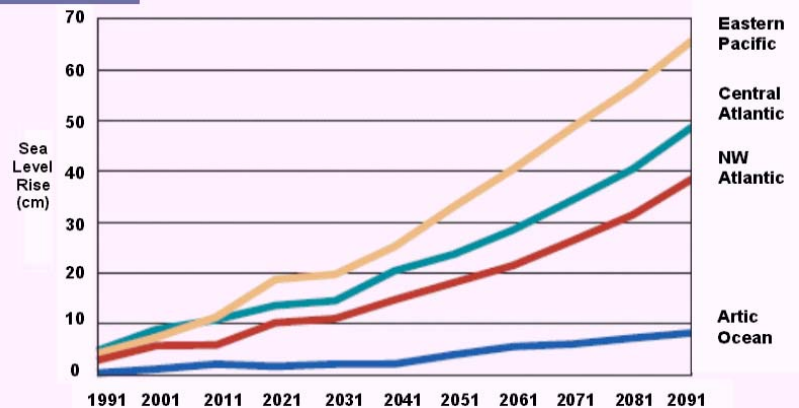
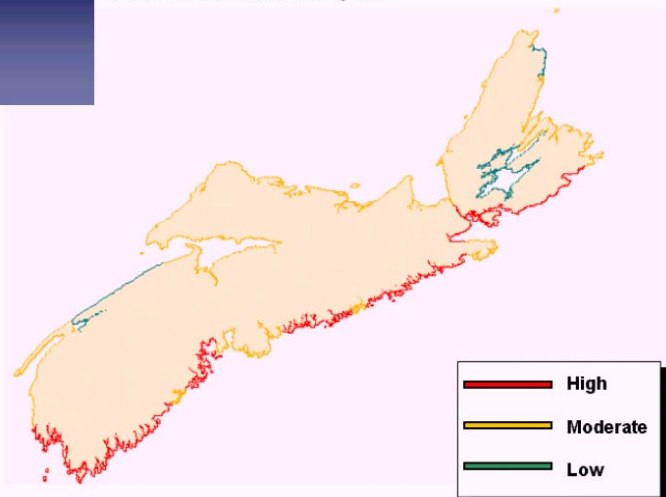


Figure 1.18 Sensitivity to Sea Level Rise

Source: Environmental Canada, 2000



³ <http://www.climatechange.gc.ca>
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Health and Well-being

A study funded by the Nova Scotia Department of Health found that chronic disease in the province resulted in \$1.24 billion in direct medical costs and \$1.79 billion in lost productivity each year.⁴ Other diseases can also have a large impact on the economy. Although epidemics are of particular concern in the developing world; outbreaks such as SARS and incidences of the West Nile Virus have a large direct impact on Canadian industries such as tourism.

There are many social, environmental and economic determinants of health. These include what we inherit and learn from our parents (our genetics and household environment); how we live (our education, income and work); where we live (our housing, neighborhoods and communities) and the quality of our environment (the air, land and water).⁵ These determinants are especially important during the early years in a person's life from conception to school age. Early life experiences and exposure to various risk factors can profoundly shape learning skills, coping skills, resiliency, adult health and other important development outcomes.

Early Childhood Development (ECD) programs typically offer wide-ranging education services as well as health services (such as immunizations and health screenings) and nutrition services, typically for children younger than six. A study by the Economic Policy Institute in the United States concluded that providing a high-quality ECD program to more children who live in poverty would have a substantial payoff for governments and taxpayers in the future. As those children grow up, costs for remedial and special education, criminal justice, and welfare benefits would decline. Once in the labor force, their incomes would be higher, along with the taxes they would pay back to society. By improving the skills of a large fraction of the U.S. workforce, these programs for poor children would raise the gross domestic product (GDP), reduce poverty, and strengthen U>S. global competitiveness. Providing a high quality ECD program to 20% of children who are currently in poverty would boost U.S. GDP by 0.5% or \$107 billion within 45 years.⁶

Figure 1.19 Probable cases of SARS worldwide, 07/08/2003
Source: World Health Organization

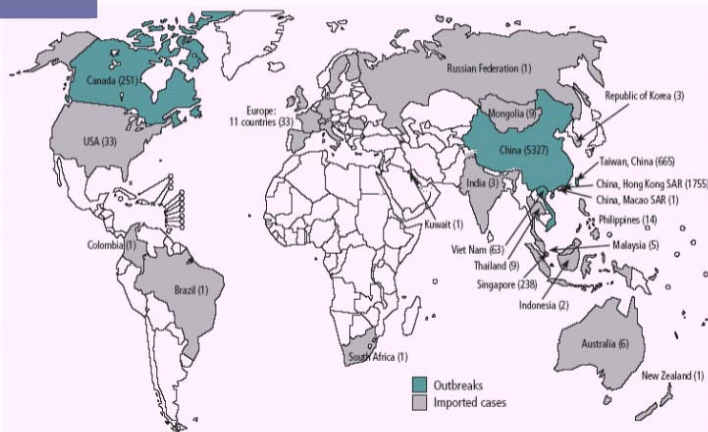


Figure 1.20 Total Health Expenditure, Canada (1975-2004)
Source: Canadian Institute for Health Information

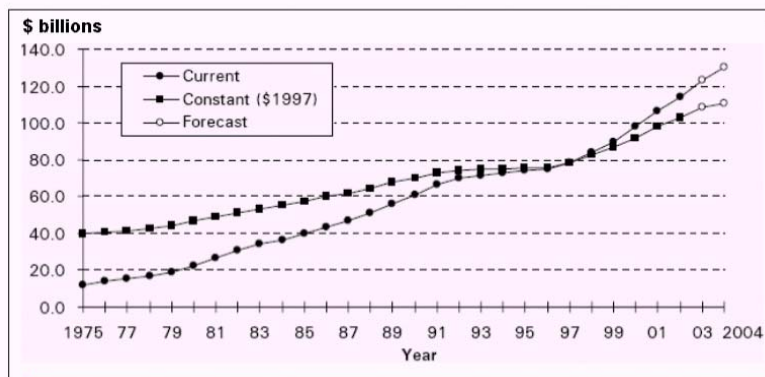
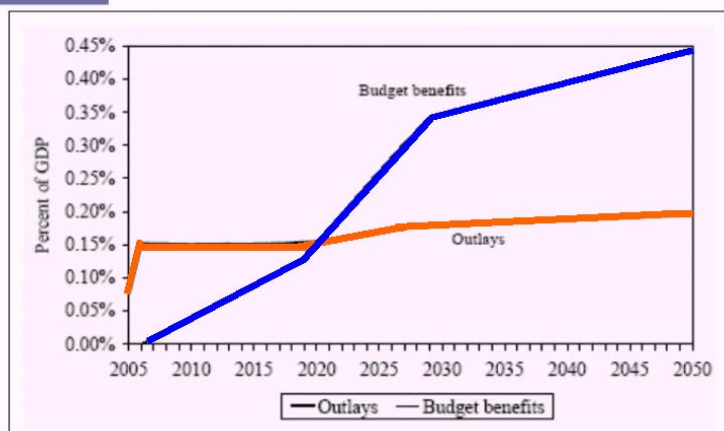


Figure 1.21 Projected Cost-Benefit of Early Childhood Development in the United States
Source: Economic Policy Institute, 2004



⁴ *The Cost of Chronic Disease in Nova Scotia*, GPI Atlantic, October 2002

⁵ *Improving the Health of Canadians*, Canadian Population Health Initiative, 2004.

⁶ *Exceptional Returns – Economic, Fiscal and Social Benefits of Early Childhood Development*, Economic Policy Institute, 2004

Safety and Security

The September 11th attacks inflicted casualties and material damages on a far greater scale than any terrorist aggression in recent history. The destruction of physical assets was estimated in the U.S. national accounts to amount to \$14 billion for private businesses, \$1.5 billion for State and local government enterprises and \$0.7 billion for Federal government. Rescue, cleanup and related costs have been estimated to amount to at least \$11 billion. Within weeks of the attack there were several episodes of bio-terrorism in the form of mail containing anthrax. At the same time, awareness of a number of other sources of threats increased. Concerns were raised about the vulnerability of critical infrastructure (power plants, nuclear facilities, chemical factories, dams, bridges, pipelines and water supply). The tightening of border controls following the attack disrupted trade flows, especially at the US-Canada border where 500,000 vehicles and \$1.4 billion in bilateral trade cross each day.

Worldwide, the events of September 11, 2001 continue to have an impact on all economies. Longer term costs associated with the continued threat of terrorism compound immediate costs of terrorist acts including loss of life, destruction of property and depression of short term economic activity. The looming threat of terrorism directly increases the cost of undertaking international trade transactions. The OECD estimates extra trade security measures cost between 1 and 3 percent of value of North American trade flows. Shippers pass the costs of direct security measures and higher cargo, vessel, transport infrastructure and passenger insurance premiums into higher shipping and aviation cargo freight rates and fares. Many producers also now carry higher inventory levels to maintain supply chains in the event of terrorist disruption.

Trade facilitation and improved security objectives can be mutually reinforcing. Technological advances to increase security also should increase the efficiency of cargo handling and people movement, lowering trade costs. Such technologies include face and eye scanners, electronic transmission of quarantine data and electronic shipping systems. With international trade expanding rapidly, global logistics are increasingly necessary. Thus, investment in these new systems should deliver considerable future efficiency returns, regardless of their benefits in countering terrorism.

Figure 1.22

Insured Losses

Source: SWIS Re, Economic Research & Consulting and OECD

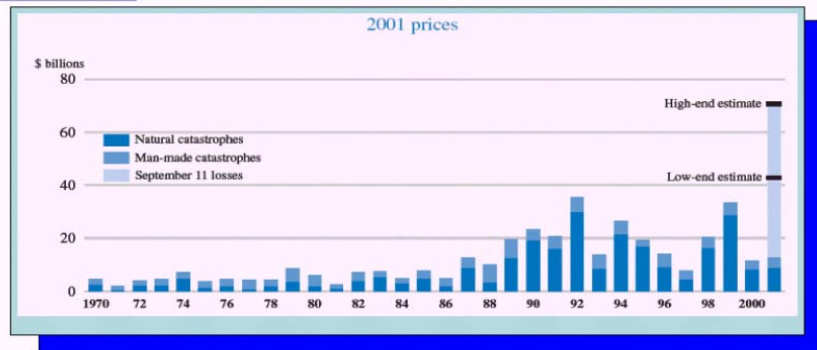


Figure 1.23

Transportation Costs

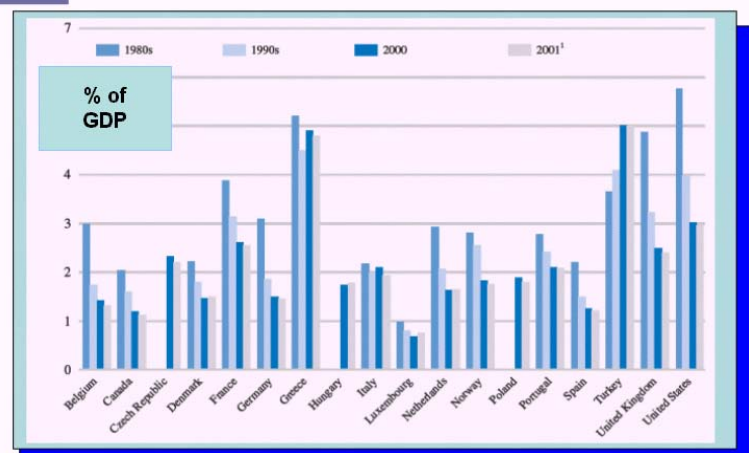
Source: Cass Information Systems and OECD



Figure 1.24

Military Spending as a Percentage of GDP

Source: Nato



Consumer Demand

The Canadian Manufacturers & Exporter's 2003 Management Issues Survey asked manufacturers to identify current and future challenges that will fundamentally change the nature of their business over the next five to ten years. The most frequent responses were the stronger Canadian dollar followed by increasing competition from China and the changing pattern of consumer demand.

Whether they are individual consumers, other manufacturers, or other businesses, customers are demanding new products to meet new needs and better products to fulfill old ones. They expect quality to be high, product to be delivered on time, and prices to be the lowest on the market. Consumers are expecting better functionality, customized design, financing, and after-sales service. So too are business customers. Product and process innovations are essential if manufacturers are to keep up with new and changing customer requirements. Many Canadian manufacturers have responded over the past decade by adopting advanced technologies.

Consumer tastes and purchasing power are also changing. Product innovation and new technologies create new demands. An aging population and immigration trends are changing consumer purchasing patterns, opening new markets and closing old. So too are changes in the pattern of work and leisure activity. In recent years, there has been an increase in the percentage of household budget that Nova Scotia residents spend on transportation, health care and recreation. Overall, trends in Nova Scotia mirror the national scene. However, Nova Scotia's consumers are also distinct from the country as a whole. Based on consumer behavior data and lifestyle indicators, three quarters of Nova Scotians can be categorized into market segments related to a rural lifestyle. On a national basis, only 15 percent of Canadians fall within those same market segments.

In the future, businesses will increasingly be expected by the public, government and other stakeholders to exercise responsibility for the way they interact with the environment. Environmental sustainability will be a critical driver of costs and a key operating principle in product design, engineering and life-cycle management.⁷

Figure 1.25

Future Business Challenges

Source: Canadian Manufacturers & Exporters, 2004

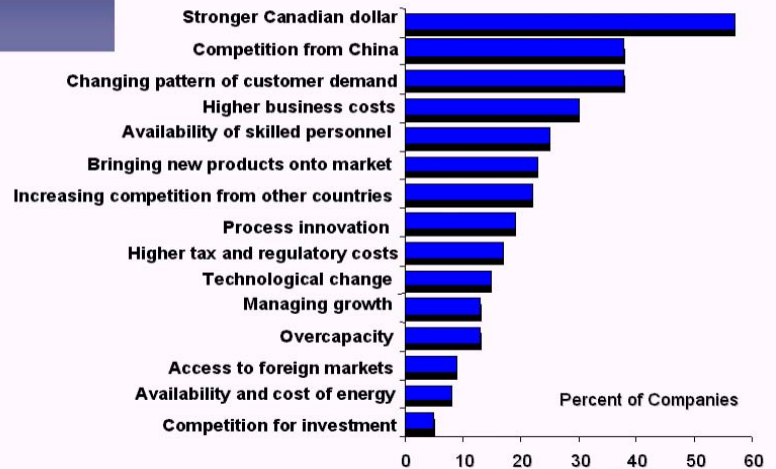


Figure 1.26

Investment or Investment Intentions in Advanced Manufacturing Technologies

Source: Canadian Manufacturers & Exporters, 2004

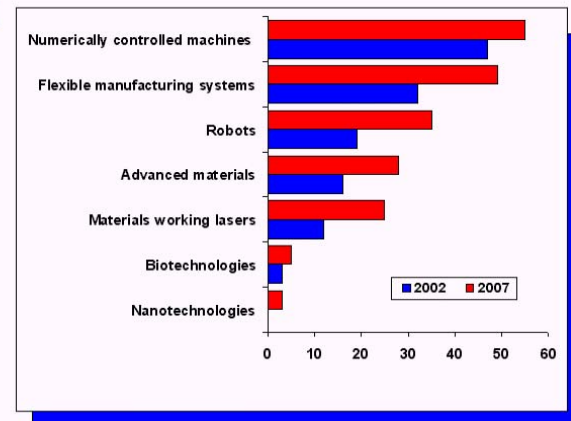
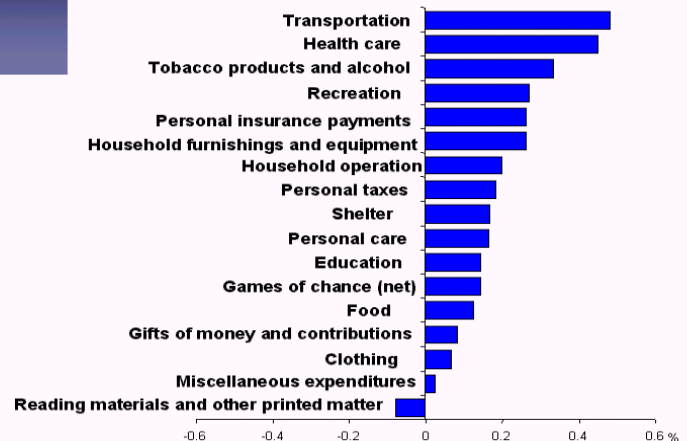


Figure 1.27

Average increase in consumer spending by item Nova Scotia, 1997-2002



⁷ Global Trends in Manufacturing, Canadian Manufacturers and Exporters, 2004

2.0 Industrial Structure

This section provides an overview of Nova Scotia's economic drivers. For the purpose of this analysis, a major portion of the provincial economy is segmented into five product-based clusters and five technology or knowledge-based clusters. These groups of industries account for approximately a quarter of provincial employment and a third of Nova Scotia's Gross Domestic Product (GDP). Industries were grouped together on the basis of common sector definitions, linkages identified through Statistic Canada's input-output tables, and cluster studies conducted in other jurisdictions. No attempt was made in the cluster definition process to determine which, if any, sets of industries are a significant size from a national or international basis.

Nova Scotia's product-based clusters, defined broadly as groups of interconnected companies and related service providers that form a product supply-chain, include:

- Ocean-Based Products (including the offshore energy sector);
- Forest-Based Products;
- Agricultural-Based Products;
- Mineral-Based Products; and
- Diversified Manufacturing (transportation equipment, textiles, plastic and rubber products; and metalworking).

Nova Scotia's technology or knowledge-based clusters, defined as groups of companies and related service providers that utilize a similar set of technology-based platforms or specialized knowledge in the production of goods and services, include:

- Information and Communications Technology (ICT);
- Engineering and Environmental Services;
- Life-Sciences;
- Creative Production and Design Services; and
- Business Support Services.

An overview is also provided of the tourism and social sectors. In terms of the later, employment in health care, education and public administration account for over a quarter of Nova Scotia's workforce. Sectors such as construction, retail, wholesale, utilities, real estate, and personal services were not included in the analysis.

2.1 Ocean-Based Products

The ocean-based products cluster includes the fishing industry, aquaculture, seafood processing, boat and shipbuilding, port operations, offshore oil and gas, coastal tourism and supporting public sector organizations. The direct GDP impact of the ocean sector in the Nova Scotia economy is estimated at \$2.62 billion in 2001, about double the 1996 impact – measured at \$1.37 billion. This direct impact accounts for about 10% of Nova Scotia's total GDP. When spinoff effects of ocean activity in the broader economy are considered, the GDP impact rises to \$4.08 billion, just over 15% of total Nova Scotia GDP. In terms of employment the ocean sector accounts for just over 30,000 direct full-time jobs or about 7% of total provincial employment. The impact rises to just under 14% when spin off effects are included.¹

Nova Scotia has the largest fishing industry in Canada with more than 8,500 people employed in primary fishing. Fish and fish products account for approximately 20 percent of Nova Scotia's exports. The preliminary value of fish landings for 2002 was \$731 million. The state of the fishery in Nova Scotia tends to be a function of resource availability and market conditions. The collapse of the ground fishery caused a significant change in the industry and had major impacts on numerous coastal communities throughout Nova Scotia. Shellfish, including lobster, crab and scallop, are now the most important species in terms of landed value. On the processing side, a significant trend of consolidation, as large firms acquire smaller companies, is expected to continue. Aquaculture is still in a developmental stage in Nova Scotia with some 400 sites producing a range of finfish and shellfish species. The industry is comprised of mainly independent producers operating on a relatively small scale compared to counterparts in New Brunswick and PEI. The contributions of the industry to GDP increased from \$5.7 to \$21.6 million between 1997 and 2000, but then dropped significantly in 2001 due to the failure of a major producer. Employment has fluctuated with production, increasing from 512 in 1997, peaking at 708 in 2000, and then dropping to 529 in 2002. The industry currently faces a number of challenges including the need for expanded research and development, financing, access to suitable sites and regulatory requirements.

Related industries such as boatbuilding had an estimated output of \$83 million in 2001, up from \$50 million in 1998. It generates 800 to 900 direct jobs. Shipbuilding and repair, located around Halifax Harbour, generates a little over 1,000 jobs. Marine transportation generates in the range of \$100-115 million annually to provincial GDP and creates between 1,500 and 1,800 full-time equivalent jobs. In 2001 the Port of Halifax handled 1,332 vessel movements and 13.9 million tonnes of cargo. It is the largest short sea shipping port in the country, the second largest cruise port, and the third largest container port. Port Hawkesbury, on the Strait of Canso, handled 21.5 m tonnes of predominately petroleum products in 2001.

Natural gas consumption has been growing in the U.S. since 1985, and demand throughout North America shows no sign of lagging. Nova Scotia's Sable Offshore Energy Project, which invested \$3 billion in infrastructure, produces natural gas from a number of wells for industrial and commercial/residential applications. Future development prospects for Nova Scotia may be in the area of liquefied natural gas (LNG). Anadarko Petroleum Corporation is now constructing a \$450-million LNG terminal, capable of processing up to 1 billion cubic feet a day, at Bear Head.

There is a growing demand for ocean related technologies for shipbuilding, fisheries, fish processing, aquaculture, ocean exploration, security, automatic identification systems and offshore oil and gas exploration. Some of these technologies include robotics, subsea vehicles, and navigation and communications equipment, as well as imaging devices, oceanic sensors, and marine-application programming and information systems. Continuous upgrading of technology in traditional industries will be necessary for the cluster to remain competitive in a global marketplace.

¹ Gardner Pinfold, Economic Value of the Nova Scotia Ocean Sector, January 2004

Figure 2.1 – Oceans Products Cluster

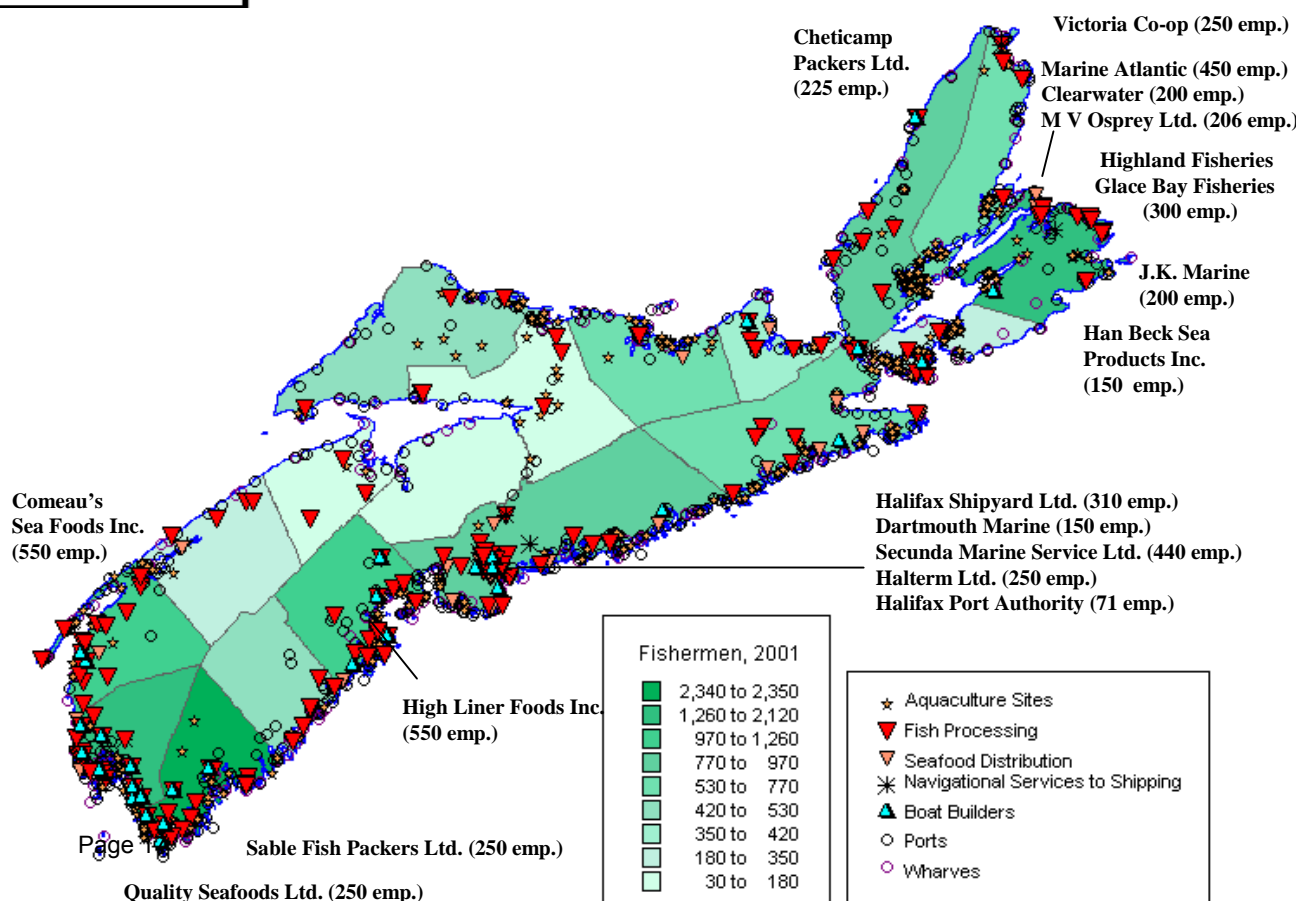
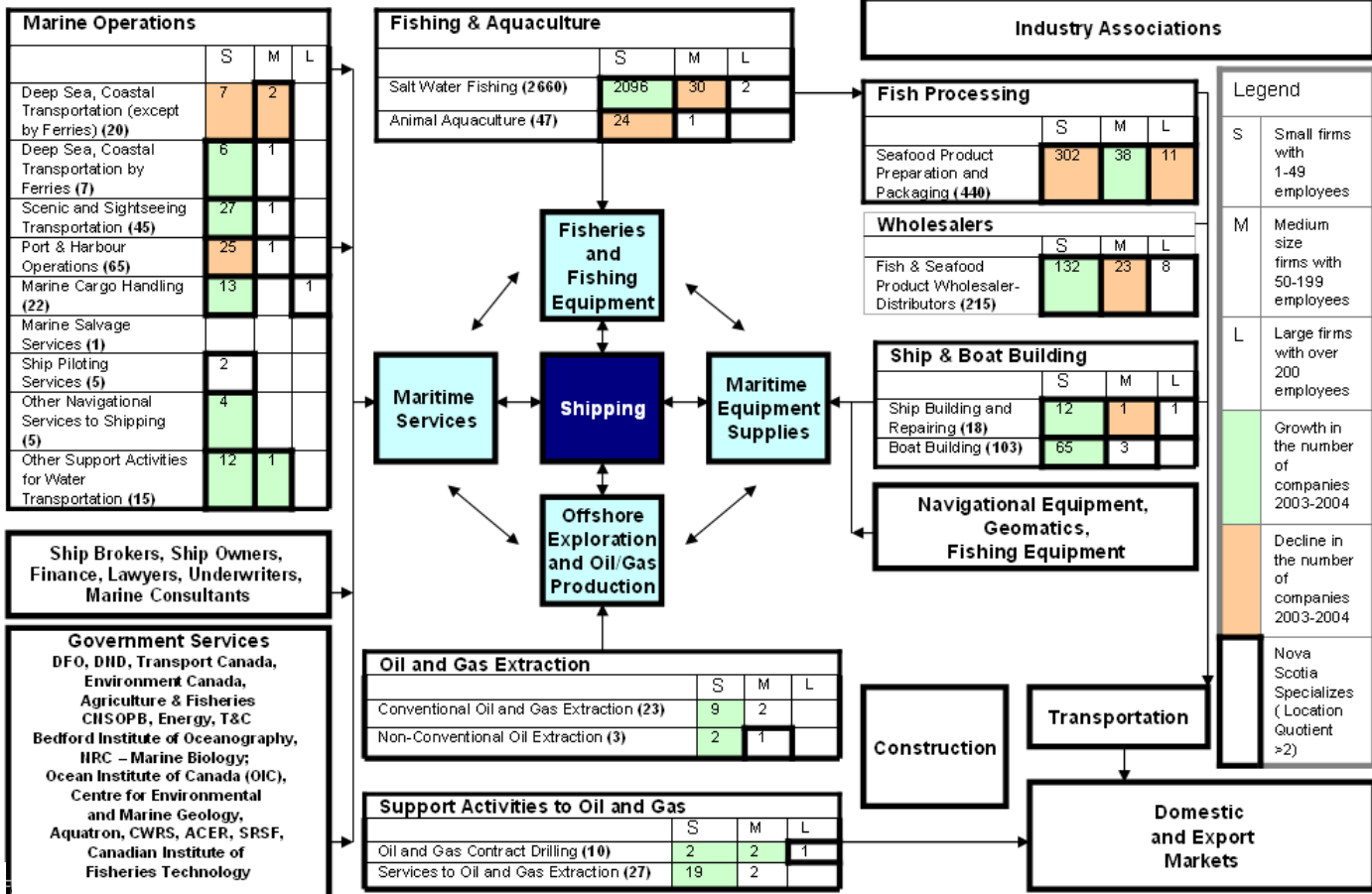


Figure 2.2a

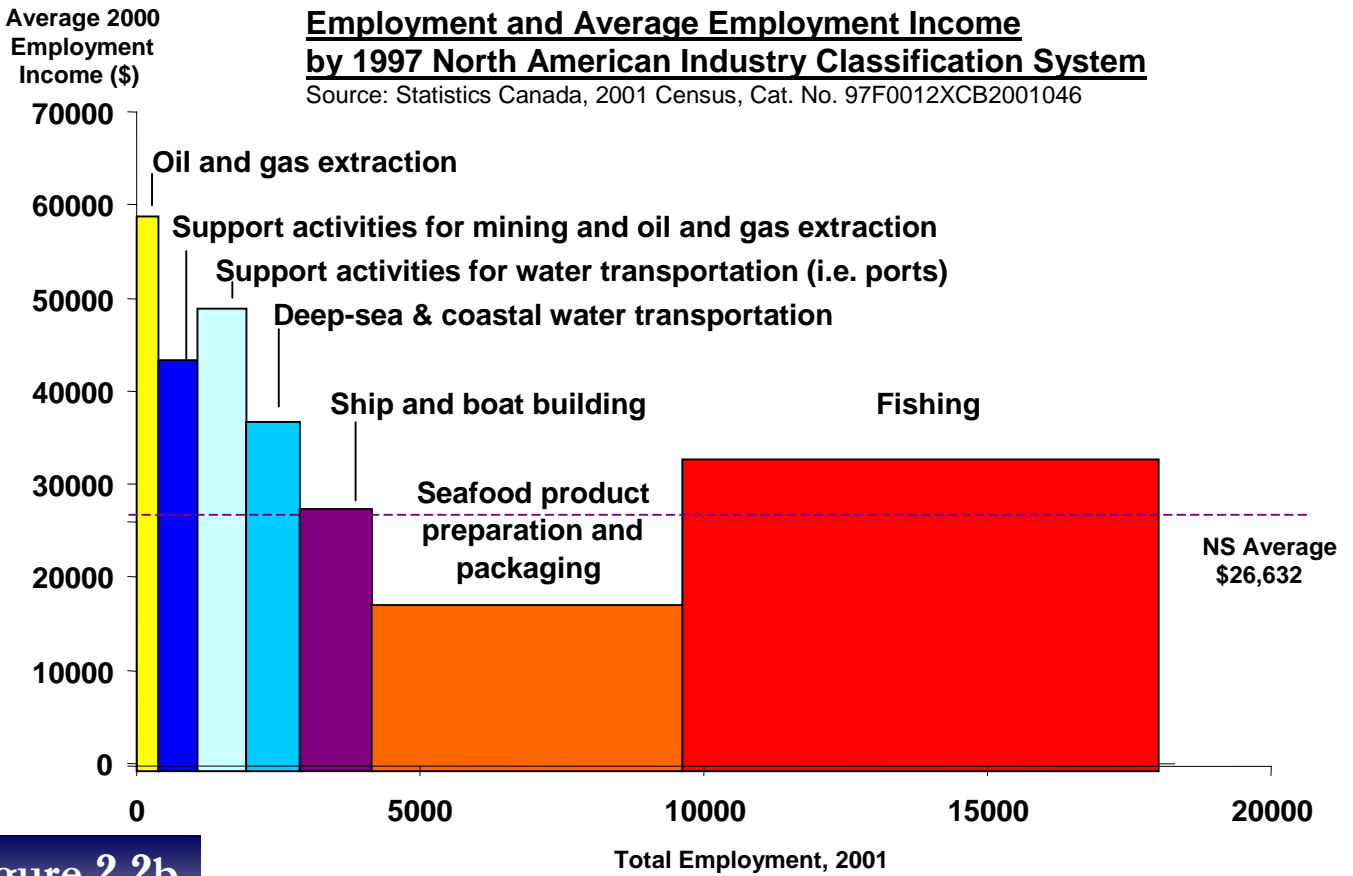
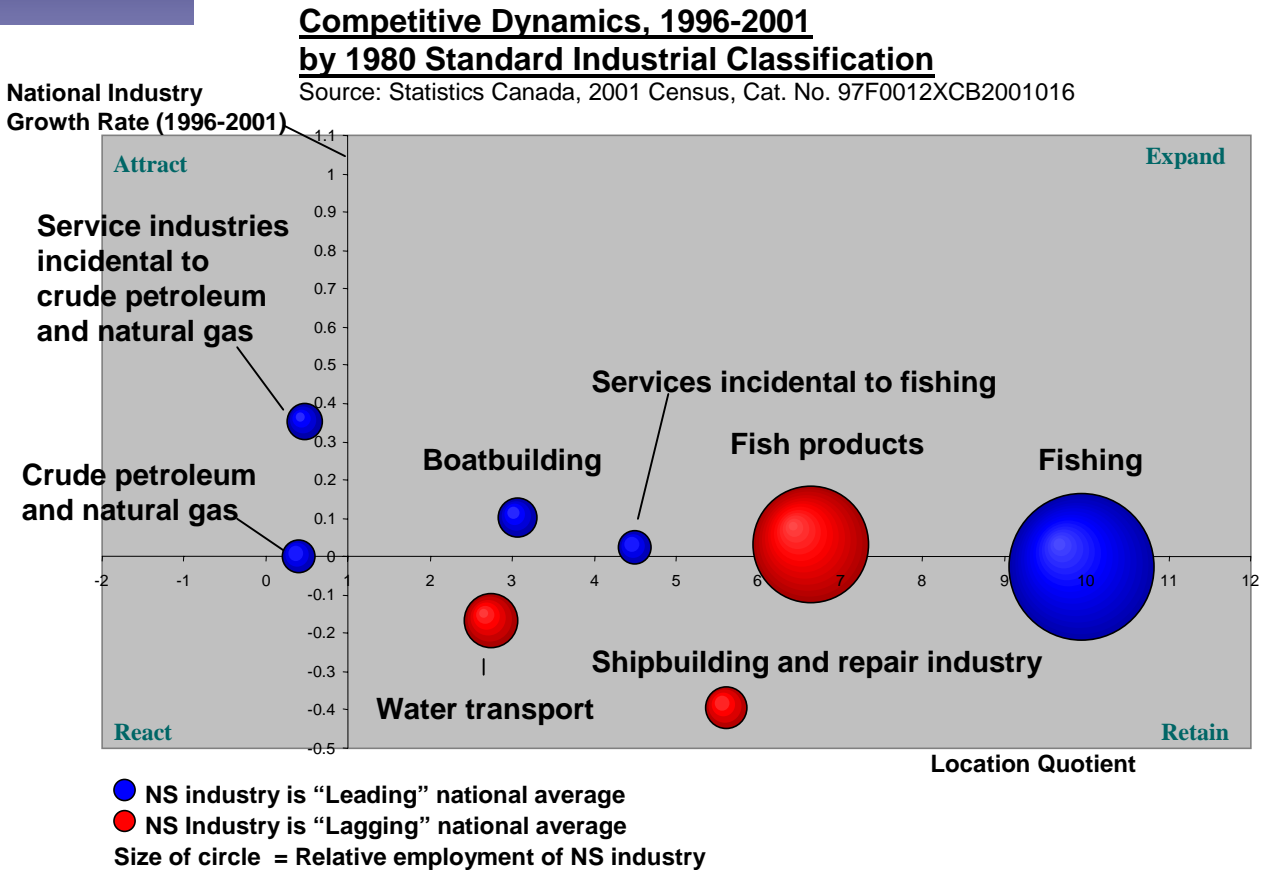


Figure 2.2b



2.2 Forest-Based Products

This cluster spans all companies in the supply chain involving the processing of wood and includes: primary forestry (logging), primary support activities, wood products and pulp and paper. Forest industries represent approximately 13,000 employees and over 2 percent of provincial GDP. Forestry activity is an important part of the economy in all areas of the province, but it is especially significant in Southwest, Northern and Strait areas. The larger mills such as Bowater, Kimberly Clark, and Stora Enso and support activities in surrounding areas are key economic drivers in many communities across Nova Scotia.

Over the last decade, employment growth in this cluster was three times that of the province as a whole. Forest-based products is one of Nova Scotia's fastest growing clusters in terms of GDP and average weekly wages in the pulp and paper sector continue to be among the highest in province. Lumber, pulp and paper account for nearly 20% of provincial exports. Export Development Canada is predicting that the forestry sector will have the highest export growth among all of Nova Scotia's sectors in the short term.² However, there are signs of concern in the cluster's outlook. Challenges faced by the pulp and paper industry include high electricity prices, exchange rates, changes in demand for paper and over-capacity in the industry, and competition for U.S. market share from Brazil. In terms of the lumber industry, it is currently enjoying a period of record prices due to a boost in U.S. demand. However, the industry has suffered through a protracted period of low prices and great uncertainty due to the softwood lumber dispute. This has caused some bankruptcies to occur as well as a significant accumulation of debt that now hampers potential for investment. The number of small businesses within the cluster has declined between 1999 and 2003 with the exception of timber tract operations and some wood products industries such as kitchen cabinet manufacturing. Compared to other provinces such as British Columbia, Quebec and New Brunswick, the province does not have a large specialization in value-added wood industries. A recent report completed for ACOA noted that key future external markets for niche value-added (non-paper and non-lumber) will be in the United States, central Canada and Europe. The niche products will involve more finished and semi-finished products being sold to retailers and wholesalers. This value-added sector could provide the source of product diversification in the future. This report notes many challenges faced by this segment of the industry, including shipping costs, competition from China and Russia, raw material prices, high insurance costs, availability of skilled workers and high taxes.³

The forestry labour force in Nova Scotia is going through a transformation. While the number of workers in this cluster has been growing, the supply of labour is dwindling due to demographic factors such as slow population growth, an aging population and the urbanization of the labour force. Regions of the province and sub-industries within the forest sector with an older workforce and low unemployment rates may face the labour supply problem sooner than others. For example, the number of workers over 45 years in the pulp and paper sector is nearly twice as high as the sawmill industry. At the same time, the population base around two of the cluster's largest employers (Stora Enso and Bowater) is older than average. Guysborough and Richman counties had a medium age above 41 in 2001 as did Queens and Lunenburg counties. While the cluster is adjusting to some of these realities, more effort is required. Increasingly, the forest industry is requiring higher skilled workers, but the demand for these workers is strong across all sectors. The industry needs to be better at recruiting workers with advanced skill levels. Wage levels in the pulp and paper sector will help attract workers, but skill requirements are very high. Skill requirements in the primary forest sector and wood products industries are lower, but wages are less competitive.⁴

² Export Development Canada, *Global Export Forecast*, 2004

³ Gardner Pinfold *Community Economic Development Project*, 2004

⁴ Atlantic Provinces Economic Council *Nova Scotia Forest Industry Labour Force Profile*, 2005

Figure 2.3 – Forest Products Cluster

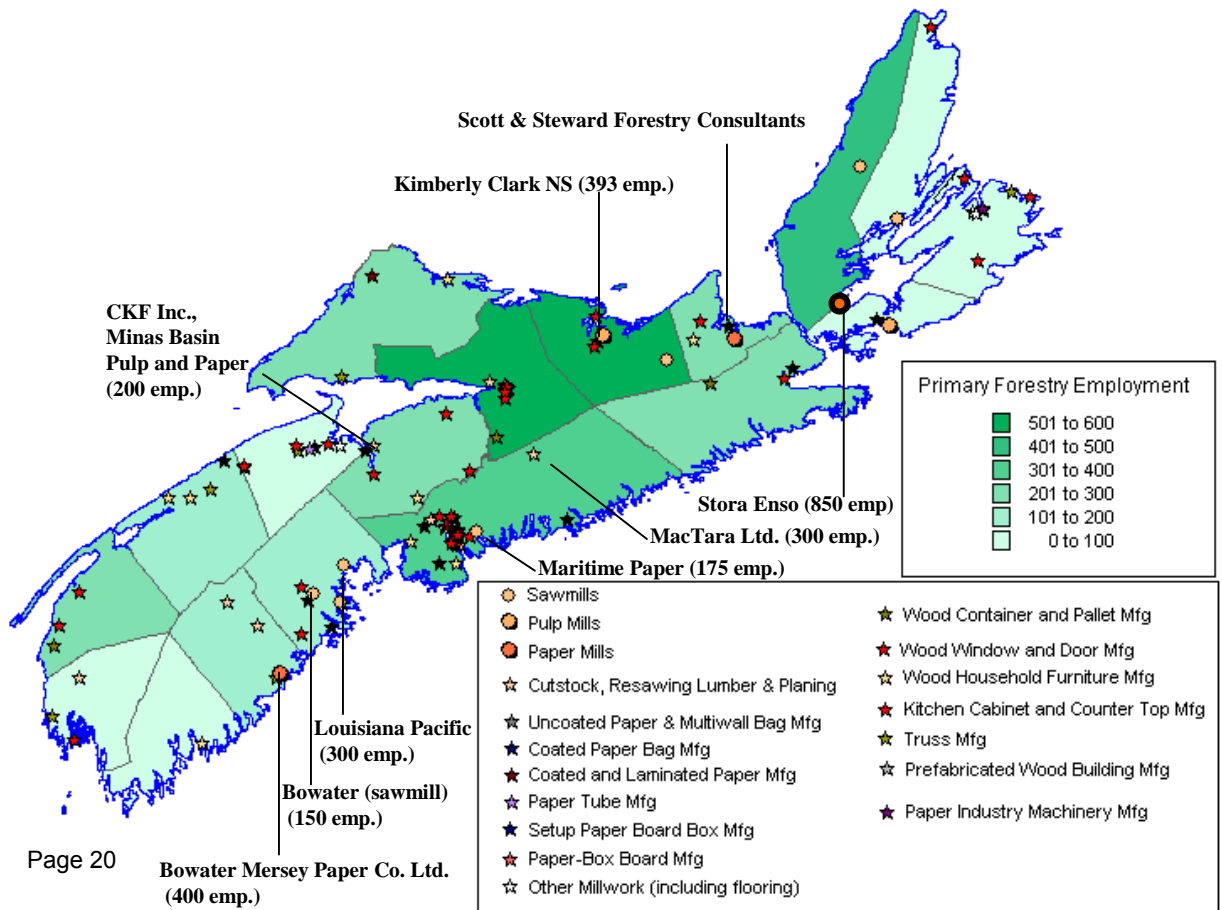
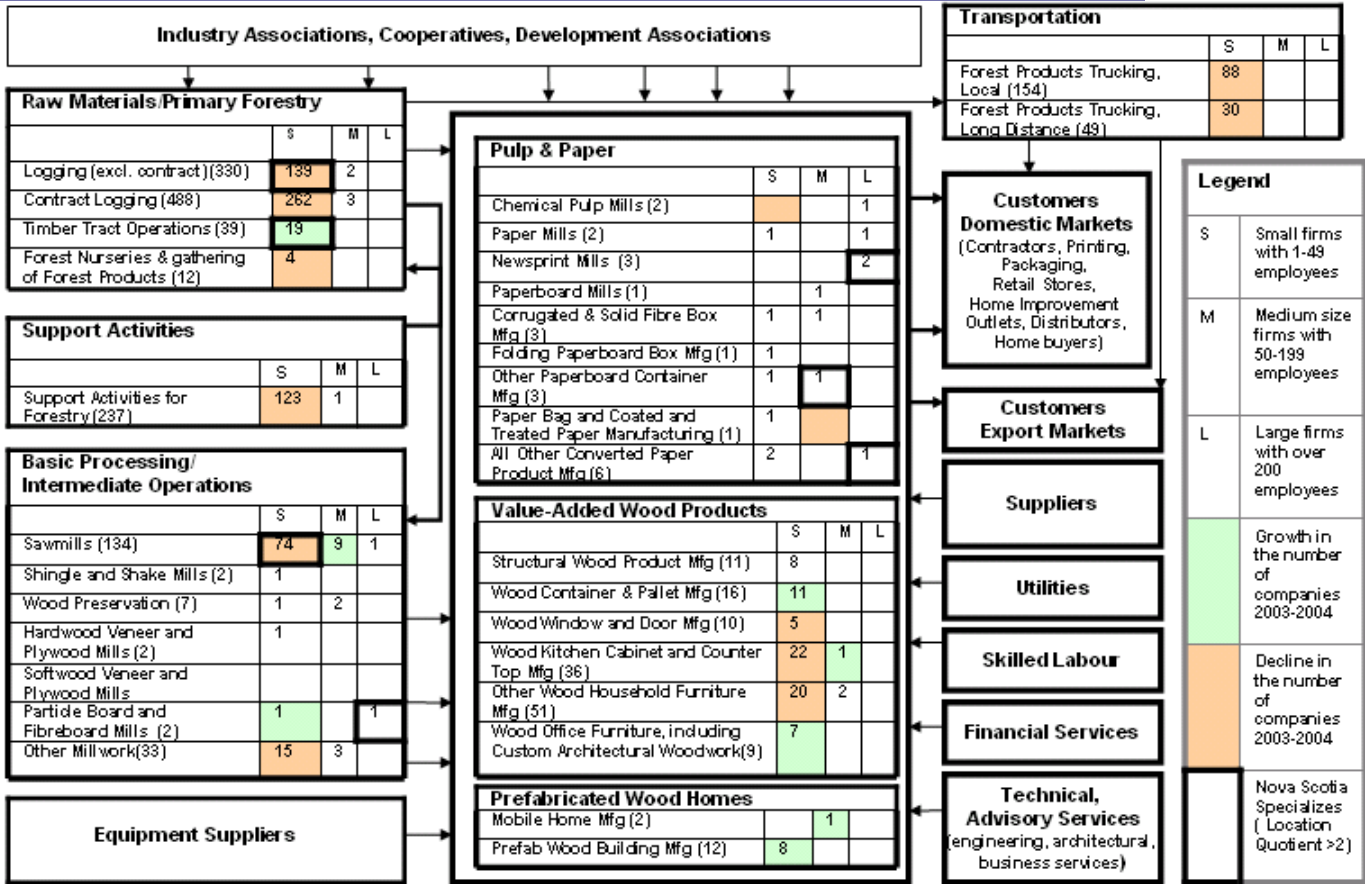


Figure 2.4a

**Employment and Average Employment Income
by 1997 North American Industry Classification System**

Source: Statistics Canada, 2001 Census, Cat. No. 97F0012XCB2001046

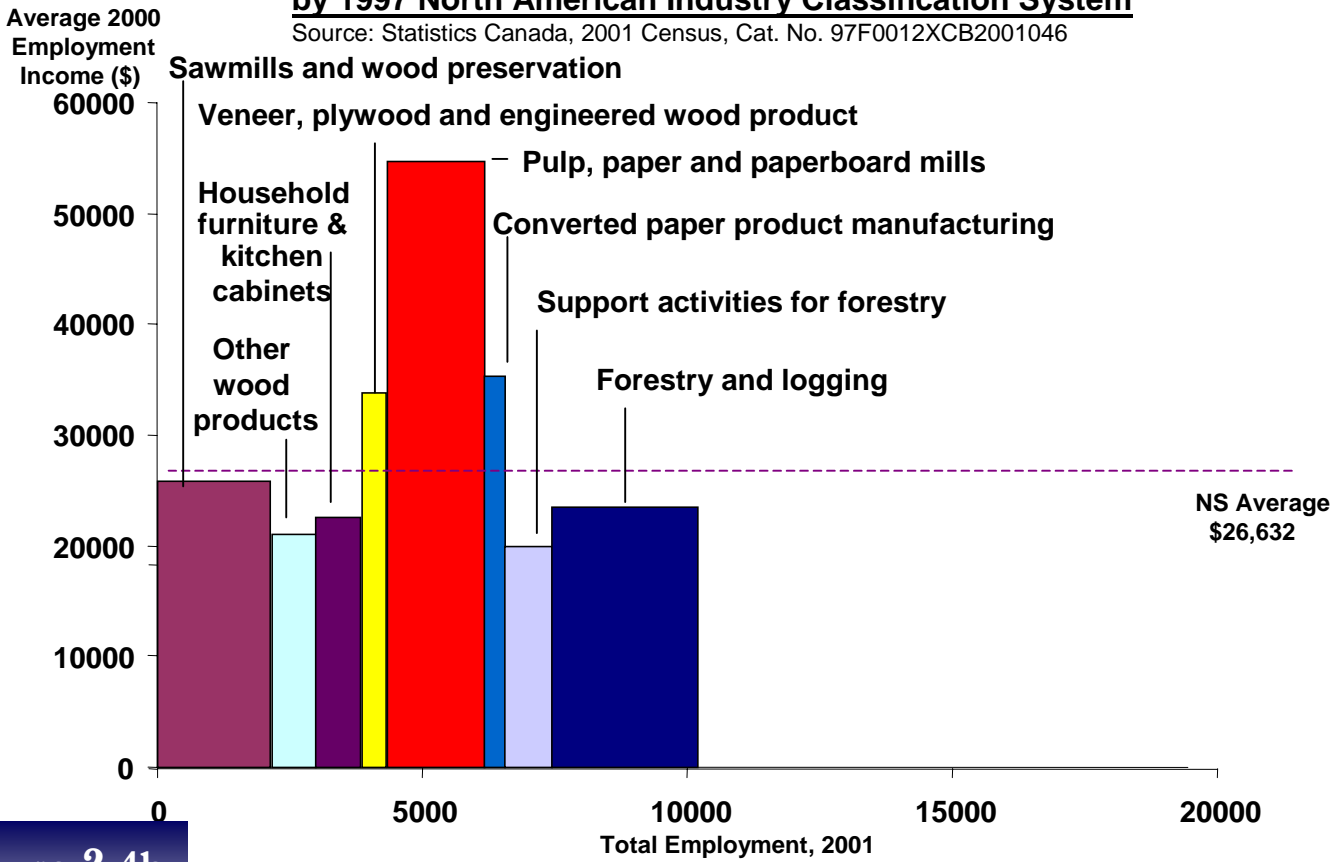
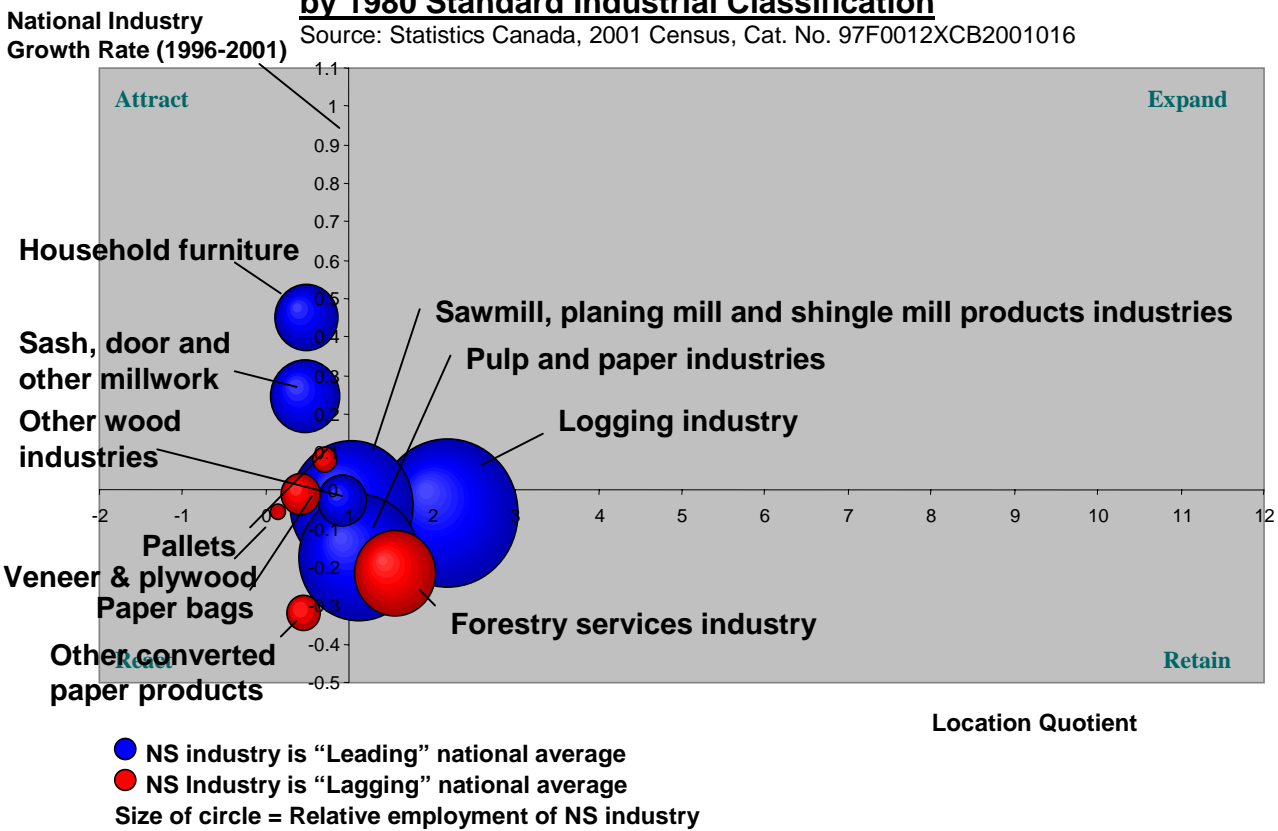


Figure 2.4b

**Competitive Dynamics, 1996-2001
by 1980 Standard Industrial Classification**

Source: Statistics Canada, 2001 Census, Cat. No. 97F0012XCB2001016



2.3 Agricultural-Based Products

This group includes primary agriculture, agricultural services and food processing (meat and poultry processing, fruit and vegetable processing, the flour and cereal products industry, and beverage industries). Not including wholesalers, retailers and the food service industry, the cluster employs over 12,000 people and generates approximately 3 percent of Nova Scotia's GDP. In 2001, there were almost 4,000 enumerated farms operating in the province. Most farms in Nova Scotia are relatively small in size and produce products such as cattle, dairy, apples or blueberries. The province is recognized as the nation's largest producer of blueberries, producing 35% of Canada's crop. In terms of food processing, the majority of employment is concentrated in larger firms such as Larsen Packers, ACA Co-operative Ltd., Maple Leaf, Farmers Dairy, Oxford Frozen Foods, Ben's Ltd., & Moirs Chocolates.

The traditional agriculture sector in Nova Scotia has faced much adversity and challenges brought on by poor markets, trade developments and the mad cow disease. The number of farms has declined significantly in the province as smaller farms have simply gone out of production or have been consolidated with larger operations. The non-supply managed livestock industries beef and pork have suffered from poor returns. The supply managed chicken industry has performed well while the turkey industry has faced net return challenges. The dairy sector has been stable although there is a significant trend toward consolidation. The negotiations at the World Trade Organization continue to be a concern for these supply-managed industries. The beef sector has been devastated by the mad cow disease and associated border closings.

The greenhouse and horticultural industries have performed better. The wild blueberry industry has experienced the greatest growth over the past 20 years and is benefiting from increased awareness associated with health attributes and convenience. The cranberry industry has also experienced significant growth and continues to grow. Export markets are becoming increasingly important. Within the Christmas tree industry, significant value has been added through wreath and other ornament production. The grape industry and associated farm wineries have grown in the past 10 years. There are now six wineries in operation with one or two new operators expected in the next few years. The bottled water industry, which is considered to be part of food and beverage industry, also offers promise.

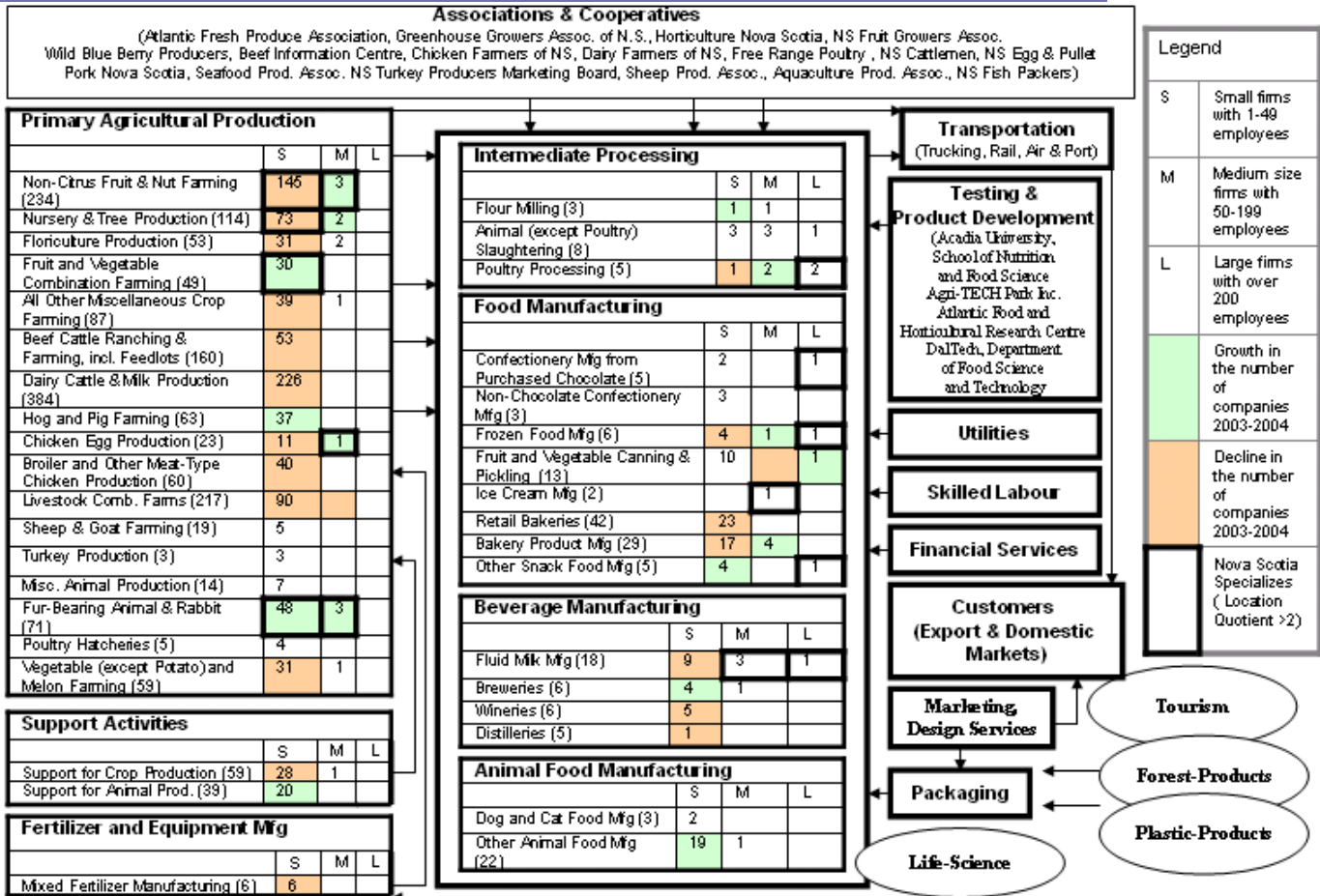
The processed food industry in North America is dominated by large multi-faceted companies. The sector enjoys steady growth and seems immune from economic upswings and downswings. Historically, there is a high level of merger and acquisition activity and the industry is becoming more global. Consumer trends and demographics drive the demand for goods from this sector. Dieting, obesity and fitness trends all contributed to the sector. Organic foods, for instance, are growing rapidly as a market segment with increasing interest in food safety and healthy products. In the United States, the industry is expected to reach \$30 billion by 2007 with a five-year compound growth rate of 21%.⁵

Employment in primary agriculture continues to decline in every province due to increased efficiencies in agricultural production. Overall, global trends are presenting challenges for many industries with Nova Scotia's agri-food cluster which will require attention to developing high quality, customer-driven products through innovation. The idea that agriculture industry in province plays a role in feeding world is a fallacy. The potential for large-scale commodity related production in Nova Scotia simply does not exist. The industry must look for other new food opportunities that have potential on a niche market basis. For instance, opportunities for both employment and revenue growth exist in agri-foods and in further integrated the sector with life-sciences. Functional foods and nutraceuticals, which is the combination of nutrition and medicine, has a global market estimated at US \$138 billion.⁶

⁵ Gardner Pinfold *Community Economic Development Project*, 2004

⁶ KPMG, *Canadian Technological Roadmap On Functional Foods and Nutraceuticals*, 2002

Figure 2.5 – Agricultural Products Cluster



- Oxford Frozen Foods (358 emp.)
- Avon Valley Farms Ltd. (124 emp.)
- Stirling Fruit Farms (450 emp.)
- Dykeview Farms Ltd. (256 emp.)
- Sarsfield Food Ltd. (175 emp.)
- ACA Co-operative Ltd. (500 emp.)
- Maple Leaf Poultry. (260 emp.)
- Eastern Protein Foods (140 emp.)
- Frito-Lay Company (232 emp.)
- Larsen Packers Ltd. (500 emp.)

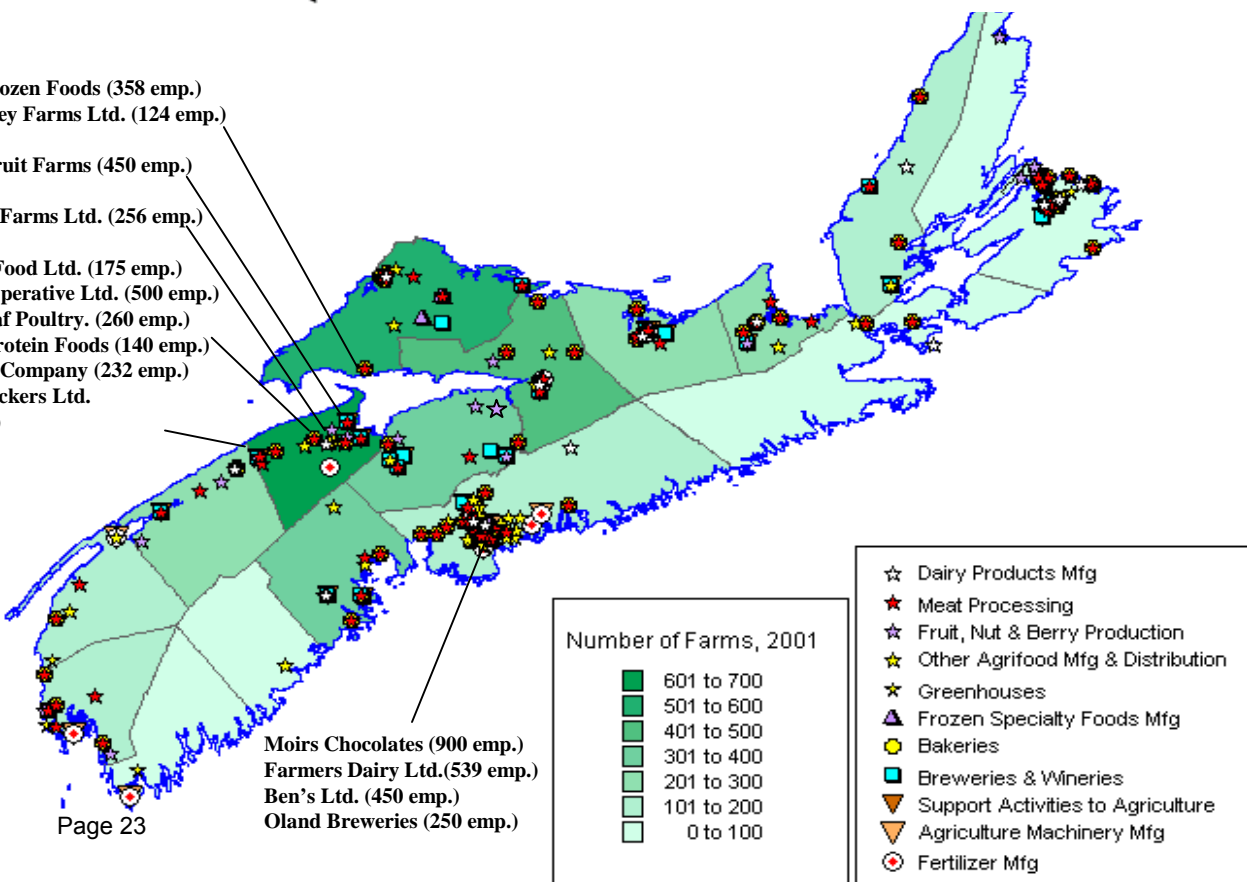


Figure 2.6a

Average 2000
Employment
Income (\$)

**Employment and Average Employment Income
by 1997 North American Industry Classification System**

Source: Statistics Canada, 2001 Census, Cat. No. 97F0012XCB2001046

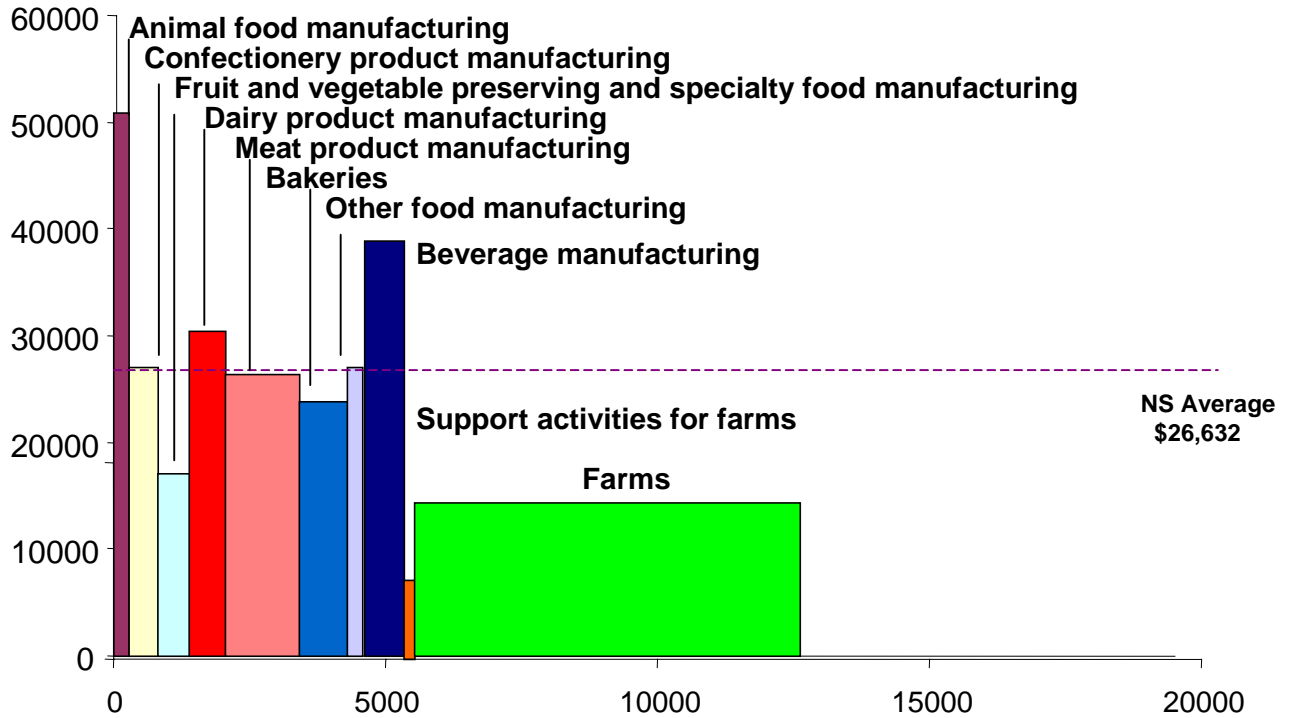


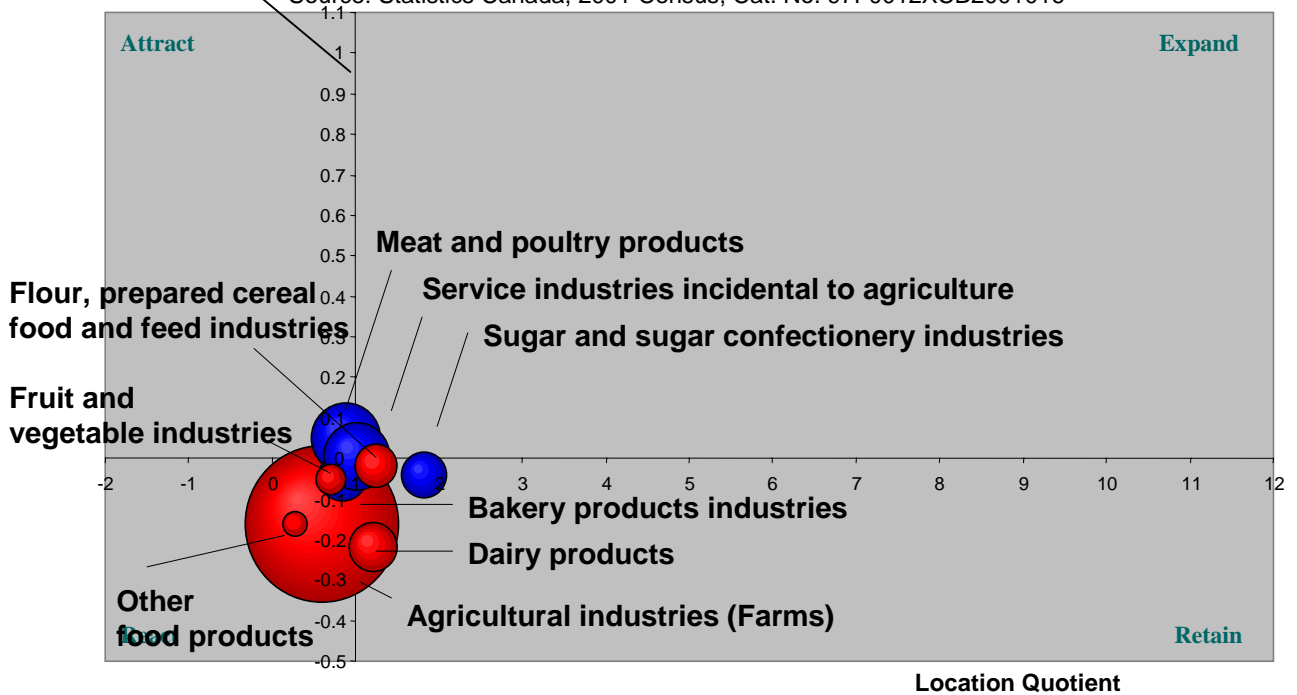
Figure 2.6b

Total Employment, 2001

National Industry
Growth Rate (1996-2001)

**Competitive Dynamics, 1996-2001
by 1980 Standard Industrial Classification**

Source: Statistics Canada, 2001 Census, Cat. No. 97F0012XCB2001016



● NS industry is "Leading" national average
● NS Industry is "Lagging" national average
Size of circle = Relative employment of NS industry

2.4 Mineral-Based Products

The industrial mineral processing and manufacturing industries of Nova Scotia are diverse and technically advanced. The cluster employs approximately 3,000 people and accounts for 1 percent of provincial GDP. Nova Scotia's mining history includes the production of gypsum, anhydrite, salt, aggregate, barite, coal, gold, copper, lead, zinc, tin, antimony, manganese, and several other industrial mineral commodities such as diatomaceous earth and iron oxide. Until recently, coal production was the leading mineral produced. Although the cluster has been declining in terms of its relative contribution to the economy, there have been recent start-ups in several areas. Current production highlights include:

- approximately 8 million tonnes of gypsum annually from 5 surface mines, accounting for 80% of total Canadian production;
- approximately 1 million tonnes of salt annually from 1 underground mine and 1 brining operation, accounting for approximately 10% of total Canadian production;
- crushed stone and sand & gravel aggregate production from numerous operations accounting for approximately 10 million tonnes per year for domestic consumption and export markets;
- coal production (0.3-0.4 million tonnes per year) from five surface mines; and
- other commodities including limestone, dolomite, silica sand, peat, clay, granite, sandstone and slate.

Projects currently in feasibility or pre-production stages of development include:

- a red marble quarry in the River Denys area of Cape Breton Island. In early 2003, test blocks of red and grey marble were extracted for processing and market development; and
- a white quartz quarry near Yarmouth.

In terms of an outlook for the cluster, existing producers should be able to maintain current production levels, given known resource availability. Economic forecasts for a stronger U.S. economy bodes well for this industry over the medium term. Long-term potential is good for a demand for product from Nova Scotia, given our proximity by bulk carrier vessels to the east coast of the United States. Environmental concerns, significant transportation costs, high energy costs, associated provincial regulation, and public opposition will represent significant challenges to growth and profitability in this industry.⁷

An often under-estimated segment of the mining industry is the secondary processing that takes place in the province associated with industrial minerals. There are many examples of diverse and technically-advanced operations that sell product both locally and throughout the world. These operations provide examples of how economic opportunities can be pursued based on these minerals. Processing of rocks and industrial minerals ranges from basic upgrading of raw aggregate materials to meet user specifications for asphalt and concrete to more sophisticated processes that include using limestone to manufacture cement, clay and shale to manufacture bricks, gypsum used to manufacture a fibre-reinforced building panel called FiberBond™, and barite used to manufacture barium sulphate for diagnostic X-ray examination of patients.

⁷ Gardner Pinfold *Community Economic Development Project*, 2004

Figure 2.7 – Minerals Products Cluster

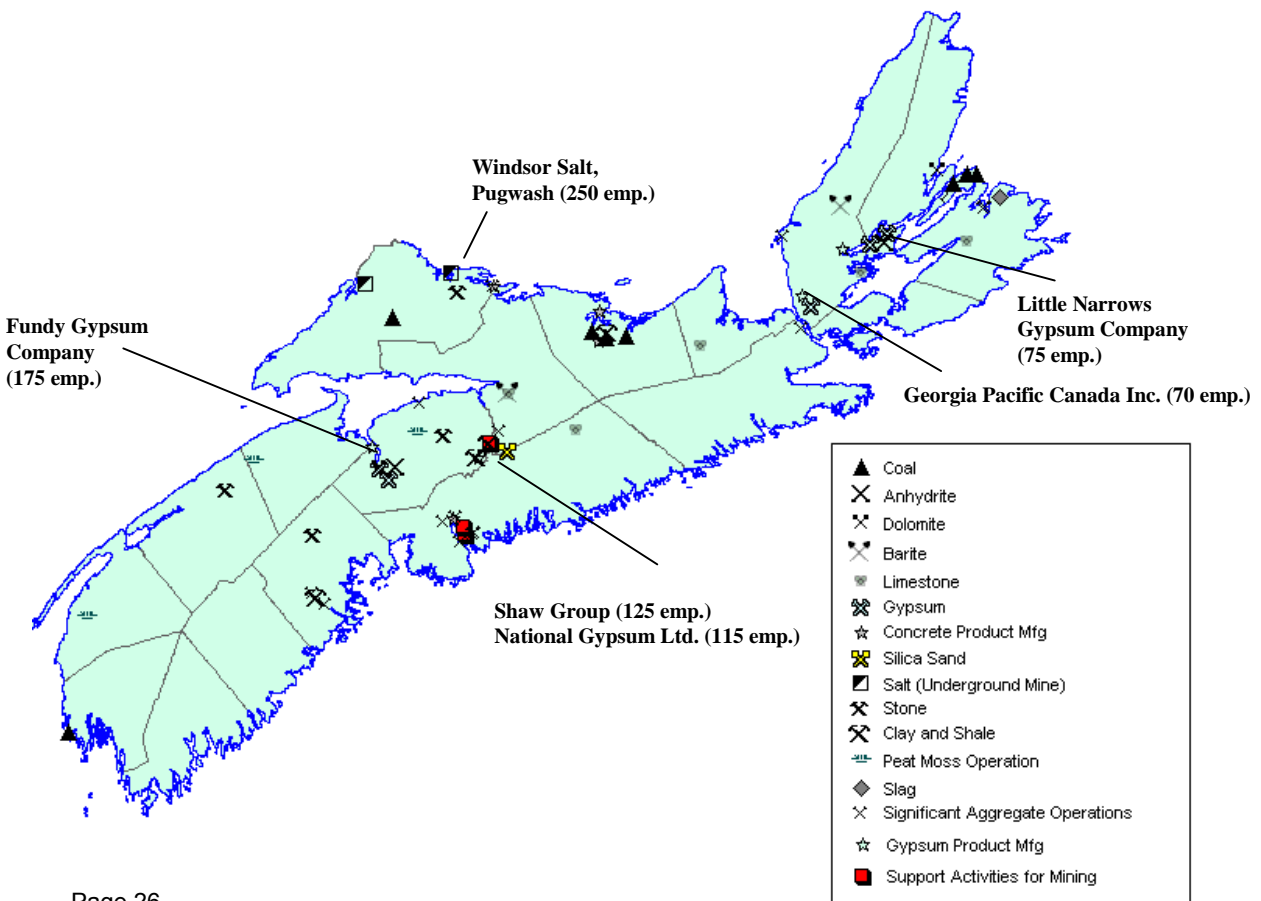
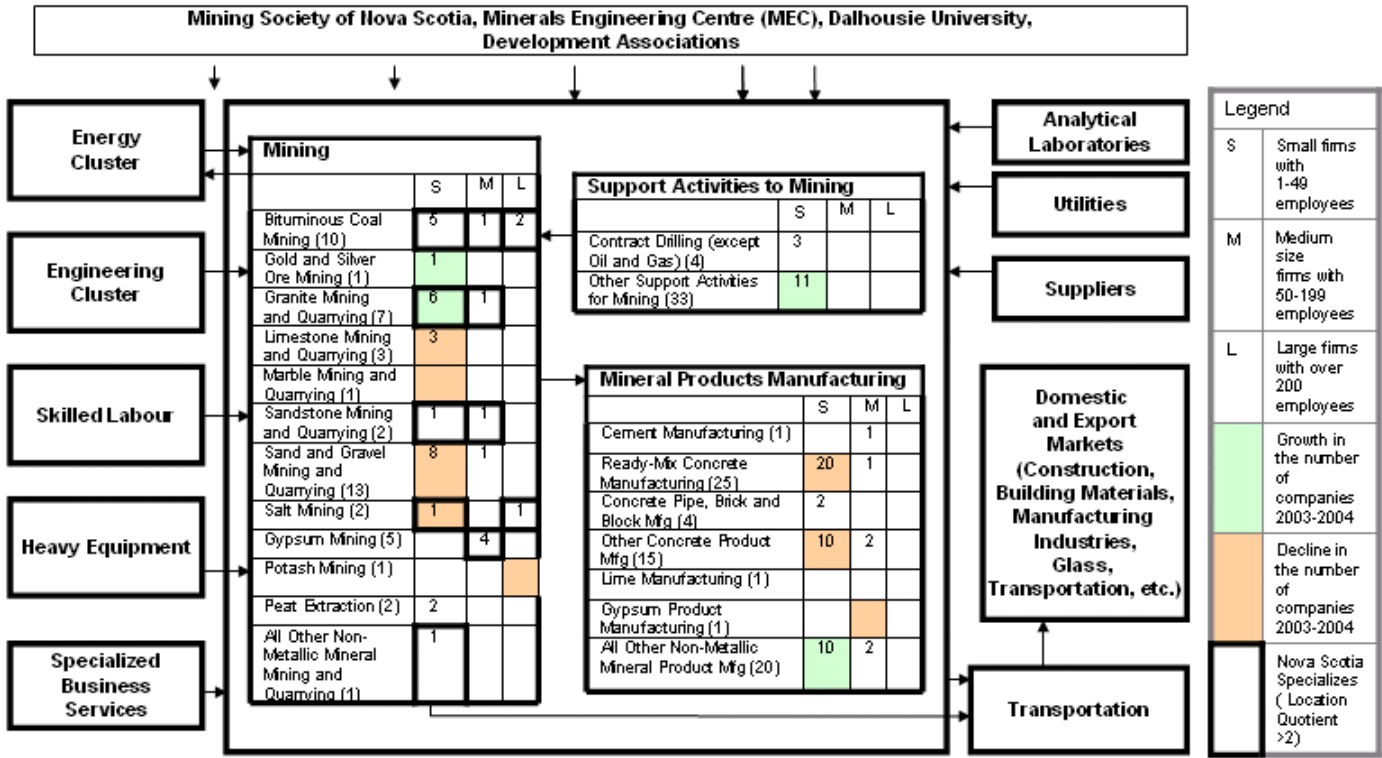


Figure 2.8a

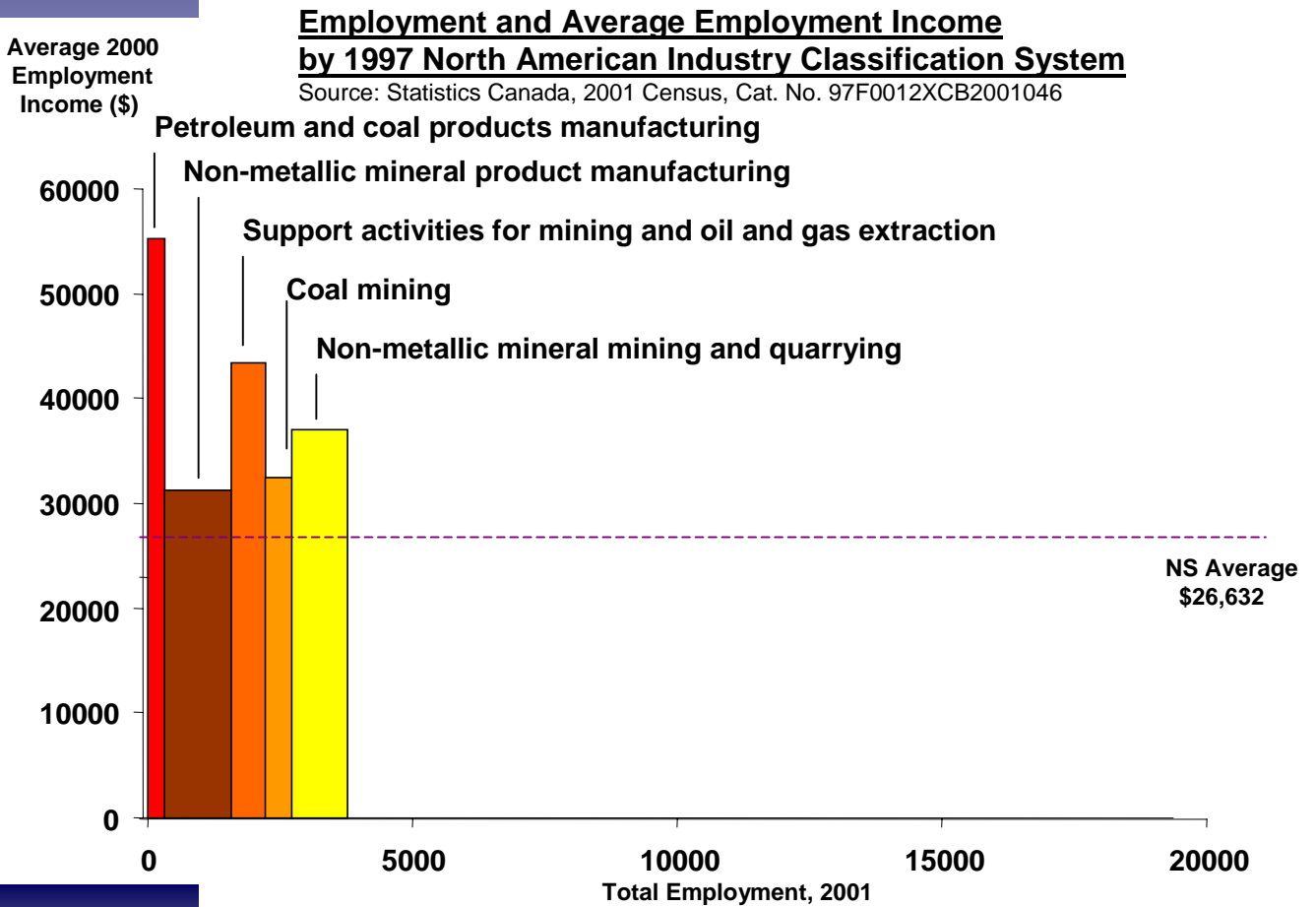
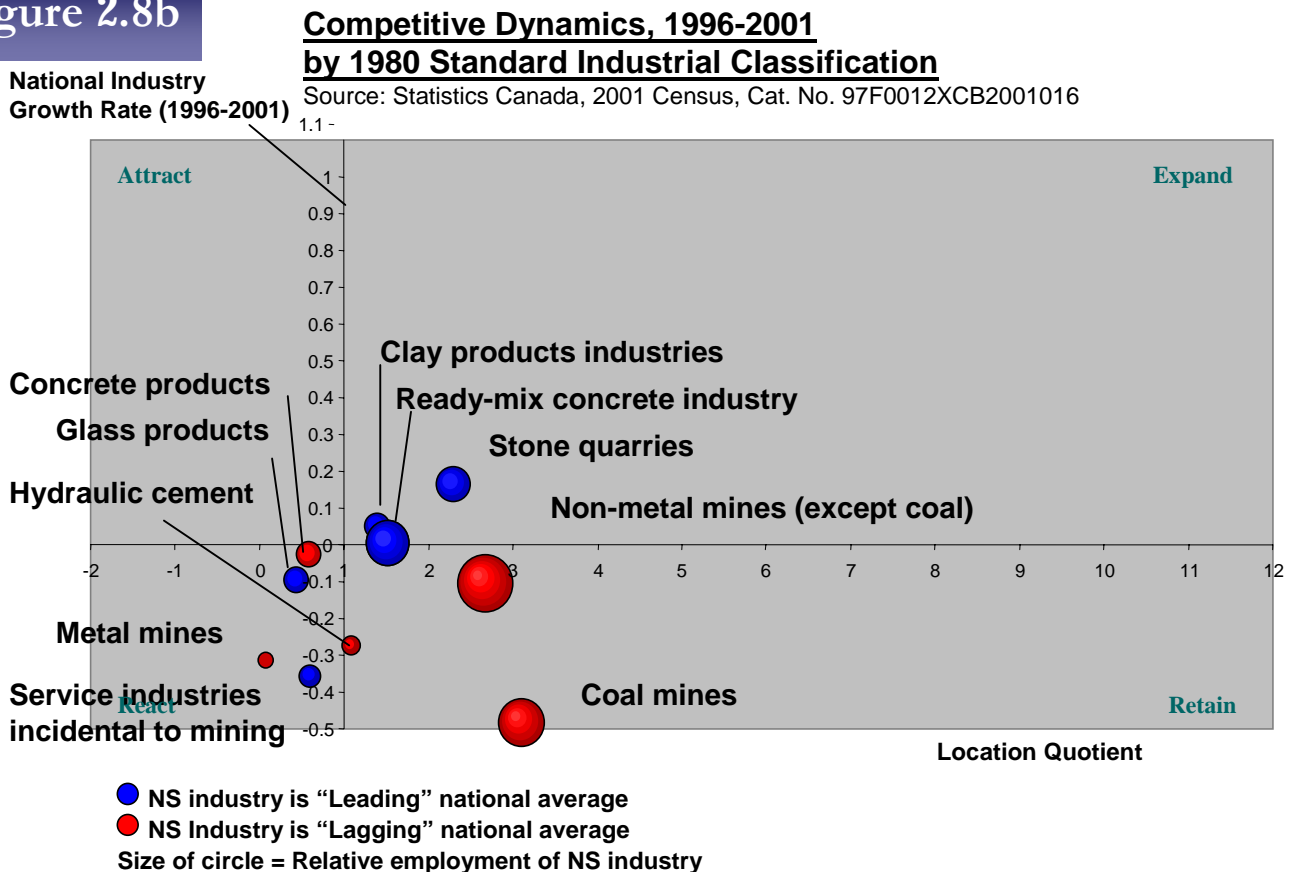


Figure 2.8b



2.5 Diversified Manufacturing

For the purpose of this report, the diversified manufacturing includes companies that produce products from plastics, rubber, metal or textiles. A large portion of the province's output in this cluster can be classified under the heading of transportation equipment which includes railroad equipment, boat and shipbuilding, aircraft and other aerospace equipment, automobile, truck and other motor-driven vehicles, and related parts including tires. Advanced manufacturing technologies (AMTs) involve new manufacturing techniques and machines combined with the application of information technology, micro-electronics and new organizational practices within the manufacturing process. Many of the provinces manufacturers employ AMTs.

The metalworking sector represents a diverse set of industries, employs almost 6,000 people and accounts for over 2 percent of provincial GDP. With the decline of the steel industry, Nova Scotia now has a smaller concentration of companies in this cluster as compared to most other provinces. Areas where there is a high concentration of employment include several aerospace companies (1,500 employees) and railroad rolling stock manufacturing (700 people employed at Trenton Works). The shipbuilding industry (represented in the oceans cluster) also employs 1,200 people. Nova Scotia exports approximately \$550 million annually of primary and advanced manufactured products such as machinery, parts & electrical components, and transportation equipment. Nova Scotia's leading export in this sector is railway equipment. Nova Scotia also leads the country in exports of a few niche products such as parking metres.

The plastics and rubber products sector employs approximately 5,300 employees and accounts for over 1 percent of GDP. Compared to other provinces, Nova Scotia has above average employment in this cluster due to the presence of Michelin Tires who operate three plants in the province and employ approximately 4,000 people. Tires account for approximately 12 percent of Nova Scotia's exports. In terms of employment, plastic industries have shown some growth both provincially and nationally. Nova Scotia has a small but growing group of packaging companies such as Intertape Polymer, Poly-Cello, Ropak Corporation, Chester Plastics.

Established over 150 years ago, the Canadian textiles industry is ranked among the oldest manufacturing industries in Canada. Historically, the industry was established to manufacture yarns and fabrics from natural fibres. Currently, the industry serves over 150 industrial sectors with production occurring mainly in Quebec and Ontario. Nova Scotia's textile industries, along with apparel industries, employ approximately 2,600 people and account for less than 0.5 percent of provincial GDP. Some of the larger companies in the province include Helly-Hansen, Weavexx, and Nova Scotia Textiles Ltd. A recent study entitled "*Innovation Performance in Canadian Manufacturing Industries*" revealed an innovation intensity for the sector was higher than the Canadian manufacturing sector as a whole. Canada's textile industry is capital and technology intensive, and must continuously re-invest to remain internationally competitive. Between 1996 and 2001, the industry was lagging in terms of both provincial and national employment growth. On a national basis, textile manufacturers continue to lose market share to off-shore suppliers.

Figure 2.9a

Share of Employment in Traditional Manufacturing, 1996

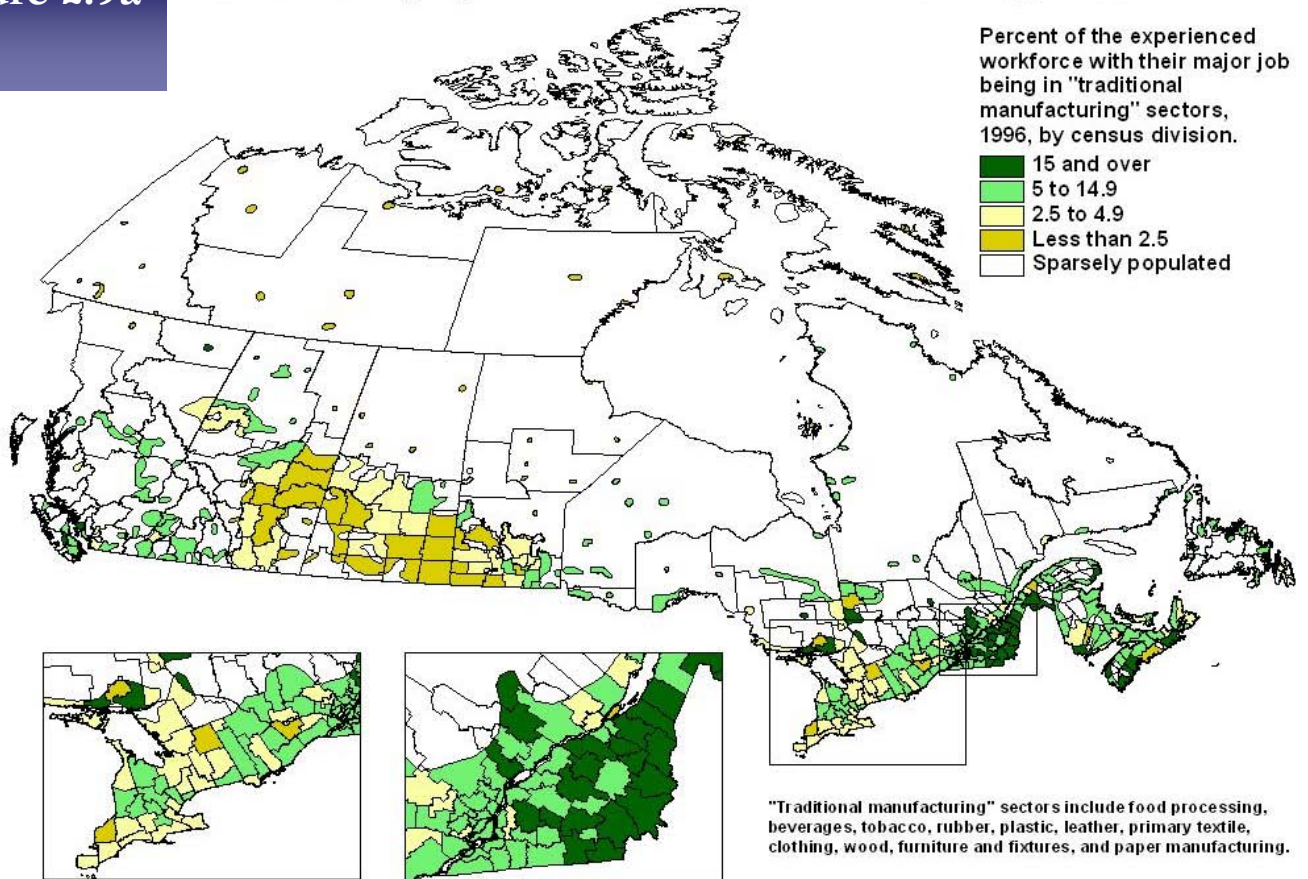
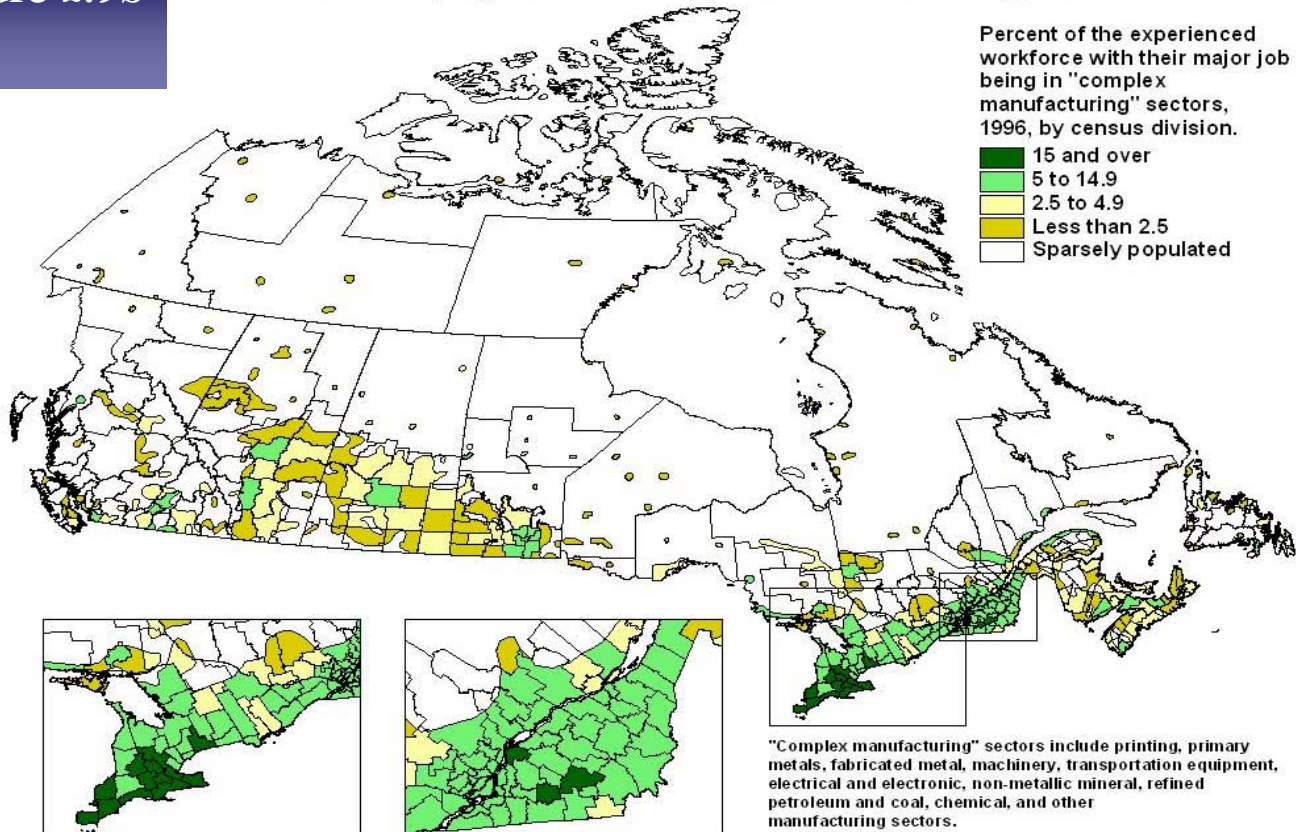


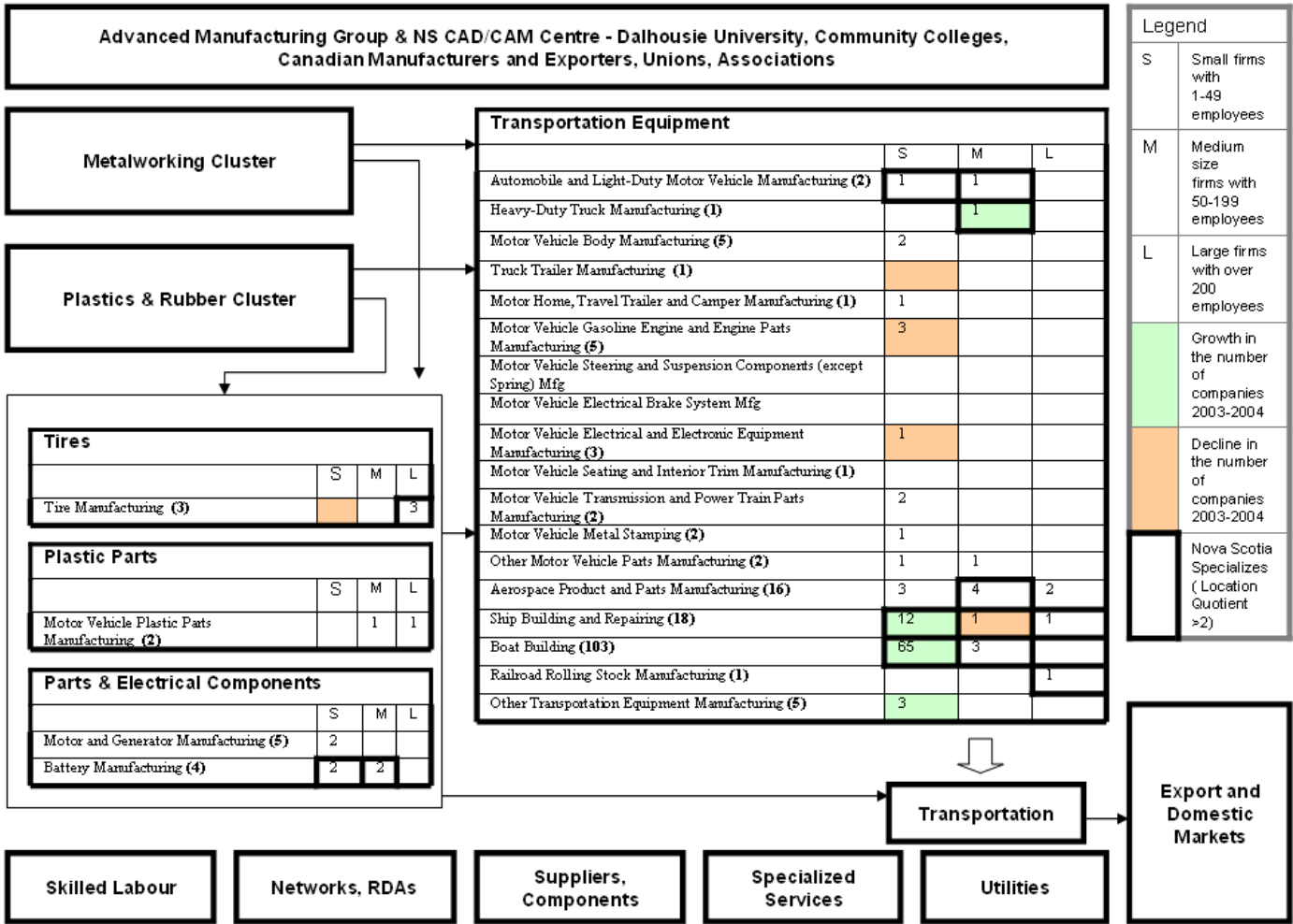
Figure 2.9b

Share of Employment in Complex Manufacturing, 1996



Source: Statistics Canada. Census of Population, 1996
Map produced by the Spatial Analysis and Geomatics Applications section (SAGA), Agriculture Division, Statistics Canada, 2000

Figure 2.10 – Transportation Equipment Cluster



Legend

S	Small firms with 1-49 employees
M	Medium size firms with 50-199 employees
L	Large firms with over 200 employees
	Growth in the number of companies 2003-2004
	Decline in the number of companies 2003-2004
	Nova Scotia Specializes (Location Quotient >2)

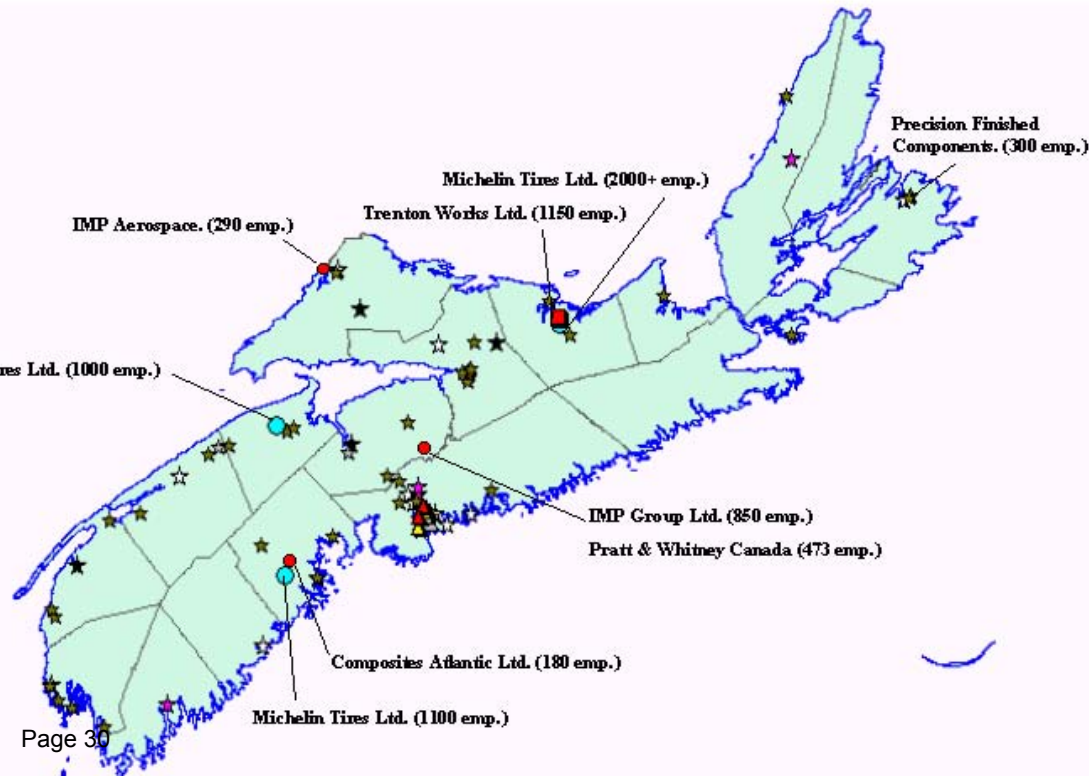


Figure 2.11a

**Employment and Average Employment Income
by 1997 North American Industry Classification System**

Source: Statistics Canada, 2001 Census, Cat. No. 97F0012XCB2001046

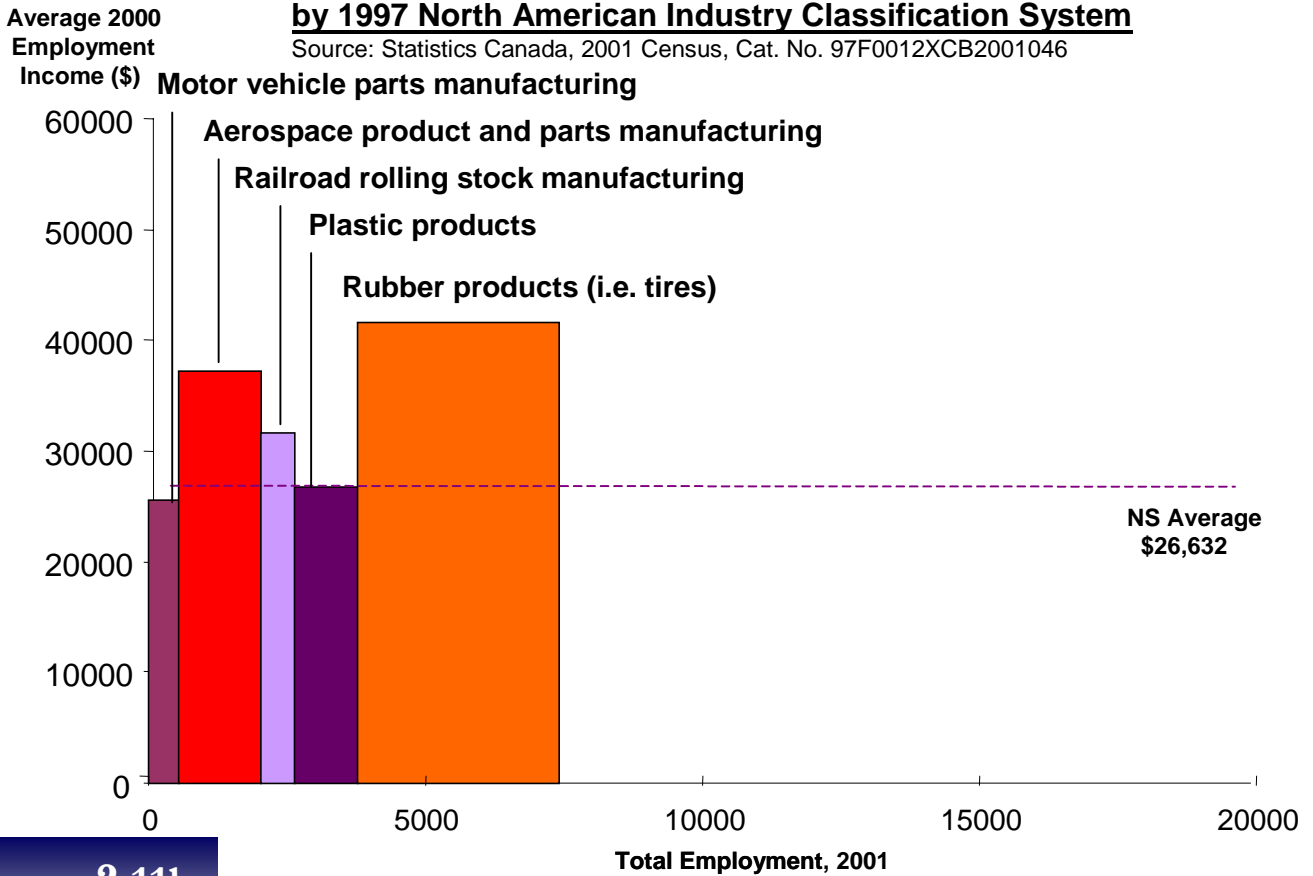
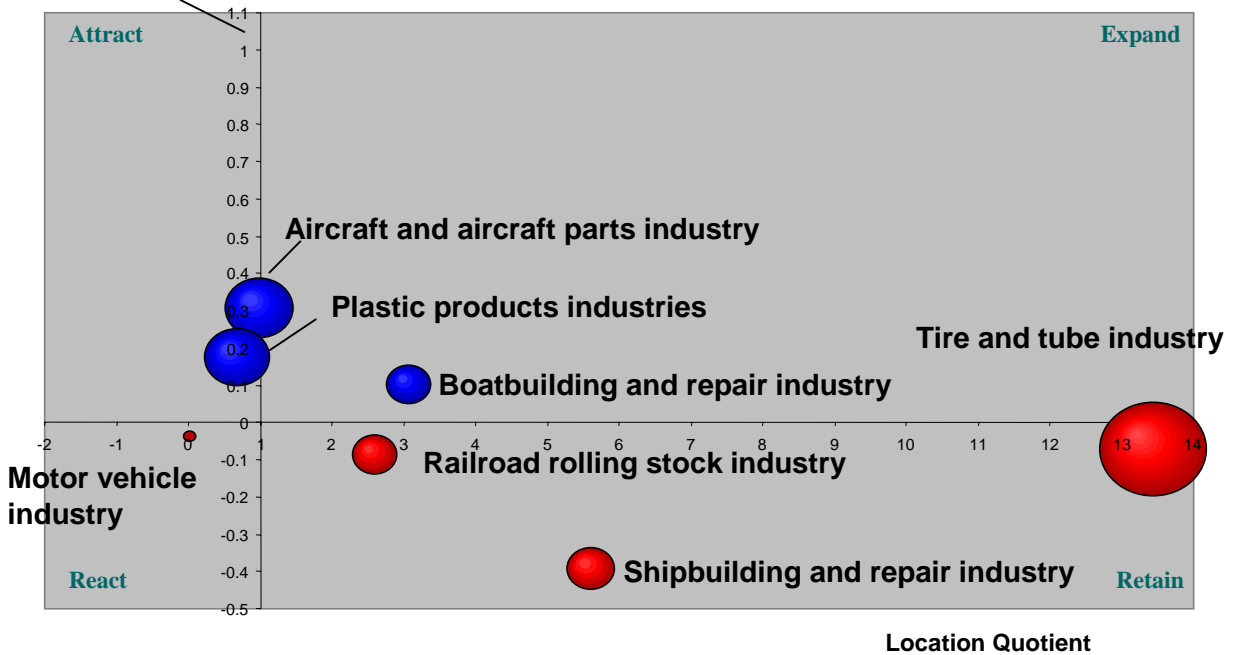


Figure 2.11b

**Competitive Dynamics, 1996-2001
by 1980 Standard Industrial Classification**

Source: Statistics Canada, 2001 Census, Cat. No. 97F0012XCB2001016

National Industry Growth Rate (1996-2001)



- NS industry is "Leading" national average
- NS Industry is "Lagging" national average
- Size of circle = Relative employment of NS industry

Figure 2.12 – Rubber and Plastics Products

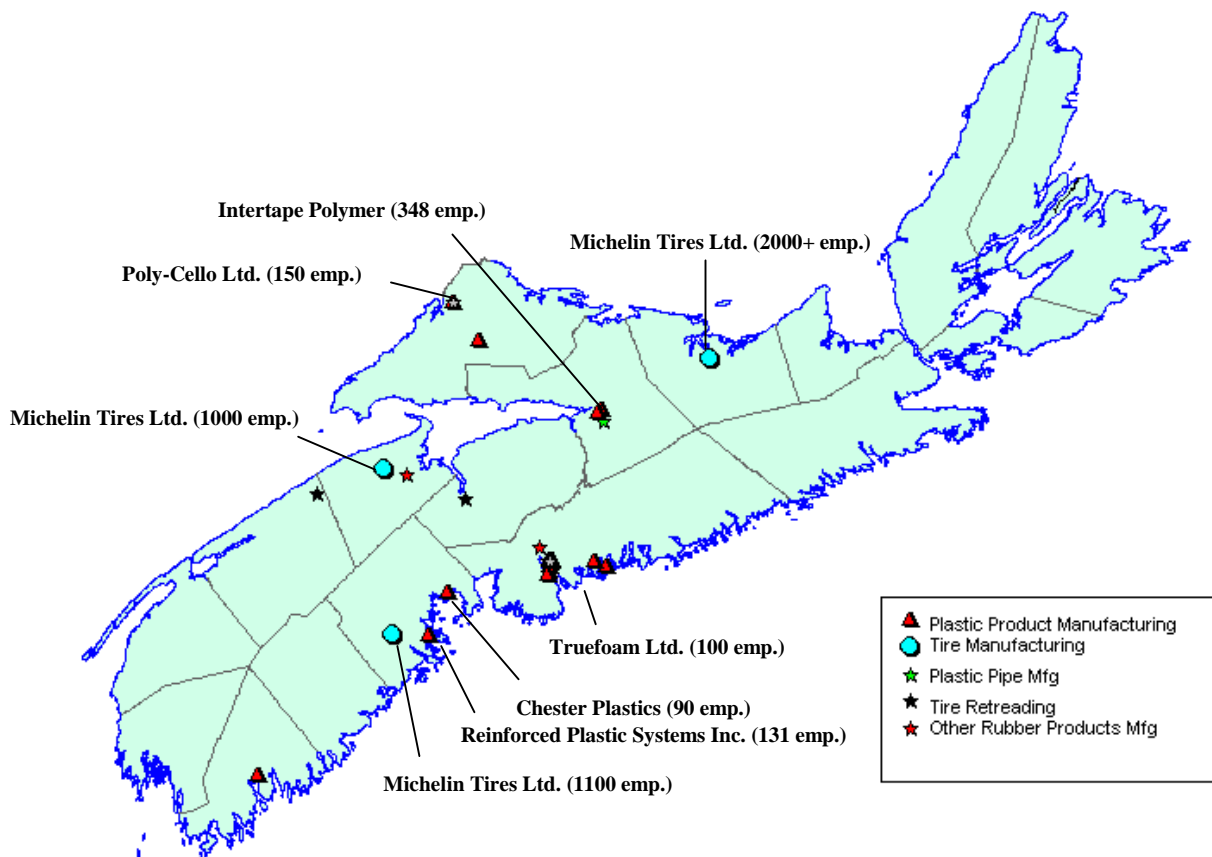
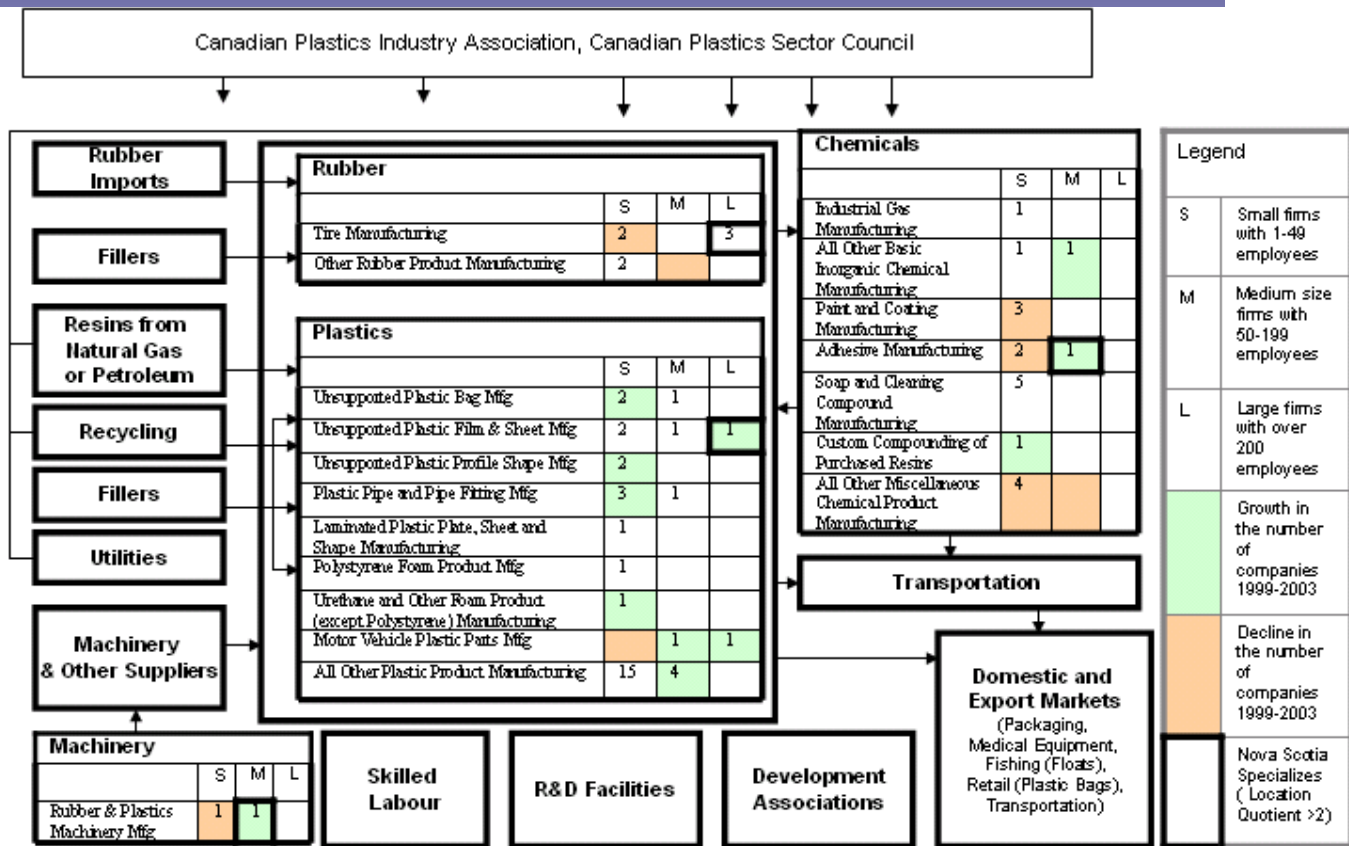


Figure 2.13 – Metalworking

Primary Metal Industries			
	S	M	L
Iron and Steel Pipes and Tubes Manufacturing from Purchased Steel	3		
Iron Foundries	1		
Non-Ferrous Foundries	1		
Forging	1	1	
Stamping	2		

Machinery Manufacturing			
	S	M	L
Construction Machinery Manufacturing	2		
All Other Industrial Machinery Manufacturing	7	1	
Commercial and Service Industry Machinery Manufacturing	4	2	
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	2		
Heating Equipment and Commercial Refrigeration Equipment Manufacturing	7	2	
Industrial Mould Manufacturing	1		
Other Metalworking Machinery Manufacturing	3	1	
Turbine and Turbine Generator Set Unit Manufacturing	1		
Other Engine and Power Transmission Equipment Manufacturing	3		
Pump and Compressor Manufacturing	2		
Material Handling Equipment Mfg	4	1	
All Other General-Purpose Machinery Manufacturing	3	1	

Legend	
S	Small firms with 1-49 employees
M	Medium size firms with 50-199 employees
L	Large firms with over 200 employees
Green	Growth in the number of companies 1999-2003
Orange	Decline in the number of companies 1999-2003
White	Nova Scotia Specializes (Location Quotient >2)

Metal Fabrication			
	S	M	L
Cutlery and Hand Tool Manufacturing	3		
Prefabricated Metal Building Mfg	1		
Concrete Reinforcing Bar Mfg	1		
Fabricated Structural Product Mfg	15	6	
Metal Window and Door Mfg	3	1	
Architectural Metal Products Mfg	12		
Power Boiler and Heat Exchanger Mfg	1	1	
Metal Tank (Heavy Gauge) Mfg	8	1	
Other Metal Container Manufacturing	2	1	
Hardware Manufacturing	3		
Other Fabricated Wire Product Mfg	14		
Machine Shops	42	1	
Turned Product and Screw, Nut and Bolt Manufacturing	2	1	
Coating, Engraving, Heat Treating and Allied Activities	8		
Metal Valve Manufacturing	2		
All Other Miscellaneous Fabricated Metal Product Manufacturing	11	1	

Parts & Electrical Components			
	S	M	L
Lighting Fixture Manufacturing	2		
Power, Distribution and Specialty Transformers Manufacturing	1		1
Motor and Generator Manufacturing	2		
Switchgear and Switchboard, and Relay and Industrial Control Apparatus Manufacturing	3		
Battery Manufacturing	2	2	
Communication and Energy Wire and Cable Manufacturing	1		
Wiring Device Manufacturing	2		

Transportation Equipment			
	S	M	L
Automobile and Light-Duty Motor Vehicle Manufacturing	1		
Motor Vehicle Body Manufacturing	2		
Truck Trailer Manufacturing	1		
Motor Home, Travel Trailer and Camper Manufacturing	1		
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	5		
Motor Vehicle Electrical and Electronic Equipment Manufacturing	2		
Motor Vehicle Transmission and Power Train Parts Manufacturing	2		
Motor Vehicle Metal Stamping	1		
Other Motor Vehicle Parts Manufacturing	1	1	
Aerospace Product and Parts Manufacturing	3	4	2
Railroad Rolling Stock Manufacturing	0		1
Other Transportation Equipment Manufacturing	2		

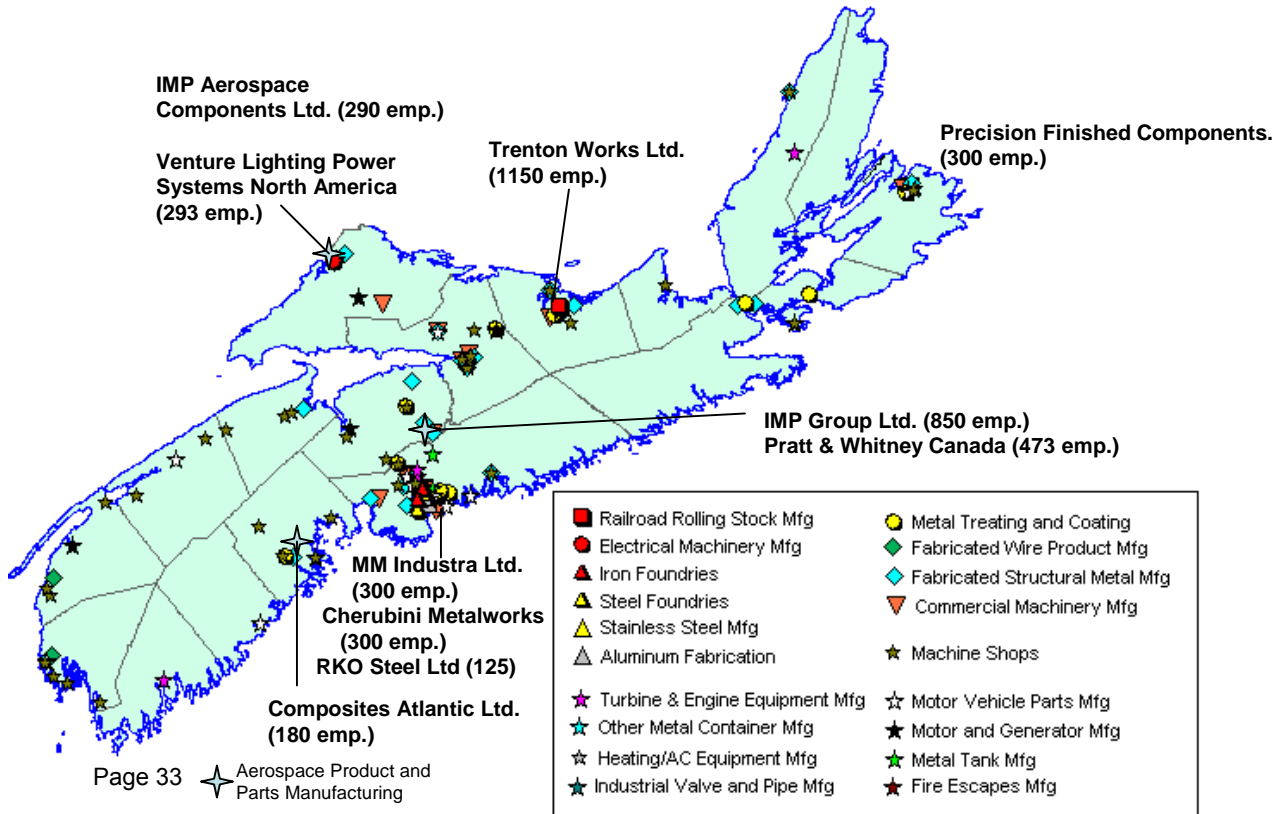
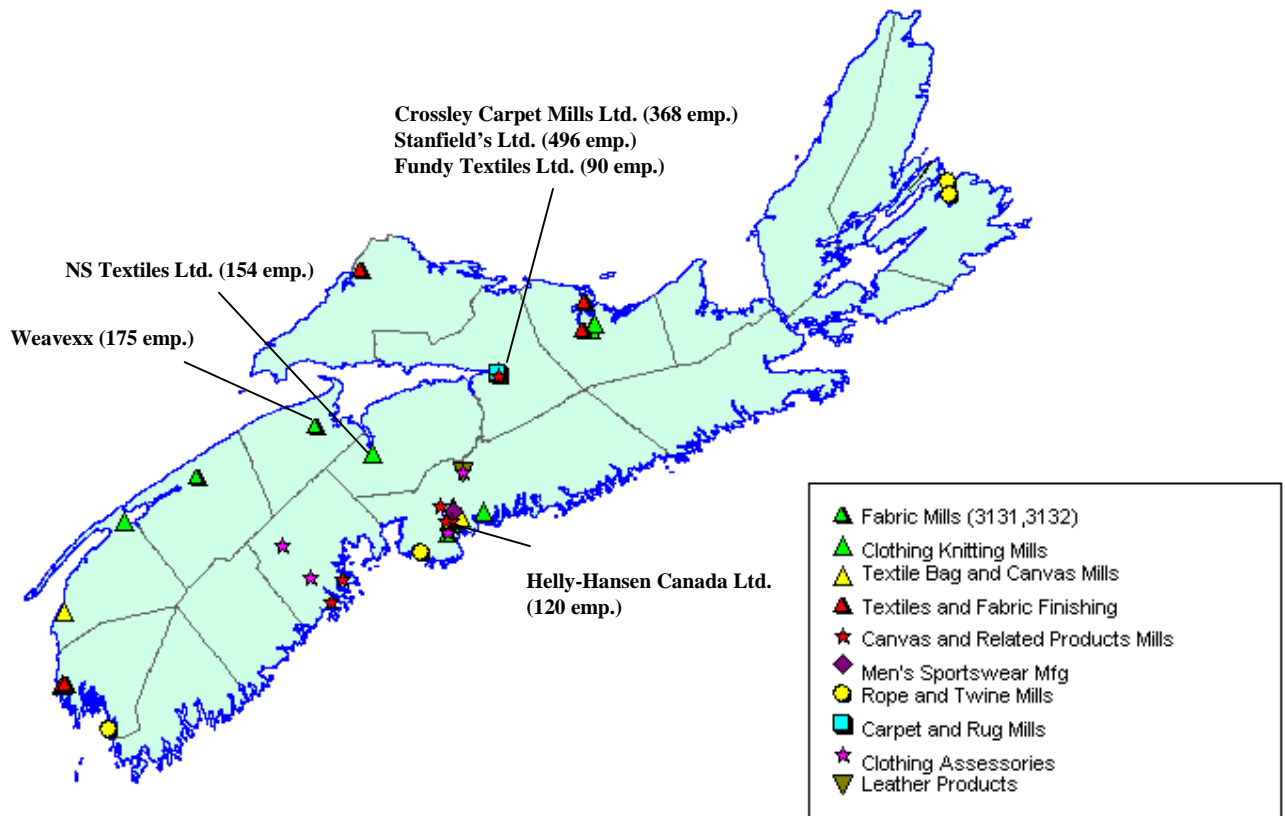
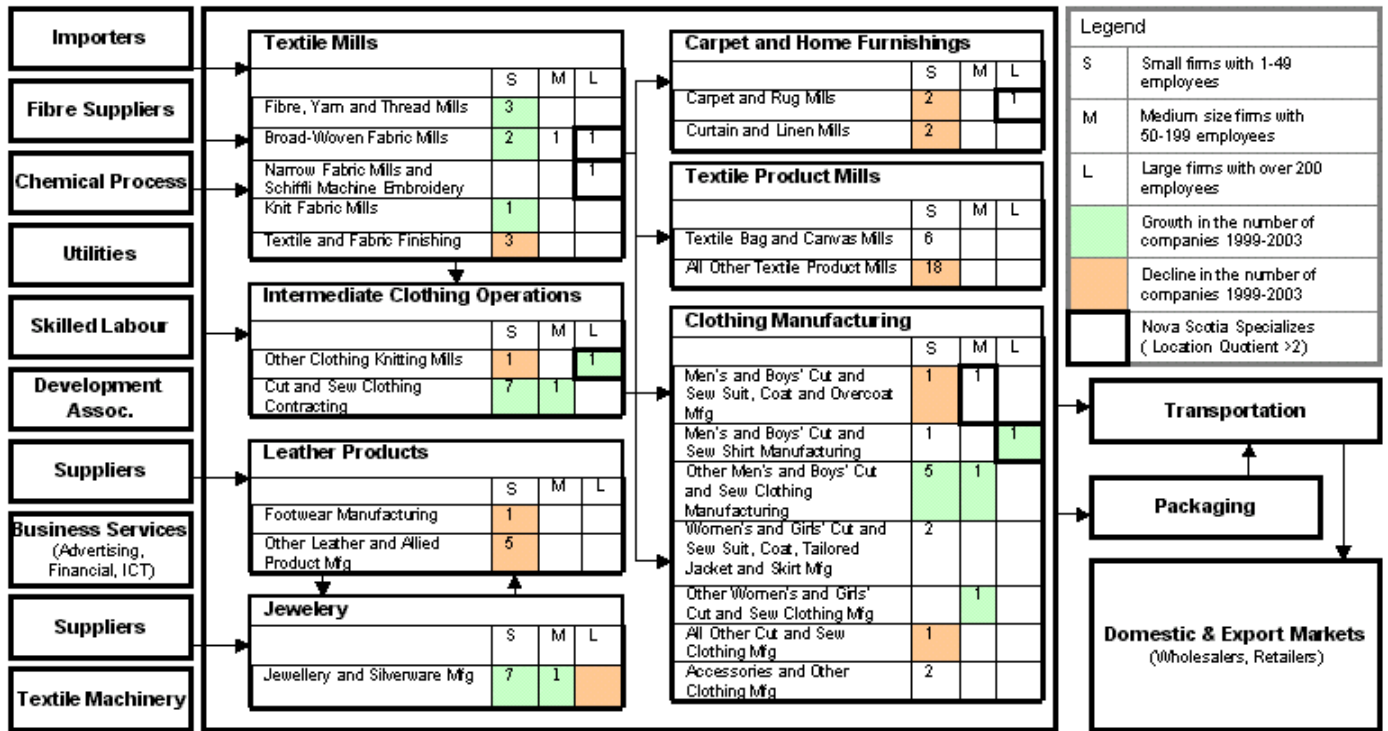


Figure A14 – Textiles and Apparel Cluster

Canadian Textiles Institute, Textiles Human Resources Council, Nova Scotia College of Art and Design



2.6 Information and Communications Technologies (ICT)

The cluster employs over 13,000 people and includes software and computer services, computer equipment manufacturing, communications equipment manufacturing, broadcasting and telecommunications. The ICT cluster accounts for almost 5 percent of Nova Scotia's GDP primarily due to broadcasting and telecommunications. Beyond telecommunications, software is one of Nova Scotia's fastest growing industries in terms of GDP. Nova Scotia has a high concentration of companies in computer services, telecommunications and navigational & guidance equipment manufacturing. The province has a small capacity in terms of ICT manufacturing and has lagged in employment growth in this area compared to other provinces.

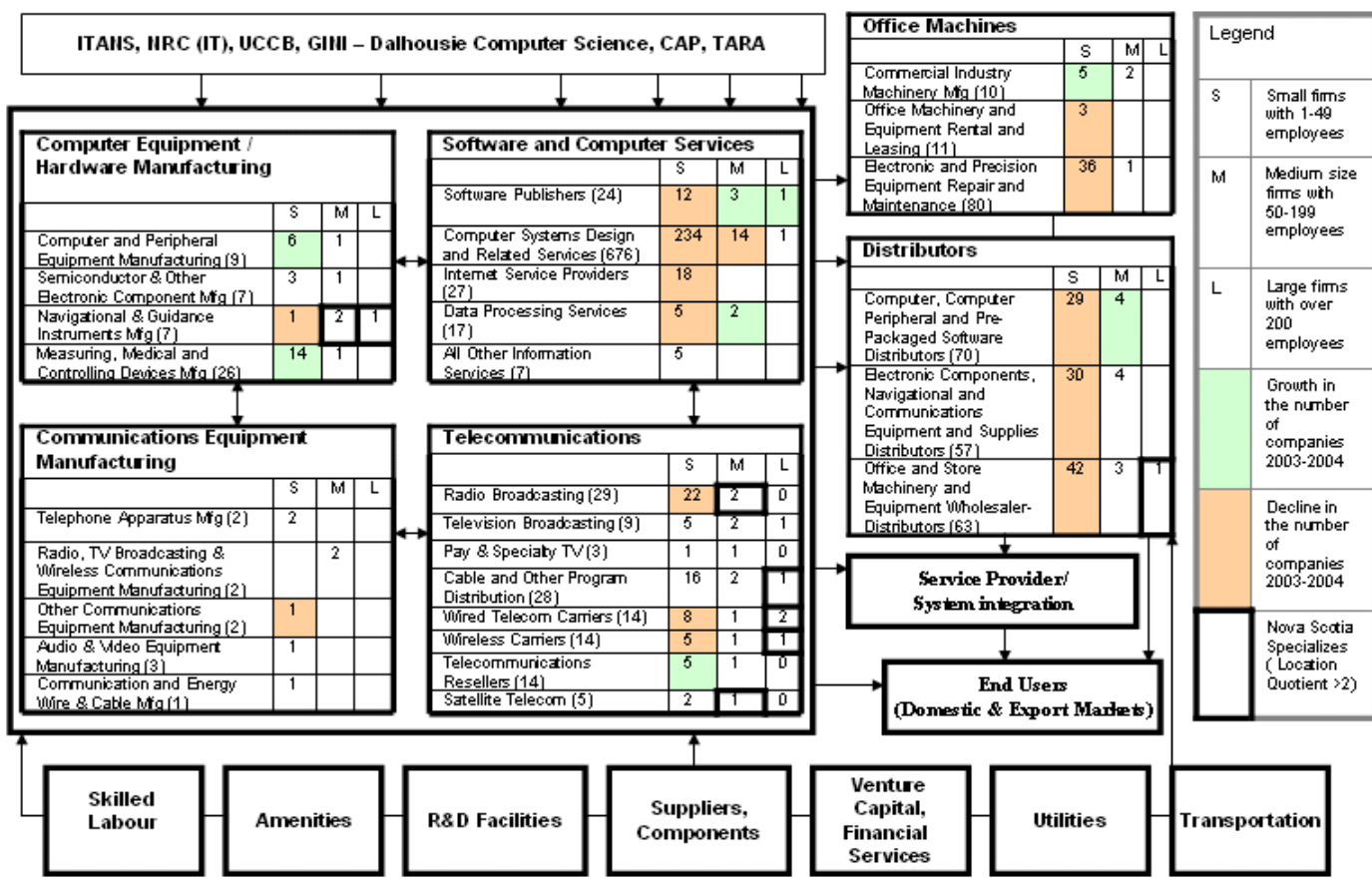
Nova Scotia has the largest share of its IT workforce in the areas of management and design compared to other provinces, but ranks among the lowest in testing and computer engineers. The university/community college system in the province does provide a steady flow of ICT workers to the labor pool. Dalhousie has the largest Computer Science Graduate school in Canada with over 300 students studying for their Masters in Computer Science. The university was the first in North America to offer a Masters of Health Informatics and Masters of e-commerce. The Computer Science Research program at Dalhousie is organized into six thematic concentrations: advanced networking, software engineering, health and pharmacoinformatics, human-computer interaction, data mining/machine learning, and security and privacy. Also located at Dalhousie University is the Privacy and Security Centre of Excellence which conducts research in the areas of intrusion detection and response, network security, privacy software, network architecture, and cartography and encryption. There are also several ICT R&D facilities in the province. TARA (Telecom Applications Research Alliance) is a unique facility with cutting-edge telecommunications research and development. GINI (Global Information Networking Institute) is the focal point for collaboration on IT research by the university and business communities. Finally, NRC (National Research Council) has a wireless research facility located in Cape Breton.

A report by Branham Group Inc, identified Nova Scotia's top ICT sub-sectors in terms of export potential as security software & services, eBusiness applications, advanced technologies and related IT services. High potential export sub sectors were defined as being a concentration of companies with adequate resources, a competitive offering and exporting experience or a plan to export. Branham estimates the global market for IT services and security services was \$425 and \$100 billion in 2003.

Offshore outsourcing is a growing trend in the ICT industry. The term "offshore outsourcing", comes from a 1980s concept of companies in developing countries contracting out low-skill, labour intensive activities to service providers located in developing nations. The purpose was to create a significant cost advantage. This concept has changed considerably in recent years, where the core value proposition of offshore outsourcing has brought into its fold a full range of IT services that are now delivered via a dynamic, international, and collaborative service delivery model, while maintaining significant costs advantages. In the US market, Nova Scotia companies can be positioned as a "near-shore" outsourcing option. The term has been applied for those countries that provide "off-shore" outsourcing and IT services to the "on-shore" or host country, but due to close proximity is considered to be near-shore providers.⁸

⁸ Branham Group Inc. 2003. "Atlantic Canada Export Strategy Development Initiative: A Technology Industry for the 21st Century: Executive Summary."

Figure 2.15 – Information and Communication Technologies (ICT) Cluster



Legend	
S	Small firms with 1-49 employees
M	Medium size firms with 50-199 employees
L	Large firms with over 200 employees
Green	Growth in the number of companies 2003-2004
Orange	Decline in the number of companies 2003-2004
White	Nova Scotia Specializes (Location Quotient >2)

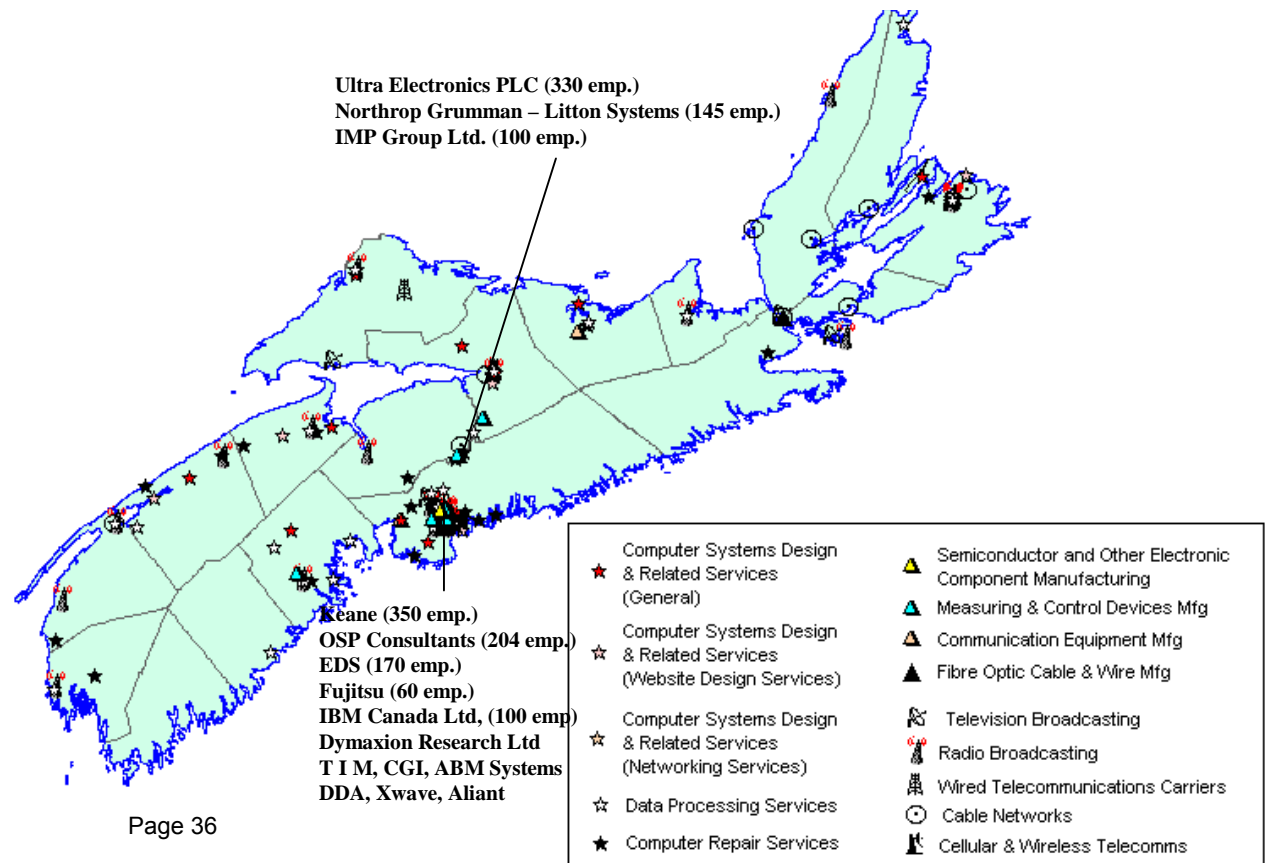


Figure 2.16a

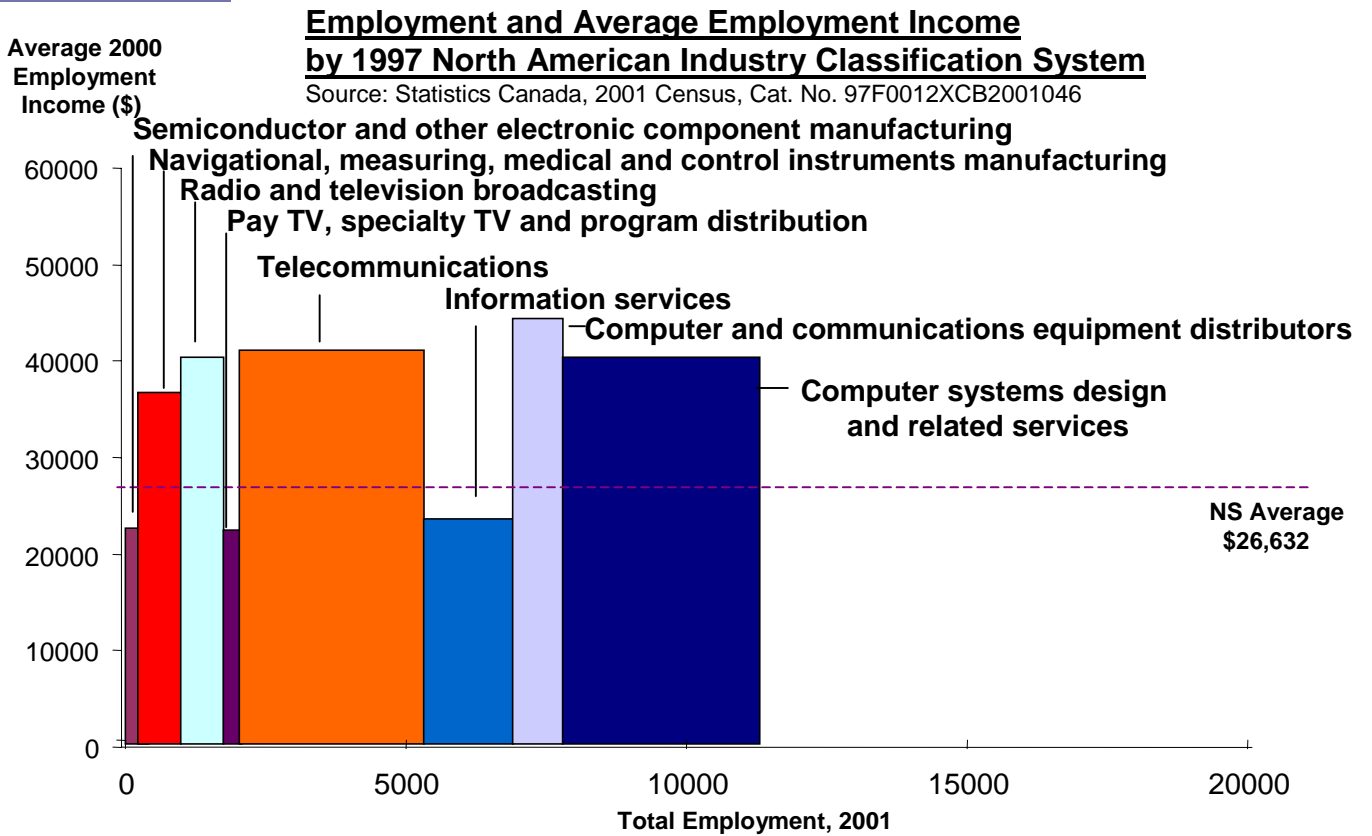
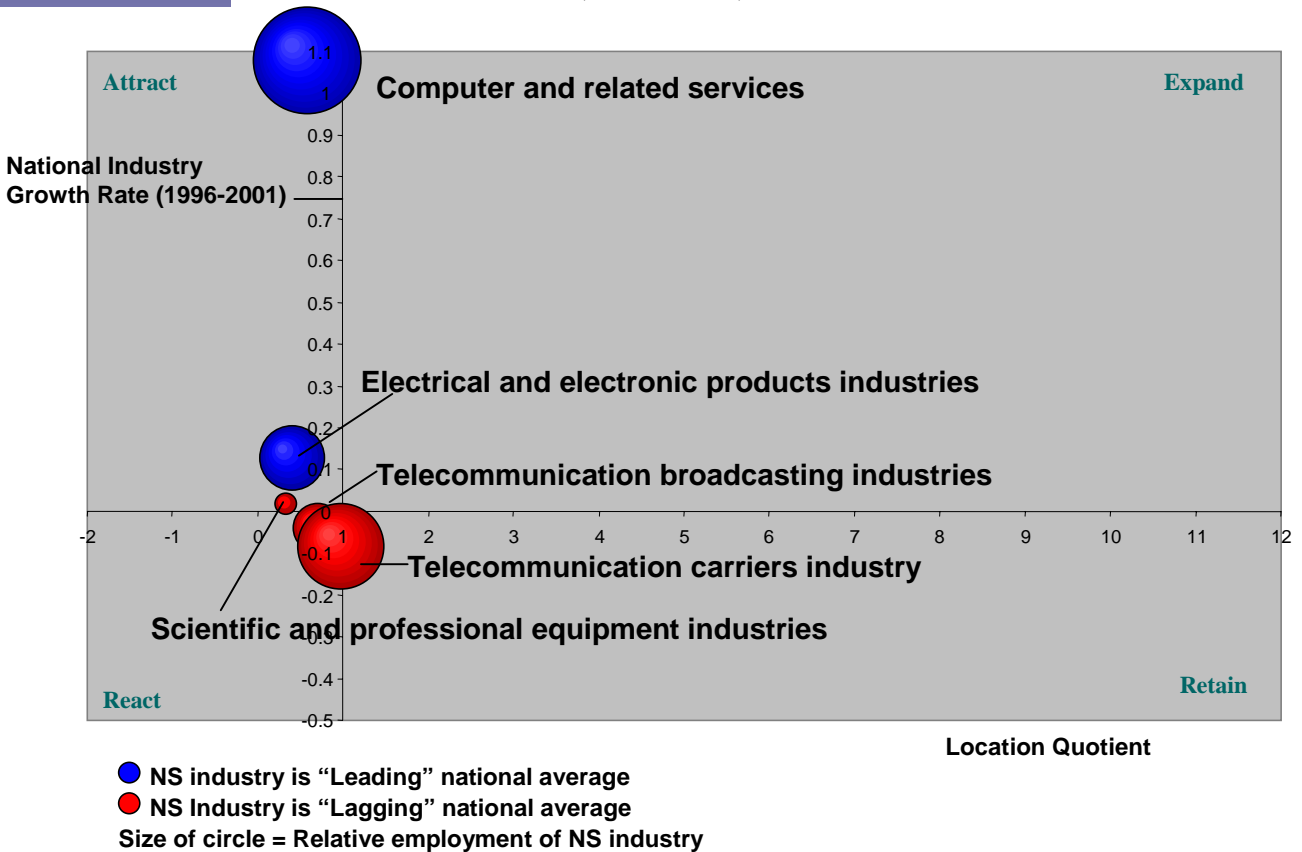


Figure 2.16b

Competitive Dynamics, 1996-2001 by 1980 Standard Industrial Classification

Source: Statistics Canada, 2001 Census, Cat. No. 97F0012XCB2001016



2.7 Life sciences

The term life-sciences or bioscience is not used consistently across jurisdictions. A 2001 American study entitled *State Government Initiatives in Biotechnology* found that no two states included the same industries in their bioscience or biotechnology definitions. The lack of consistency is due to the fact that the terms *biotechnology* and *bioscience* do not really define an industry at all, at least not in the product-centered sense that SIC codes define industries. Rather, these terms describe a set of technology-based platforms that are centered around, but not confined to, specific capacities in biological science.

For the purpose of this analysis the “core” definition of life-sciences includes producers of biotechnology, pharmaceuticals, and commercial physical and biological research. The “cluster” definition of life-sciences includes: health services, telehealth/telemedicine, nutraceuticals, functional foods, pharmaceuticals, medical devices, biotechnology.

Nova Scotia’s life-science industry accounts for less than 1 percent of GDP. In 2001, 280 people were employed in pharmaceuticals (40% increase from 1996) and 390 people were employed in medical labs (77% increase from 1996). In terms of the number of firms, there has been a decline in the number of pharmaceuticals companies and medical labs in the province from 1999 to 2003. During the same period, there has been an increase in the number of companies involved medical equipment manufacturing.

The life sciences sector has emerged as a lead sector in the global knowledge economy. Internationally, it is estimated at \$500 billion annually and growing at a rate of 20 percent a year. Although Nova Scotia does not have a large concentration of companies in this growing field; the province is home to several leading firms:

Ocean Nutrition Canada is the leading researcher, manufacturer, and distributor of marine-based natural health products and dietary supplements to the global marketplace. The Bedford-based firm operates the only manufacturing plants in North America that can commercially refine and concentrate Omega-3 fish oils.

Kytogenics Pharmaceuticals, Inc. is a biomedical company engaged in the development of products based on its medical device and drug delivery patented platform technology. Reduction of gynecological post-surgical adhesions is its most advanced medical device product.

Figure 2.17 – Life-Sciences Cluster

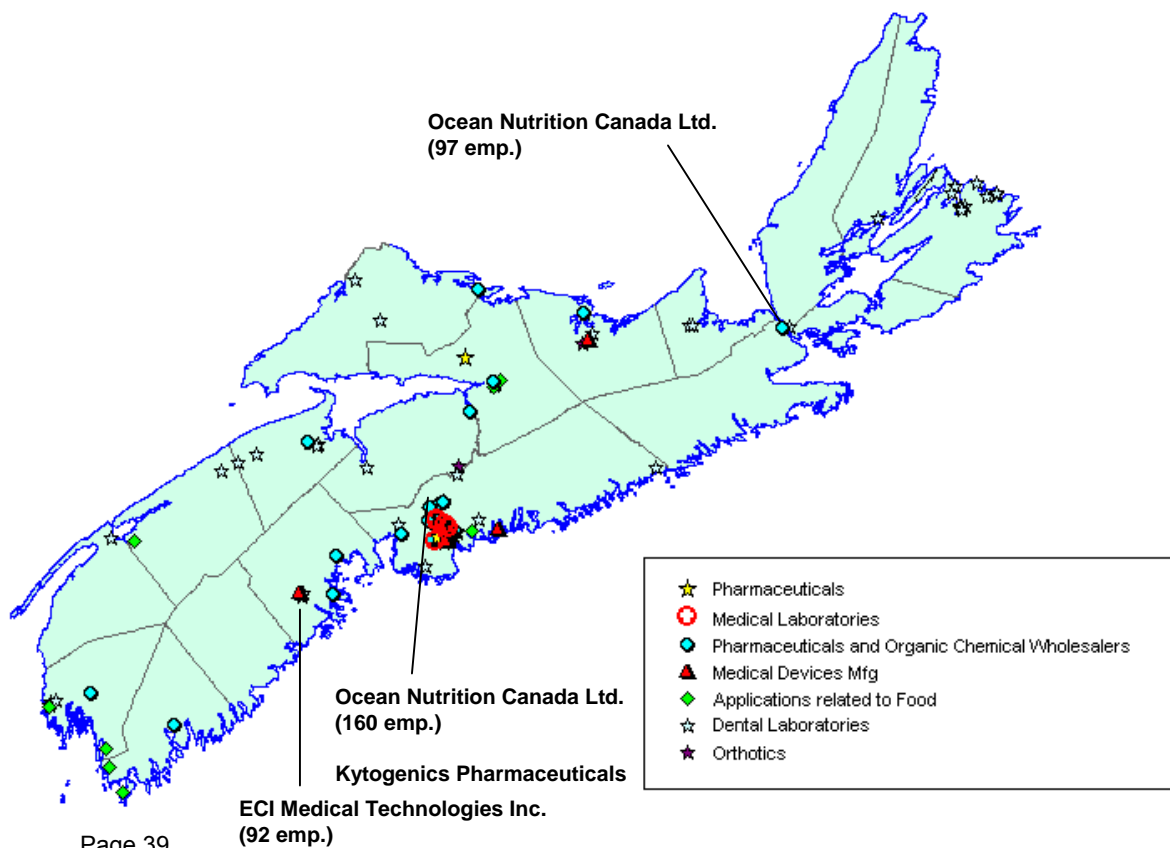
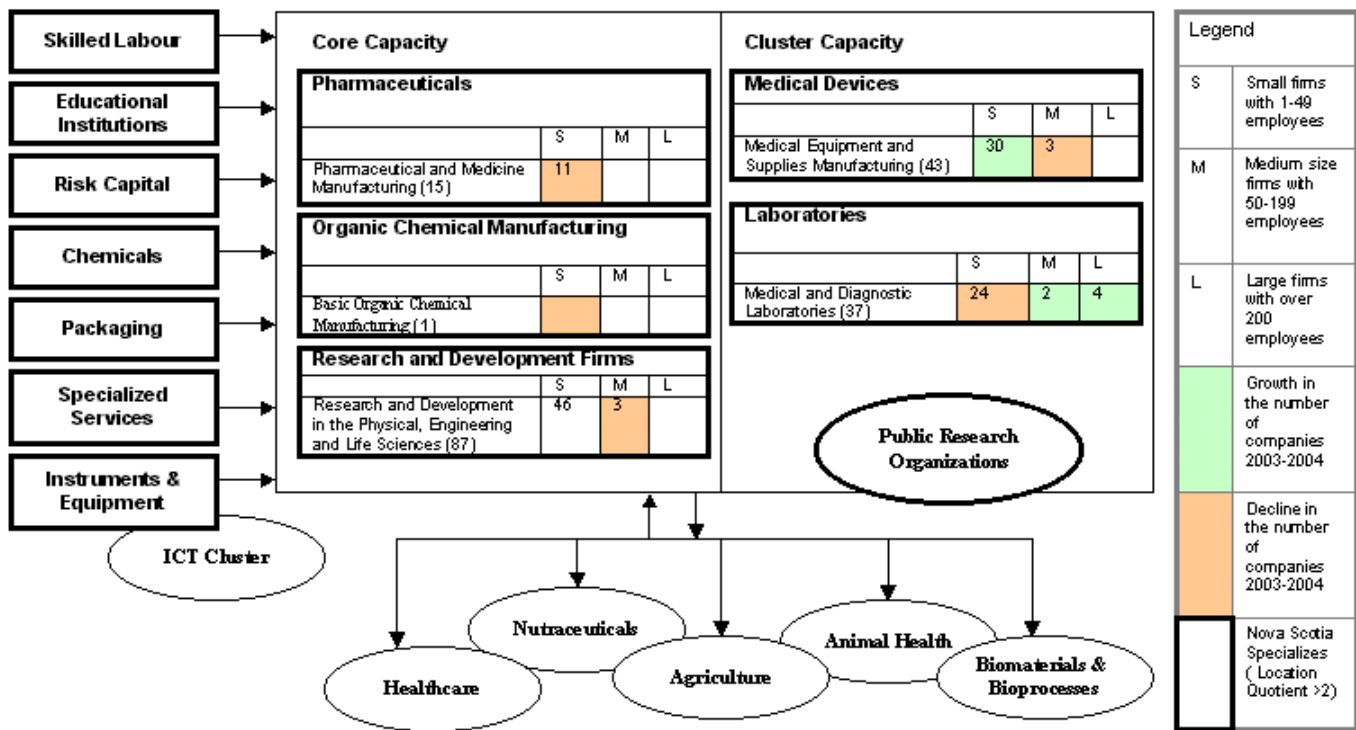


Figure 2.18a

Employment and Average Employment Income by 1997 North American Industry Classification System

Source: Statistics Canada, 2001 Census, Cat. No. 97F0012XCB2001046

Average 2000 Employment Income (\$)

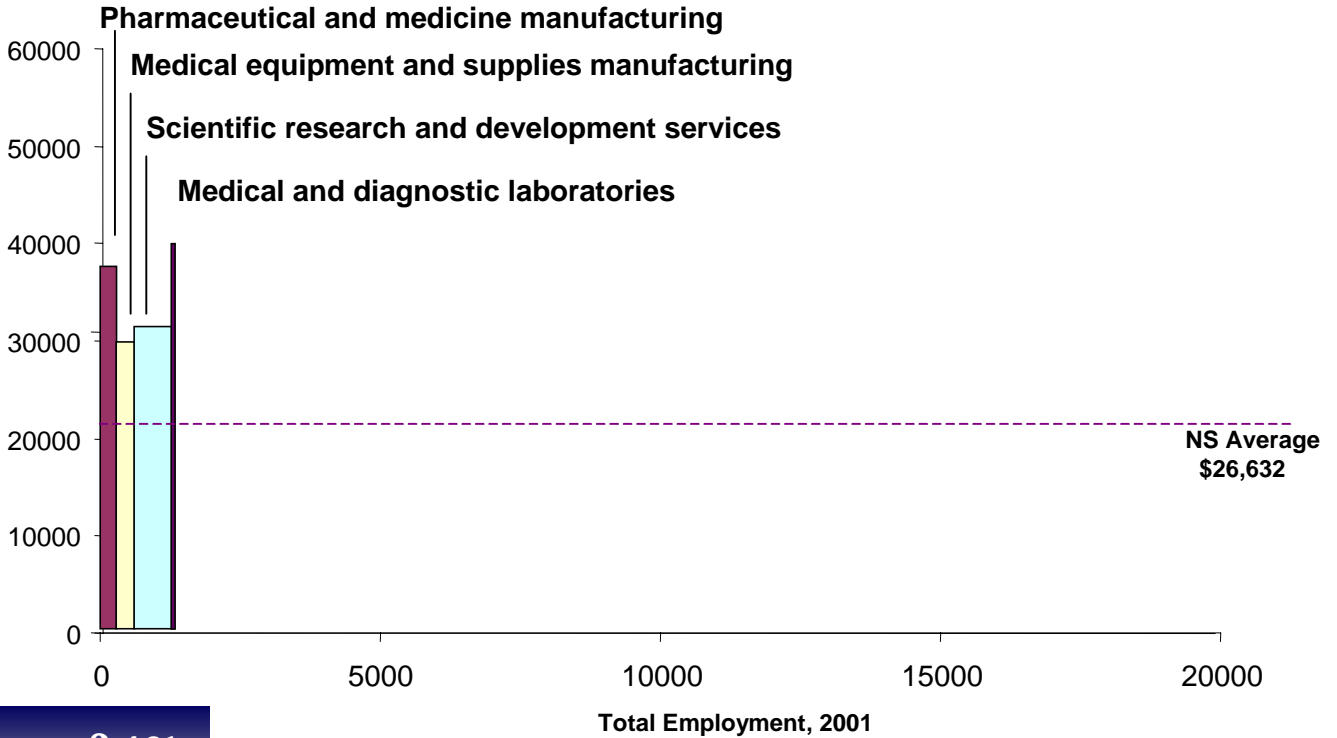
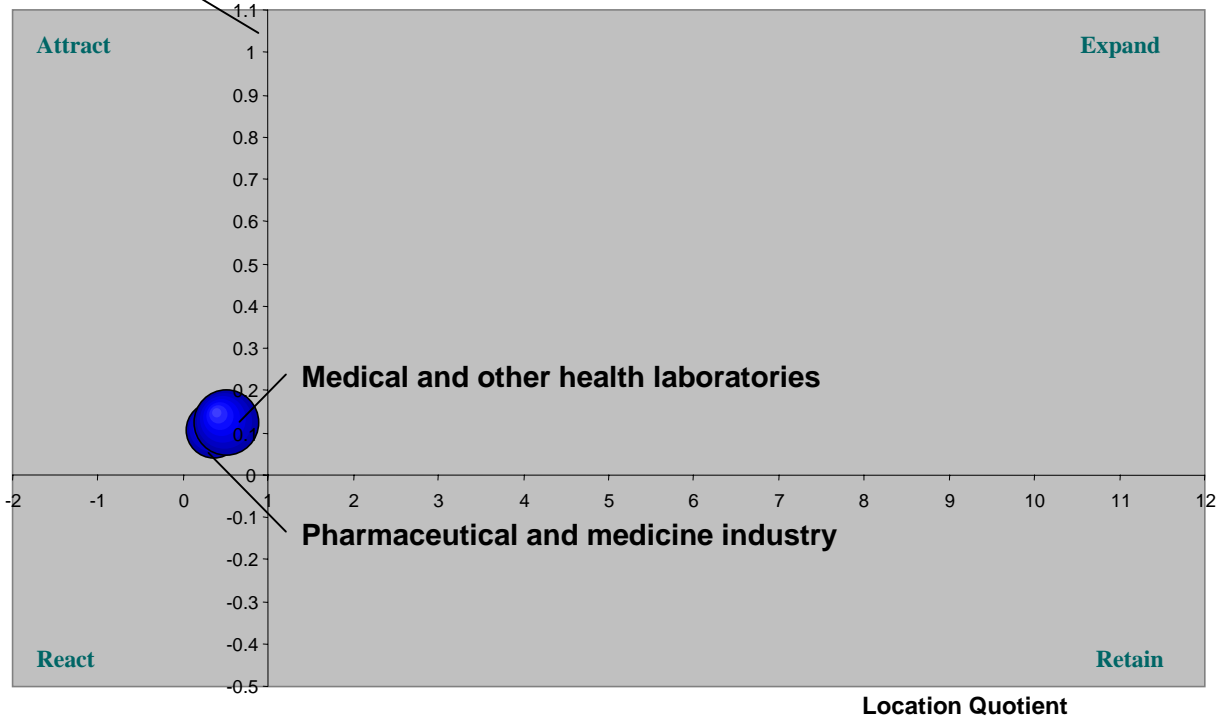


Figure 2.18b

Competitive Dynamics, 1996-2001 by 1980 Standard Industrial Classification

Source: Statistics Canada, 2001 Census, Cat. No. 97F0012XCB2001016

National Industry Growth Rate (1996-2001)



- NS industry is "Leading" national average
- NS Industry is "Lagging" national average
- Size of circle = Relative employment of NS industry

2.8 Engineering and Environmental Services

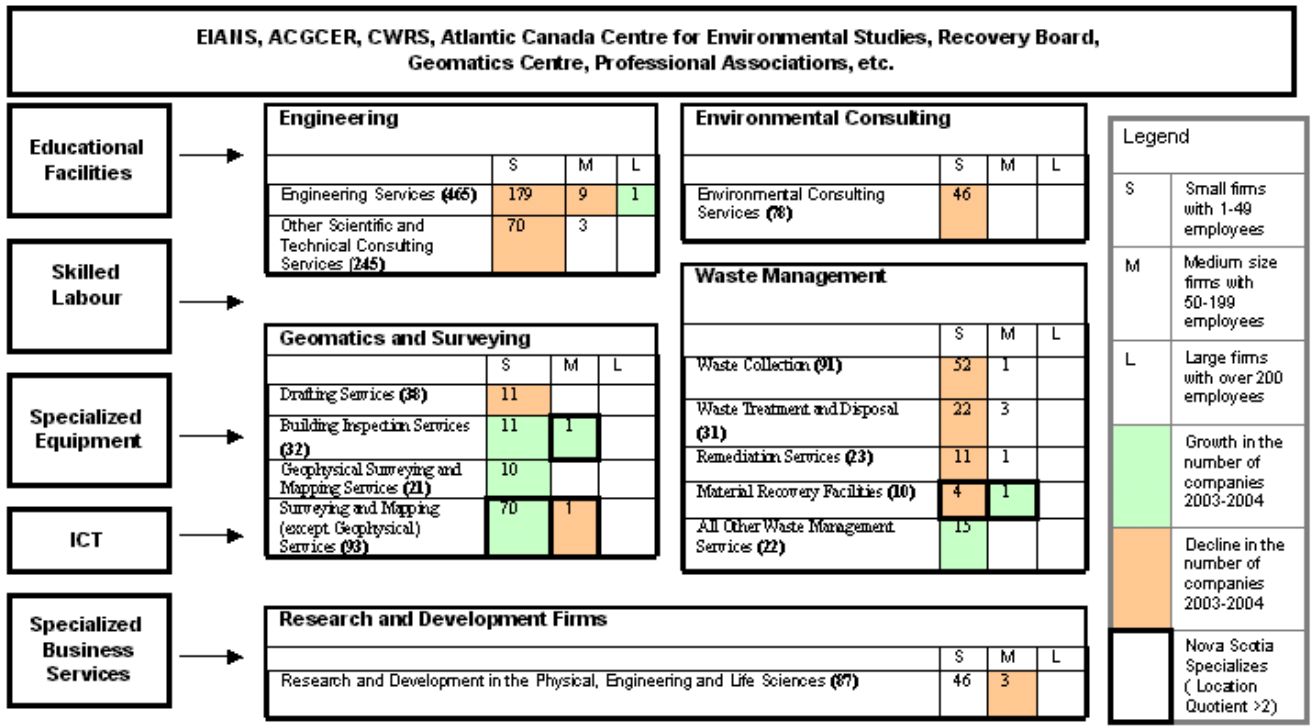
This group of industries employs approximately 5000 employees and accounts for more than 1 percent of Nova Scotia's GDP. Statistics Canada defines the environment industry as all companies that are involved in whole or in part in the production of environmental goods, the provision of environmental services and the undertaking of environment related construction activities. In terms of employment, it is a growing cluster both provincially and nationally. Atlantic Canada led the country in employment growth from 1995 to 2000 at a 65% increase. In 2000, Nova Scotia's environmental industry was the fifth largest among Canadian provinces in terms of revenues. Nova Scotia's share of the national industry accounted for 4.9% of firms, 3.6% of employment and 2.2% of revenues. The industry has since lost some standing on a national level, but remains a leader in Atlantic Canada. Most firms within the industry are small with 65% employing less than 10 people. Approximately 72% of the industry is comprised of service firms, 11% produce goods (1/3 are resellers of products made by other manufacturers), and 17% provide both goods & services. The province has over 200 engineering firms, focused primarily on environmental services, and over 70 companies that focus on surveying and geomatics. The Nova Scotia engineering industry employs approximately three times the percentage of non-engineering professionals compared to the national average of six percent, because local firms have used traditional engineering roles as a foundation for substantial diversification.⁹

Overall, Nova Scotia has significant capabilities in waste water, solid waste, water supply, environmental monitoring, construction, industrial eco-efficiency, and air pollution. Nova Scotia's competitive advantages include: (1) niche technologies and services that offer buyers unique solutions at competitive prices (water & wastewater treatment, water resource management, instrumentation, air monitoring services/technologies, solid waste management, geomatics, engineering consulting); (2) close proximity to the large US market and Europe as well as close ties with the Caribbean community; (3) a diversity of market segments served by the average company that results in a robust industry that can adapt to changing demands; (4) a strong resource-based expertise in the provision of technologies and services, including marine-based, which is currently in a stage of rapid growth; and (5) firms are well established with many firms with substantial depth in experience and skills. Nova Scotia is also recognized as a world leader in recycling as it diverted 50% of solid waste from landfills in the year 2000. More than 3000 jobs in Nova Scotia are related to solid waste-resource management, including more than 1000 jobs created as a result of the solid waste-resource management strategy. The province has hosted delegations from Hong Kong, South Korea, China, Japan, Ireland, Iceland, Caribbean, India plus others who came to learn about the program & strategy.

The environmental industry is an enabling industry with the ability to improve energy and process efficiency, sustainable resource management, and process monitoring and control that is critical to the productivity and competitiveness of many industrial sectors. In recent years, Canadian companies have generated significant export earnings from and gained international recognition for technological leadership in water and wastewater treatment technologies, liquid and solid waste management, instrumentation, geomatics, energy efficiency, renewable energy; and engineering and consulting services. Growth in the industry has come primarily as a response to the creation of laws, regulations, guidelines, and international agreements regarding the clean up of the human environment and reduction of pollution especially in the areas hazardous and non-hazardous waste management, remediation and treatment of soil, surface water, seawater and groundwater. This trend is expected to continue rapidly in the future. The global environmental market is estimated at \$846 billion, according to Environment Business International.

⁹ Nova Scotia Dept. of Environment and Labor, Canadian Environmental Industry, Statistics Canada

Figure 2.19 - Environmental and Engineering Services



Jacques Whitford & Associates Ltd. (200 emp.)
 CBCL Limited (156 emp.)
 Neill & Gunter (140 emp.)
 MacDonnell Group, Dillion Consulting
 AMEC, Canadian Waste Services Inc.

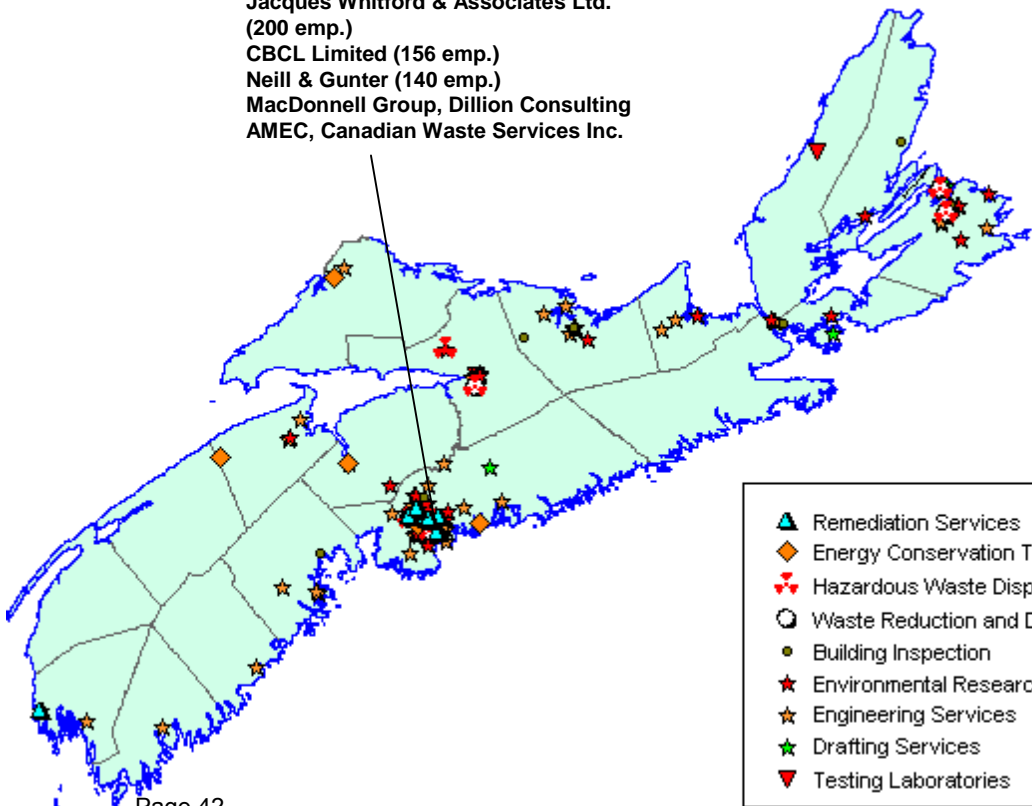


Figure 2.20a

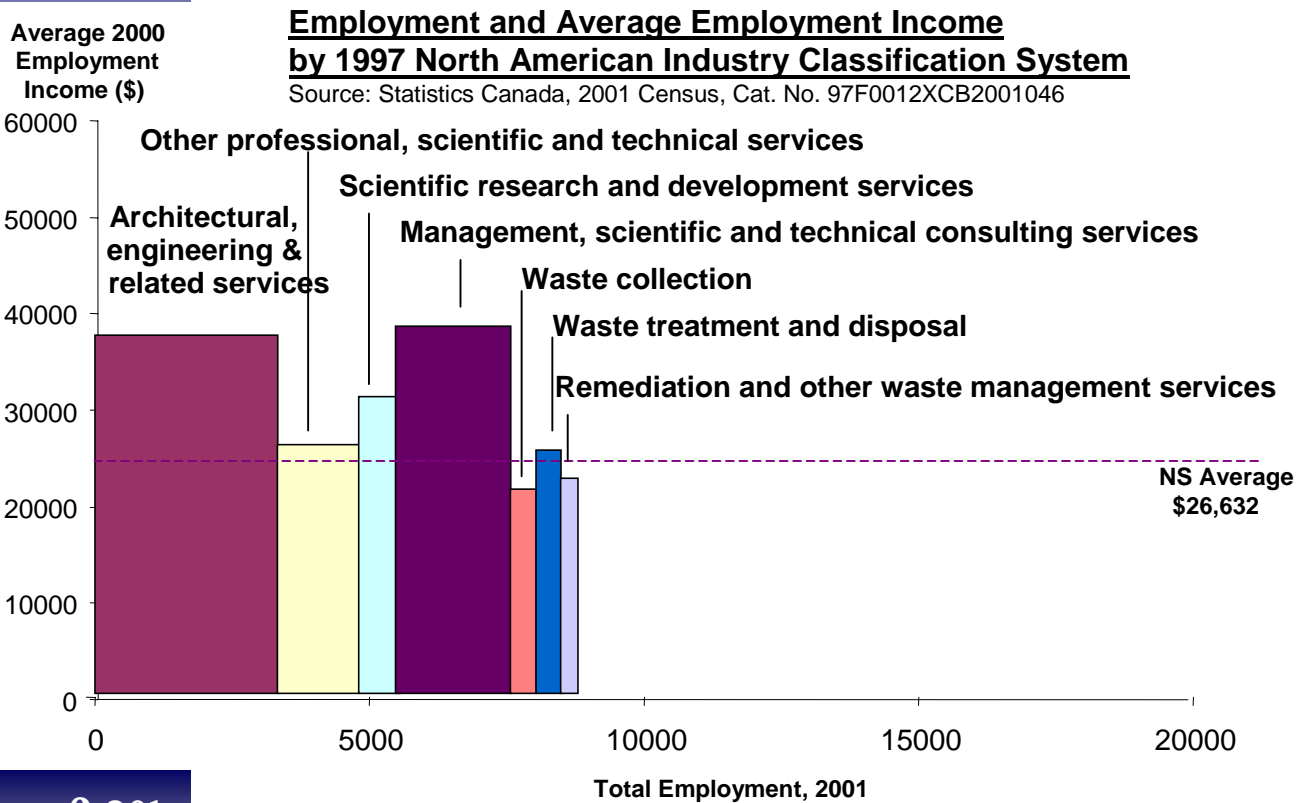
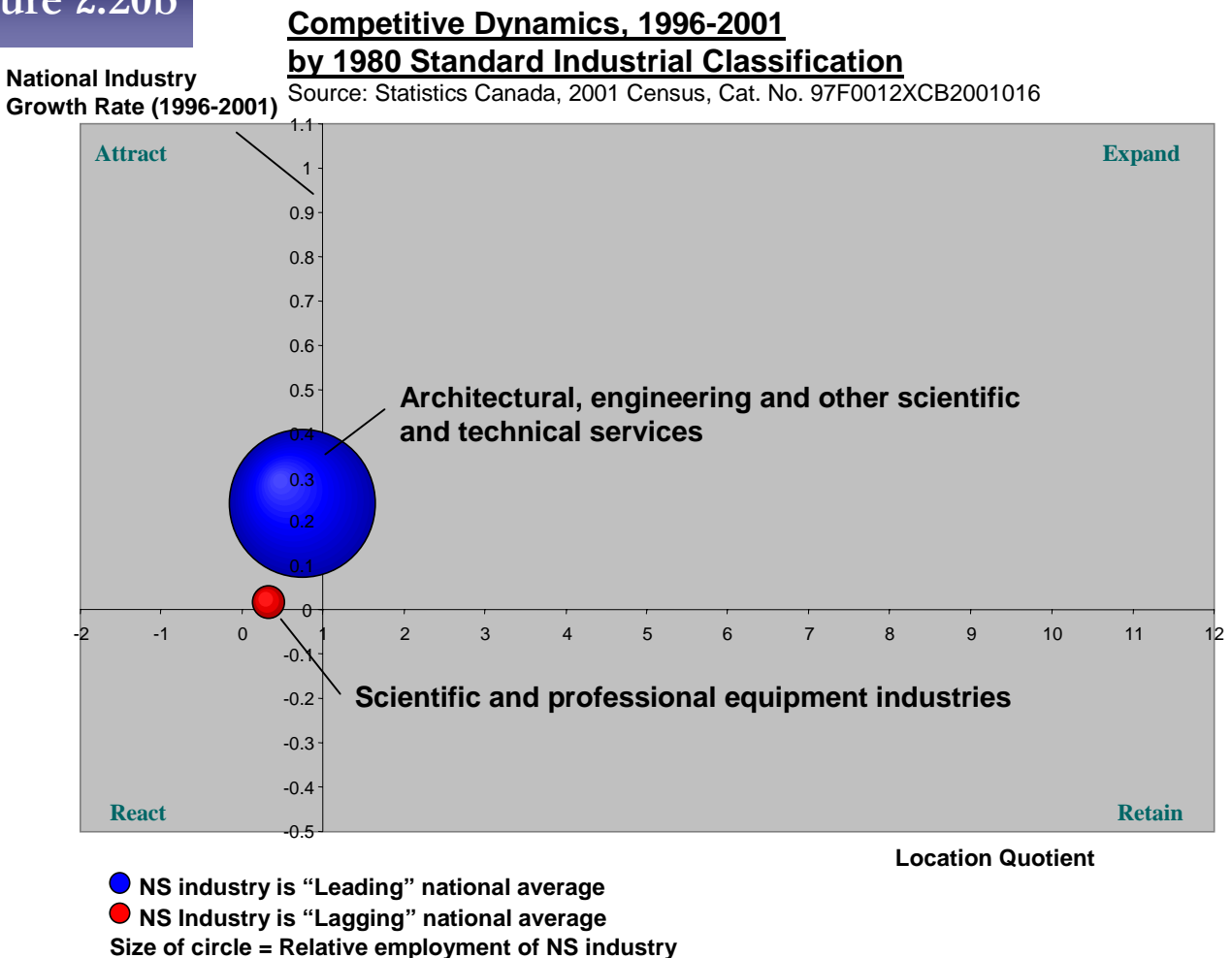


Figure 2.20b



2.9 Business Support Services

While the energy cluster has spurred growth in Nova Scotia's GDP in recent years; new customer contact centers have added over 16,000 jobs to the provincial economy. The main challenge now facing the contact centre industry in Nova Scotia is how to sustain the existing industry which consists of 34 companies, continue its growth and maximize the economic benefits. The availability of workers is one challenge that looms on the horizon for the industry. The very success of the contact centre industry may have led to saturation within certain local labour markets, particularly those centred in Halifax. Strong economic growth in other sectors have also led to more competition for labour resources. Again, this may put upward pressure on wages and increase employee turnover, reducing Nova Scotia's attractiveness to new contact centre operators.¹⁰

Another trend facing the contact centre industry is that businesses are now looking offshore when considering locations for new contact centre operations. While Nova Scotia offers many cost advantages relative to the rest of North America, there is new competition from very-distant locations such as India, the Far East, and Eastern Europe. Continued decreases in long-distance telecommunications costs have opened up competition from these developing countries. Nova Scotia needs to understand how to meet this new competitive threat. This may require a focus on higher value-added operations, relative to past practice. Recently, the Canadian dollar has also strengthened considerably. This reduces the immediate cost advantage when comparing Nova Scotia to U.S.-based operations. While Nova Scotia's productivity and quality advantages are still in place, the "easy sell" of exchange rate benefits has diminished in magnitude. Finally, the threat of changes in U.S. legislation to minimize the use of non-U.S. workers for U.S.-based contact centre operations may force many of these operations in Nova Scotia to reconsider their locations. New U.S.-based operations may cancel or at least postpone their decisions to establish contact centres outside the U.S. until this policy issue is resolved. The continuing development of the contact centre industry in Nova Scotia will face significant impact from this and other similar regulatory changes south of the border.

Despite these challenges, there continues to be tremendous opportunity for Nova Scotia to remain a "near-shore" service provider in this area and in other industries such as training, information, security, and management consulting. According to a recent report on the service industry prepared by the United Nations, the total market for all offshore services exports was estimated at \$32 billion (US) in 2001. Most was reported to be supplied by Ireland, India, Canada and Israel (in that order). The greatest opportunity for growth was cited as the outsourcing of IT enabled services that is expected to grow from \$1.3 billion in 2002 to \$24 billion in 2007. These types of business services include: computer and data processing, accounting and bookkeeping, management consulting and public relations, research and development, and training services.

Between 1996 and 2001, employment in business service industries increased by 55 percent while employment in personal and household services decreased by 19 percent. With slower population growth in the province, prospects to increase employment in the province may lie with exporting business services. Exports of services continue to grow as new information and communications technologies are increasing the tradability of services. Services account for 12% of total Canadian exports, less than the worldwide average of 19%. Business support services are also important for the domestic market as the cluster is an enabler. In order to remain competitive, it is essential that Nova Scotia's companies in other clusters have access to quality business support services such as marketing, management consulting, human resources and training, accounting, financial and legal services. Access to these services is sometimes a challenge in Nova Scotia due to its small market.

¹⁰ KPMG, 2004

Figure 2.21 – Business Support Services

Customer Contact Services			
	S	M	L
Telephone Call Centres (31)	13	6	4
Other Business Support Services (18)	12	1	

Human Resources			
	S	M	L
Employment Placement Agencies (26)	18	1	1

Management Consulting			
	S	M	L
Administrative Management (310)	183	2	
HR & Executive Search (67)	32	1	
Other Management Consulting (145)	40	3	

Security Services			
	S	M	L
Investigation Services (34)	20	2	1
Security Systems Services (45)	24		

Translation Services			
	S	M	L
Translation & Interpretation Services (16)	5		

Marketing			
	S	M	L
Media Buying Agencies (2)	1		
Media Representatives (10)	3	1	
Display Advertising (16)	5		
Direct Mail Advertising (5)	3		
Advertising Material Distribution Services (8)	2		
Specialty Advertising Distributors (14)	8		
All Other Services Related to Advertising (45)	5		
Marketing Research and Public Opinion Polling (47)	19	1	

Accounting Services			
	S	M	L
Offices of Accountants (338)	205	4	
Bookkeeping, Payroll and Related Services (190)	77		

Legal Services			
	S	M	L
Offices of Lawyers (467)	308	10	
Other Legal Services (49)	31		

Financial Services			
	S	M	L
Personal and Commercial Banking Industry (124)	114	5	5
Corporate and Institutional Banking Industry			
Local Credit Unions (57)	53	3	
Sales Financing (22)	11		
All Other Non-Depository Credit Intermediation (146)	39	2	
Other Financial Transactions Processing and Clearing House Activities (3)	1	1	
Investment Banking and Securities Dealing (50)	28		
Securities Brokerage (31)	20		
Commodity Contracts Dealing (5)	3		
Commodity Contracts Brokerage (3)	2		
Securities and Commodity Exchanges (4)	1	1	
Miscellaneous Intermediation (45)	11		
Portfolio Management (1184)	101	3	1
Investment Advice (65)	47		
All Other Financial Investment Activities (62)	12		

Legend	
S	Small firms with 1-49 employees
M	Medium size firms with 50-199 employees
L	Large firms with over 200 employees
	Growth in the number of companies 2003-2004
	Decline in the number of companies 2003-2004
	Nova Scotia Specializes (Location Quotient >2)

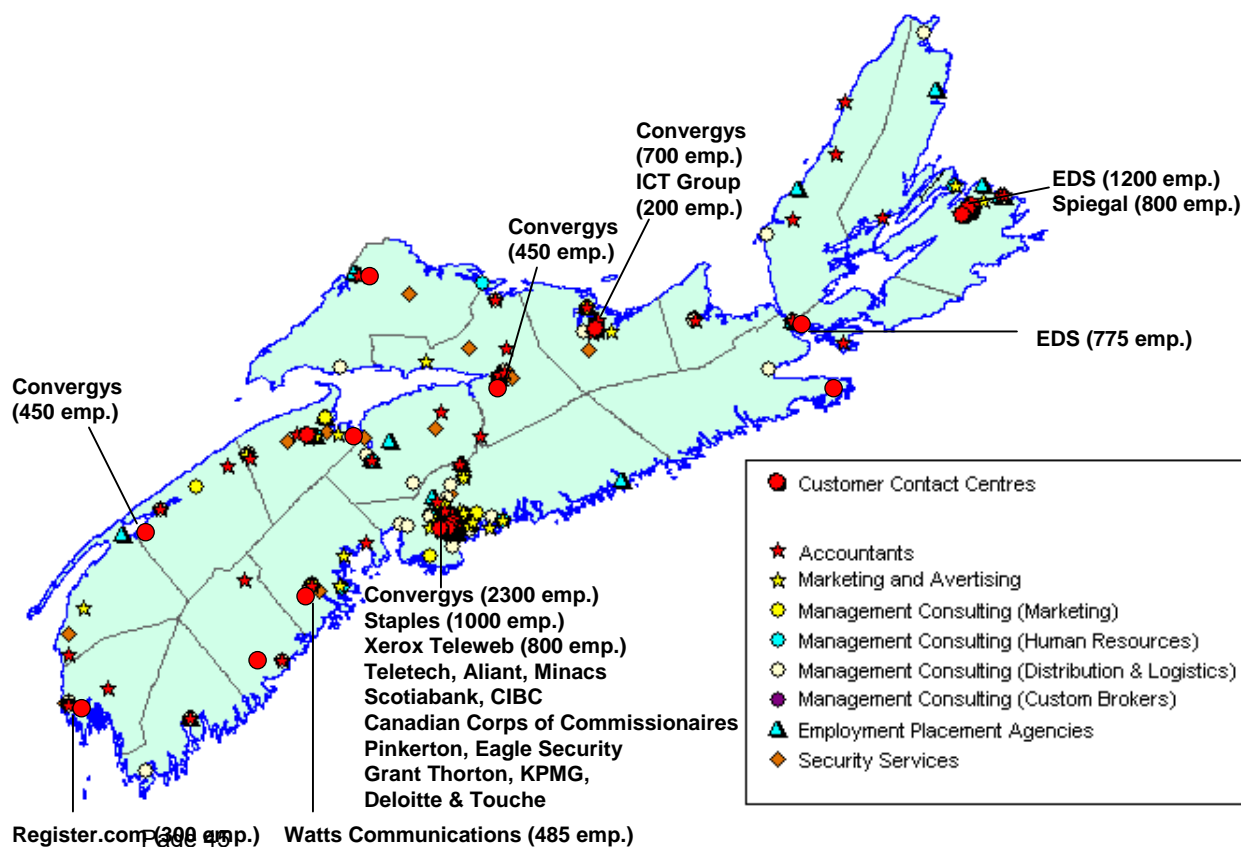


Figure 2.22a

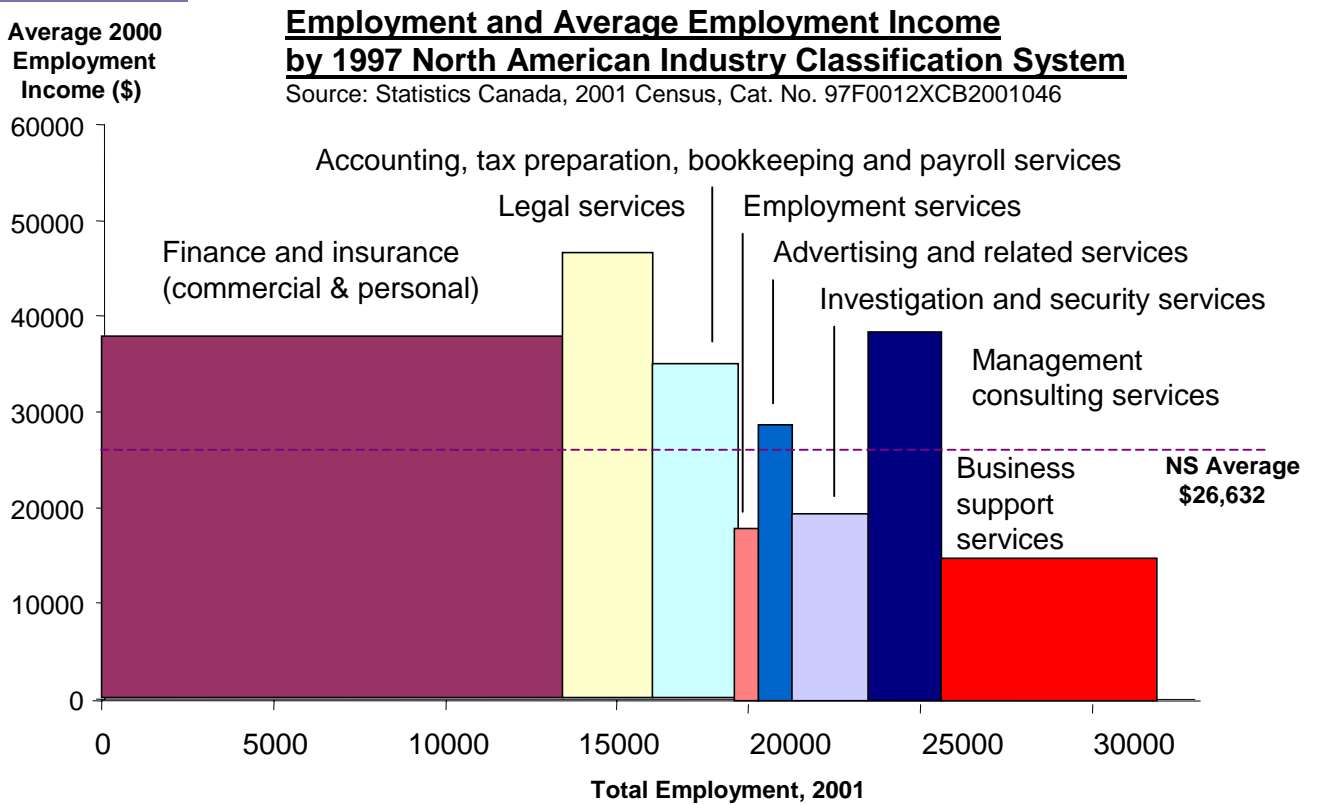
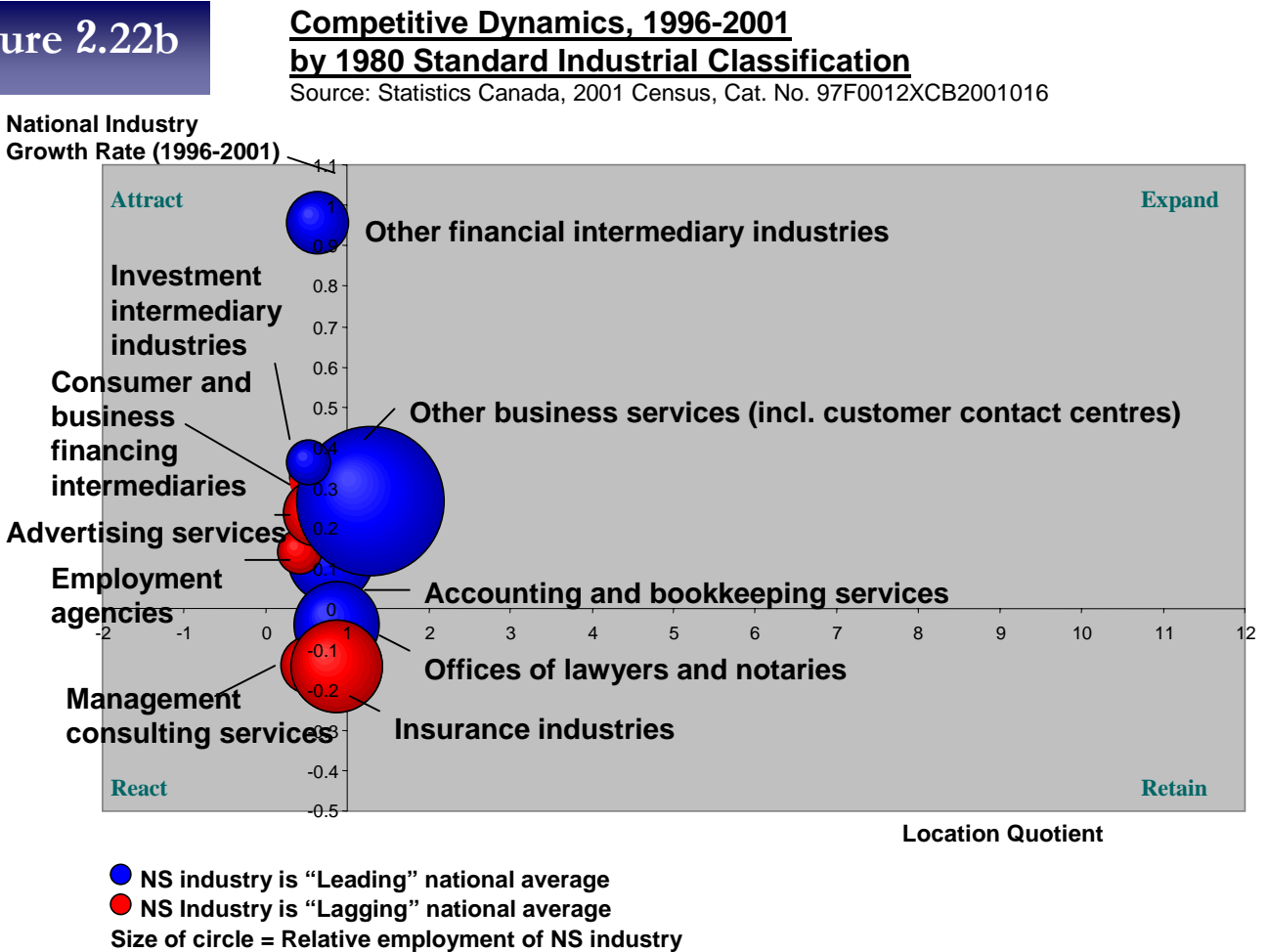


Figure 2.22b



2.10 Creative Production and Design Services

This group includes film, music, new media, architecture, communications design and product design along with related industries such as printing and publishing. The cluster is growing faster than the national average and employs over 6,000 people (1,000 in film and 3,500 in printing and publishing). The cluster accounts for less than 1 percent of provincial GDP but has experienced considerable growth in recent years. The distinct structure of the Nova Scotia economy shapes the design sector and its activities. In Nova Scotia, most design firms are clustered in either the built environment, with growing sub-sectors of architecture, engineering, and interior design, or in communications design. The lack of industrial design expertise can be attributed to the province's small manufacturing sector.

In terms of film, Nova Scotia is the fourth largest production centre in Canada. Annual film production has grown in recent years and is now over \$100 million. The value of foreign productions in Nova Scotia has grown from \$18 million in 1998-99 to \$52 million in 2002-03.¹¹ Sound recording, has also seen some growth, however, the province continues to lose artists to large firms in central Canada. Sound-recording studios in the Atlantic Region, as in the case with publishing houses, find it hard to compete with the big central Canadian corporations for access to major distribution channels. Nevertheless, local and regional recording houses meet important needs of amateur and professional musicians.

The visual arts and crafts sector, as defined by Statistics Canada, is comprised of a diverse set of activities. Visual arts include painting, sculpture, drawing, photography and associated activities. Crafts include fabrication activities using media such as clay, textiles, glass, metal and wood. In 2003, the value of exports in visual arts in Nova Scotia was \$789,000 which represented a decrease of 59 percent since 1996. In the book publishing industry, Nova Scotia's publishing houses continue to report increases in sales in recent years. Despite this growth, the book industry is still driven from central Canada. In 2002, almost three-quarters of Canadian publishing houses were in Quebec and Ontario, generating 93 percent of all national revenue in the industry.

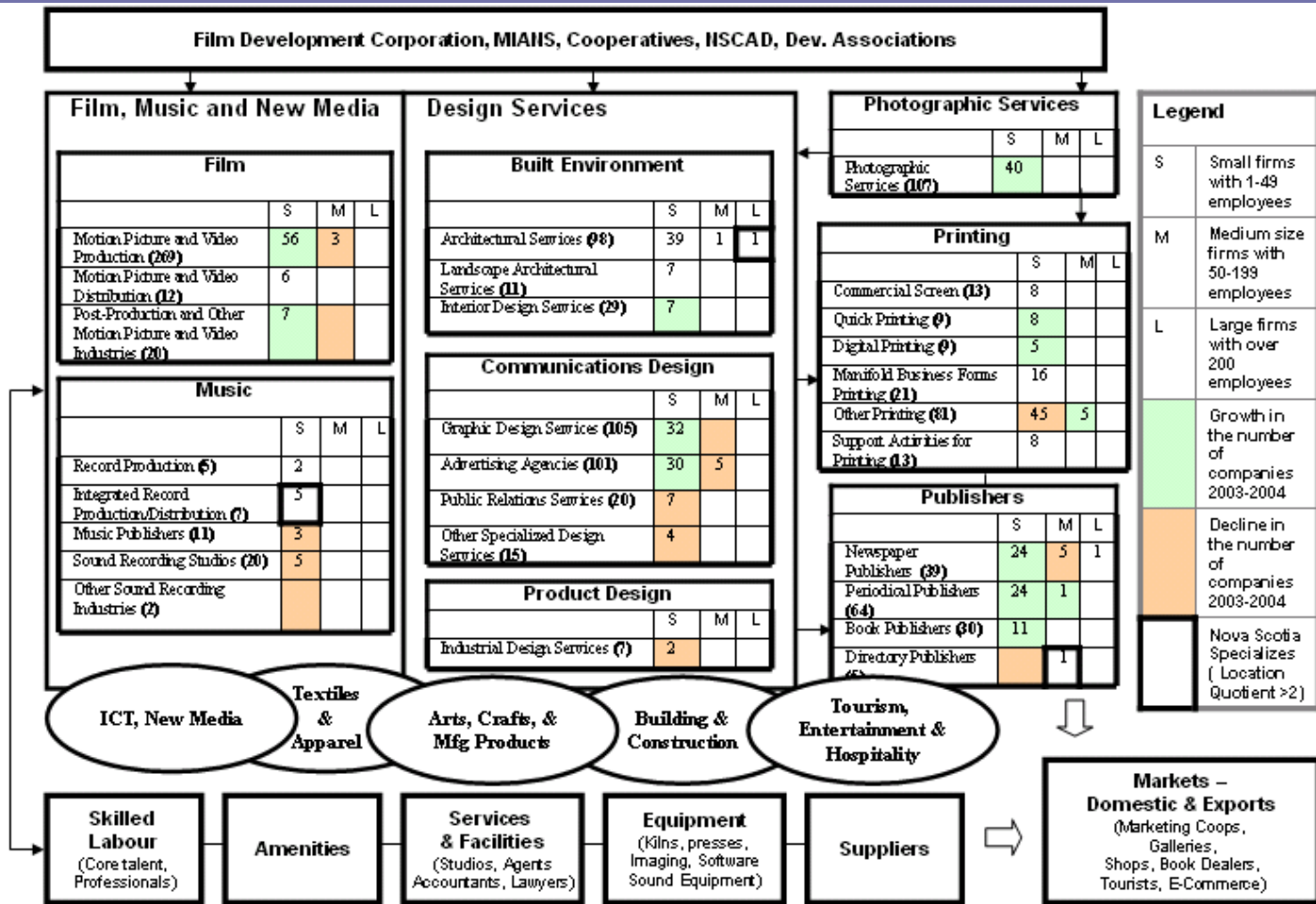
Overall, Nova Scotia's export activity in cultural products is marginal. However, there is a growing global market for these products. International trade in cultural goods and services almost tripled in value in absolute terms between 1980 and 1997, a trend that appears likely to continue. To date, many creative production sub-sectors continue to report negative profit margins and rely heavily on government subsidies. In 2002, expenditures on culture in Nova Scotia totaled \$99.6 million from the federal government, \$59.3 million from the provincial government and \$39.9 million from municipal governments.¹²

As a result of the recognition of this sub-sector in Nova Scotia's overall economic strategy, the sector has been through the process of developing its own Culture Sector Strategy for the province. As the sector strategy notes, culture in all of its forms, is embedded in the roots of Nova Scotia communities. The strategy sees an important next step to promote further growth and development and sales of cultural products. The development of cultural entrepreneurs (people who develop business concepts using cultural activities as the basis) is essential.

¹¹ Canadian Film and Television Production Association (CFTPA) Profile 2004: Economic Report on Film and Television Production in Canada (Ottawa: CFTPA, January 2004)

¹² Statistics Canada. 2004. "Profile of the Cultural Sector in Atlantic Canada"

Figure 2.23- Creative Production & Design Services



Legend

S	Small firms with 1-49 employees
M	Medium size firms with 50-199 employees
L	Large firms with over 200 employees
	Growth in the number of companies 2003-2004
	Decline in the number of companies 2003-2004
	Nova Scotia Specializes (Location Quotient >2)

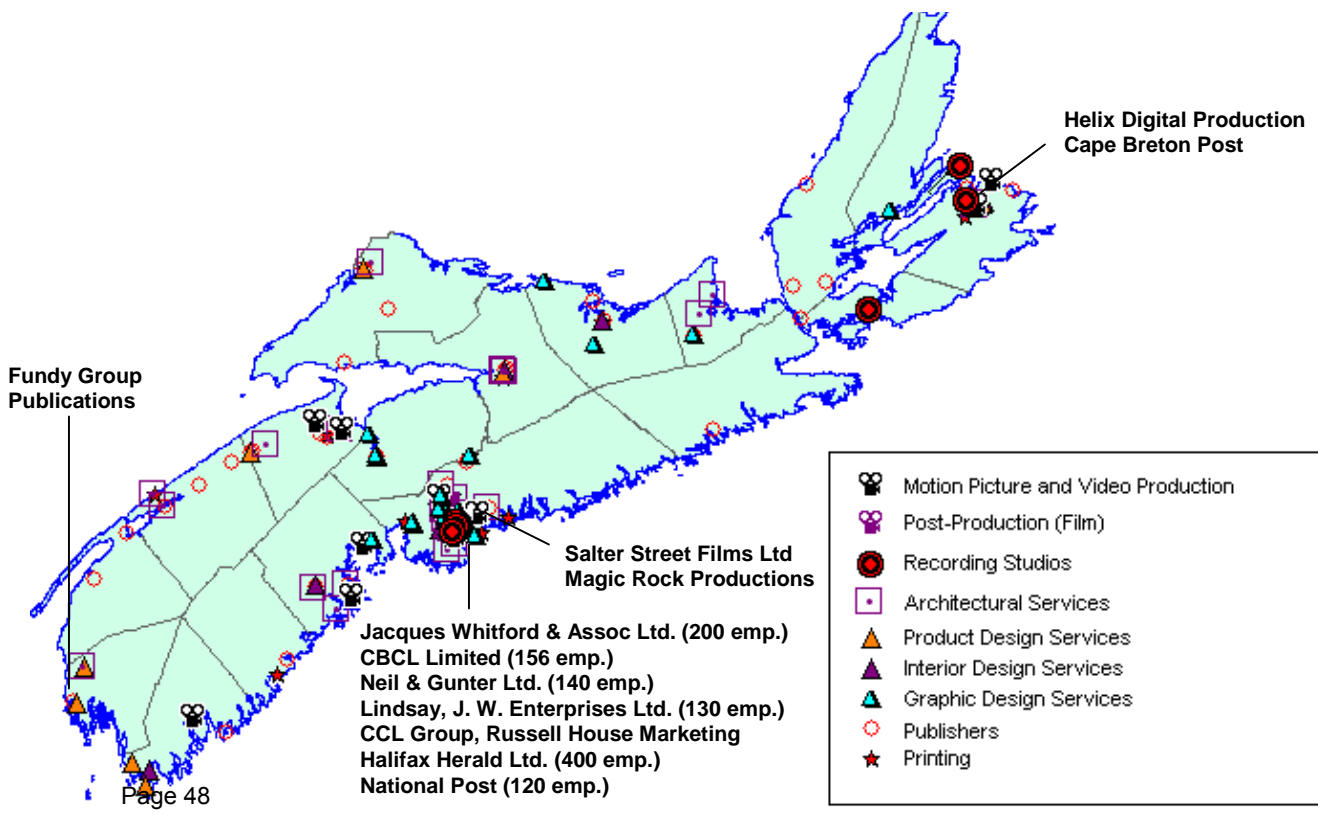


Figure 2.24a

Average 2000
Employment
Income (\$)

**Employment and Average Employment Income
by 1997 North American Industry Classification System**

Source: Statistics Canada, 2001 Census, Cat. No. 97F0012XCB2001046

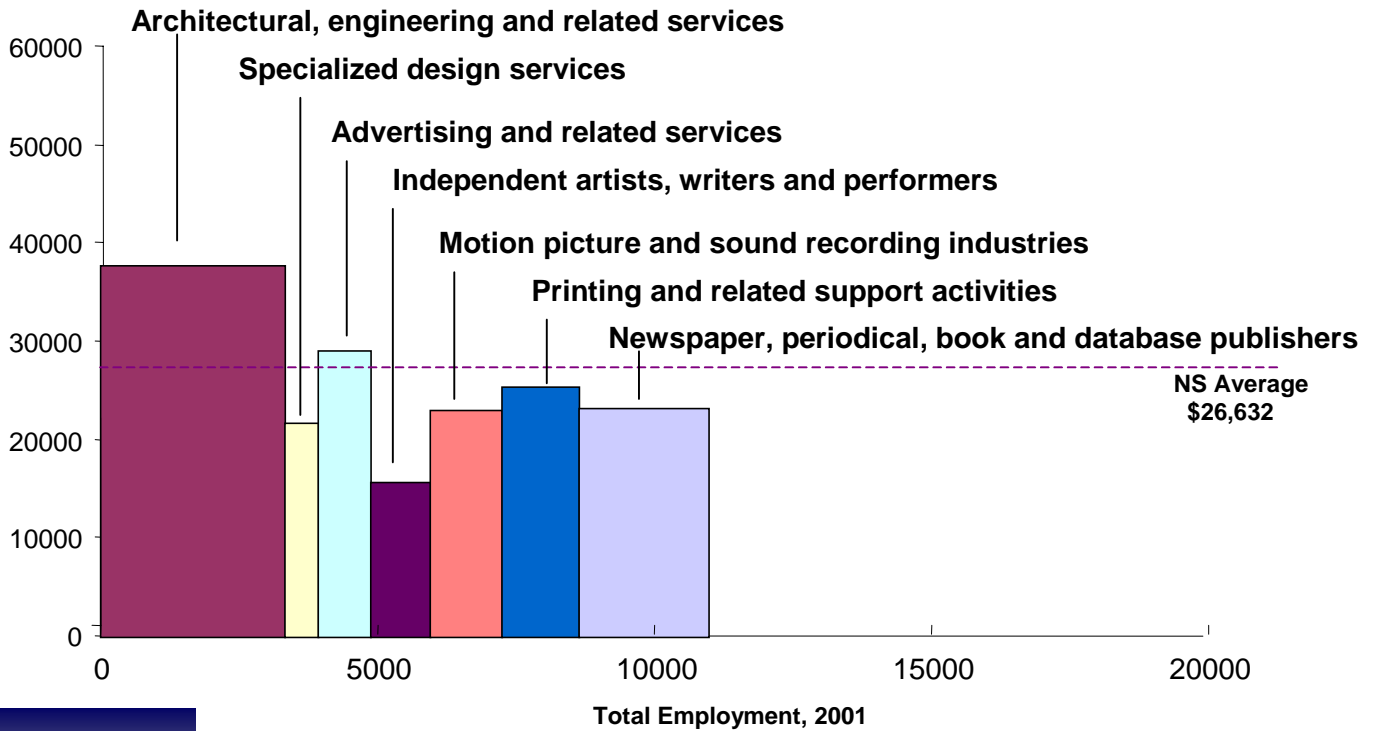
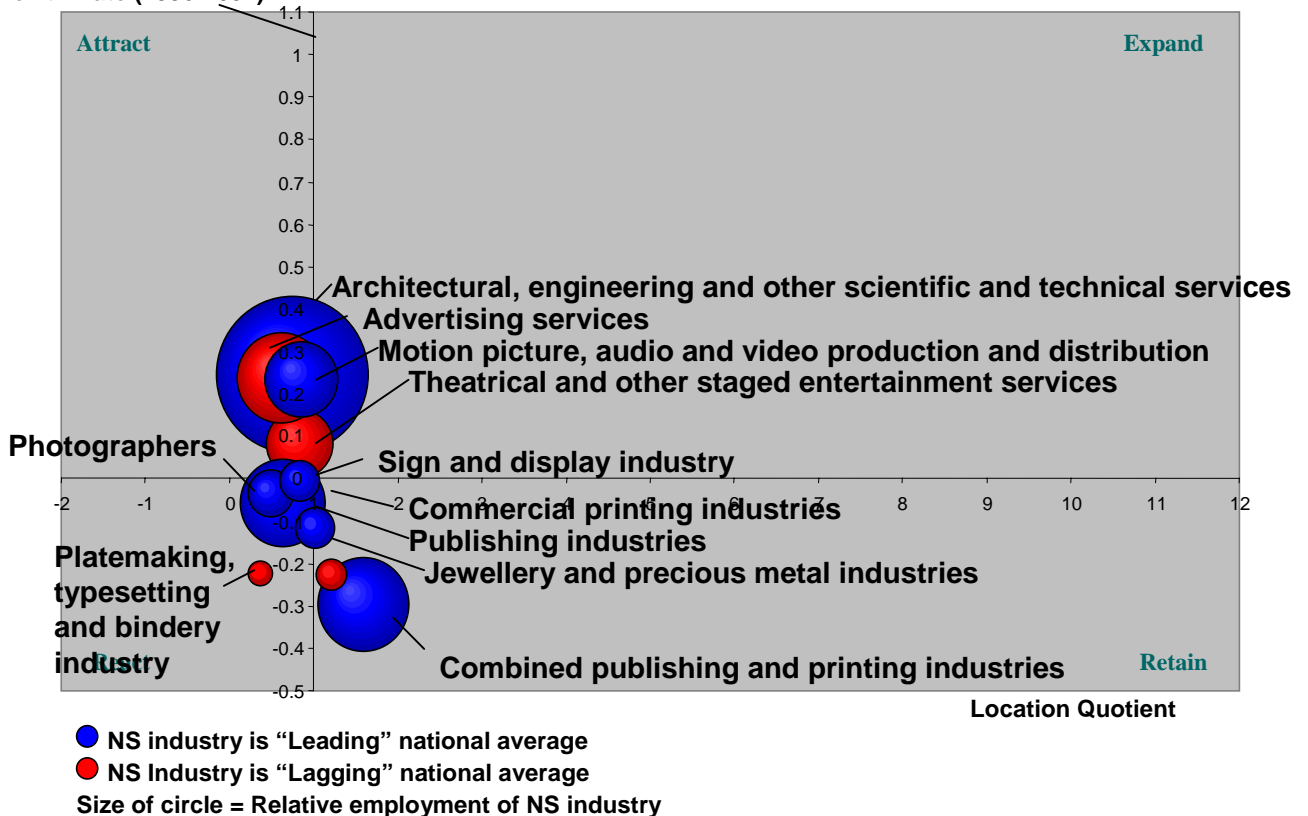


Figure 2.24b

National Industry
Growth Rate (1996-2001)

**Competitive Dynamics, 1996-2001
by 1980 Standard Industrial Classification**

Source: Statistics Canada, 2001 Census, Cat. No. 97F0012XCB2001016



2.11 Tourism and Entertainment

For the purpose of this report, tourism comprises the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited.¹³ The tourism industry is a competitive industry, and while it has experienced several challenges globally since the events of September 11, 2001, the World Tourism Organization (WTO) states that worldwide tourism receipts exceeded \$477 billion in 2003.¹⁴ Internationally, tourism represented approximately 7% of the worldwide exports of goods and services (as expressed in US\$) in September 2003, occupying the fourth position in the ranking after exports of chemicals, automotive products and fuels.¹⁵

In 2003, Nova Scotia tourism receipts generated \$1.27 billion in direct revenue and provided 33,400 direct and indirect jobs. Sixty-one percent (\$778 million) of total revenue was from non-resident visitors to the province.¹⁶ While tourism revenues were slightly down in 2003, revenues have either grown or remained constant over the past five years. As of October 2004, almost 2 million non-resident visitors have visited the province in 2004 and it is projected that revenues will increase by 1% to \$1.29 billion. Nova Scotia's primary market is Canada as over 80 per cent of non-resident visitors to the province come from other areas of the country. At 54 per cent, Atlantic Canada is the largest market segment with Ontario ranking second with 19 per cent. Representing the largest market segment decrease, American visitation decreased by from 15% in 2002 to 13% in 2003. Forty-one percent visitors to the province come to see friends or relatives and 29% come for pleasure.¹⁷

Both rural and urban Nova Scotia benefits from tourism revenues. Regionally, Halifax/Dartmouth receives the highest proportion of economic benefit from tourism in the province, followed by Cape Breton, Annapolis Valley and the South Shore. In 2003, the proportion of tourists traveling by road was 73.5% of the total and most of the remaining arrived by air. Their largest expenditures were transportation (24%), restaurants (23%), accommodations (22%), and shopping (10%).

The consensus across Canada was that 2003 was one of the most difficult years for the industry in recent memory. The industry faced tremendous volatility and unpredictability through the year and experienced substantial turmoil due to the war in Iraq, SARS, and a soft American economy. Although Nova Scotia weathered the challenges better than many destinations in North America, the province was not immune and suffered its first decrease in visitation in several years posting a 2% decline (101,000 visitors). By the end of 2003 these factors subsided and economic conditions improved and indicators were pointing to the onset of a recovery across the Canadian tourism industry. Both the provincial government and industry partners have set out strategies that are designed to significantly increase the size of the tourism industry in Nova Scotia. The rural area will also benefit from whatever success is achieved. Small business research conducted by the Bank of Montreal sees growth in accommodation and food service sectors at 20% over 2002-2007. They consider prospects for this type of business to be high. Throughout the province there has been an emergence of higher-end accommodation and dining.

¹³ www.world-tourism.org/statistics/tsa_project/TSA_in_depth/chapters/ch3-1.htm - January 13, 2004

¹⁴ Canadian Tourism Commission Annual Report 2002

¹⁵ www.world-tourism.org/facts/tmt.html - January 10, 2005

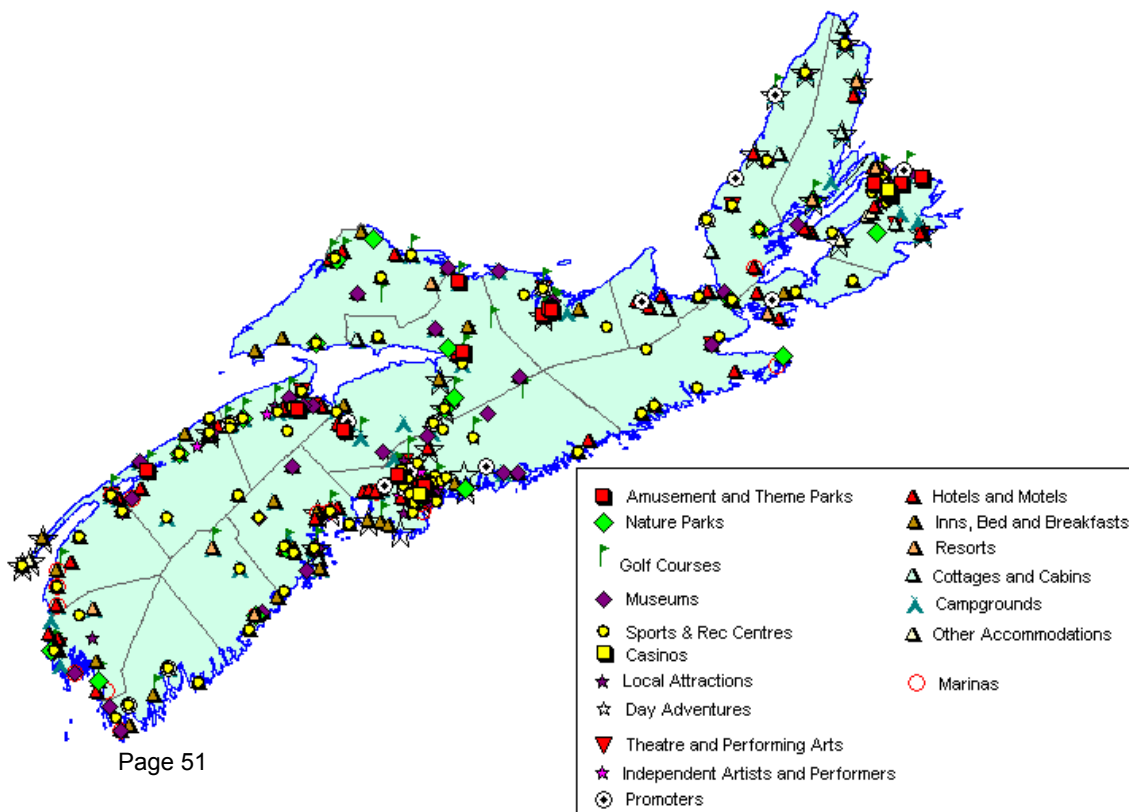
¹⁶ Tourism Insights – 2003 (<http://www.gov.ns.ca/dtc/pubs/insights/index.asp> - January 7, 2004)

¹⁷ 2003 Tourism Industry Facts, Nova Scotia Tourism, Culture and Heritage

Figure 2.25 - Tourism and Entertainment

Nova Scotia Tourism Partnership Council, Tourism Culture & Heritage, Nova Scotia Adventure Tourism Association, Canadian Tourism Commission, Destination Nova Scotia, Explore Nova Scotia, Regional Tourism Associations, Dev. Associations

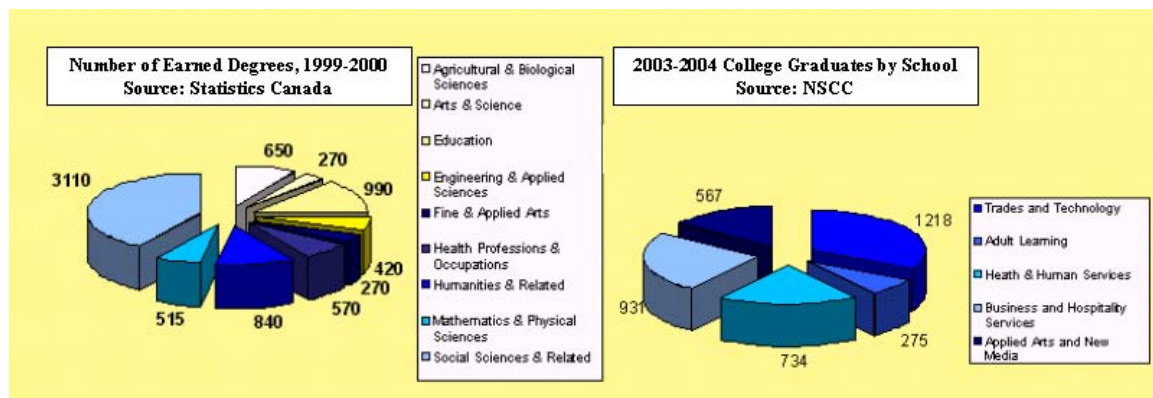
Attractions				Heritage				Accommodations				Legend	
Performing Arts				Non-Commercial Art Museums and Galleries (8)				Hotels (92)				S	Small firms with 1-49 employees
	S	M	L		S	M	L		S	M	L		
Theatre (except Musical) Companies (34)	12	1		Museums (except Art Museums and Galleries) (75)	71			Motor Hotels (16)	11	3		M	Medium size firms with 50-199 employees
Musical Theatre and Opera Companies (7)	6			Historic and Heritage Sites (15)	13	1		Resorts (29)	13	9			
Dance Companies (2)	2			Other Heritage Institutions (4)	4			Motels (174)	136	3		L	Large firms with over 200 employees
Musical Groups and Artists (34)	8			Eco-Tourism, Recreation and Amusement Parks				Bed & Breakfast (155)	83				
Other performing arts companies (6)	2			Amusement and Theme Parks (12)				Housekeeping Cottages & Cabins(66)	45			Growth in the number of companies 2003-2004	
Live Theatres and Other Performing Arts Presenters with Facilities (9)	5	1		Amusement Arcades (21)				All Other Traveller Accommodation (9)	8				
Performing Arts Promoters (Presenters) without Facilities (11)	9	1		Amusement Arcades (21)				RV (Recreational Vehicle) Parks and Campgrounds (88)	58			Decline in the number of companies 2003-2004	
Independent Artists, Writers and Performers (140)	30	1		Casinos (exc. Casino Hotels) (3)				Hunting and Fishing Camps (11)	4				
Events				Zoos and Botanical Gardens (3)				Recreational (except Hunting and Fishing) & Vacation Camps(16)				Nova Scotia Specialize s (Location Quotient >2)	
	S	M	L	Golf Courses & Country Chbs (73)				Rooming and Boarding Houses (7)					
Festivals without Facilities (19)	12			Skiing Facilities (5)				Food Service					
Sports Stadiums and Other Presenters with Facilities (15)	12			Marinas (32)				Full-Service Restaurants (822)					
Sports Presenters and Other Presenters without Facilities (17)	6			Fitness and Recreational Sports Centres (137)				Limited-Service Eating Places (1058)					
Sports Teams and Chbs (24)	20	1		Bowling Centres (43)				Mobile Food Services(42)					
Horse Race Tracks (17)	4	1		All Other Amusement and Recreation Industries (193)				Drinking Places (182)					
Other Spectator Sports (12)	3			Transportation				Retail					
Agents and Managers for Artists, Athletes, Entertainers and Other Public Figures (17)	7			Scenic and Sightseeing Transportation, Land (3)									
				Scenic and Sightseeing Transportation, Water (45)									



2.12 Social Sectors

For the purposes of this section, social sectors consist of public, private and non-profit industries that support education, health care and social assistance. This section also provides highlights of other aspects of public administration which is comprised of establishments primarily engaged in activities of a government nature, e.g., the enactment and judicial interpretation of laws and their pursuant regulations, and the administration of programs based on them. Legislative activities, taxation, national defence, public order and safety, immigration services, foreign affairs and international assistance, and the administration of government programs are activities that are purely governmental in nature.

In 2003, GDP in the health services and social assistance sector of Nova Scotia increased 2.9% over 2002 to \$1,743.0 million. The sector represented 7.6% of total GDP in the province in 2003. In 2003 employment in Nova Scotia's health care and social assistance sector increased by 5.3% to 54,100. Employment in this sector accounted for 12.4% of total provincial employment in 2003. In 2003, GDP in the educational services sector increased 0.2% over 2002 to \$1,236.9 million. The sector represented 5.4% of total GDP in the province in 2003. Nova Scotia has a strong core of post-secondary institutions. The province has 11 degree-granting universities with a undergraduate enrolment of over 36,000 and a graduate enrolment of over 5,000. The Nova Scotia Community College has 13 campuses across the province offering certificates, diplomas, and advanced programs in applied arts to over 13,000 students. The charts below show the numbers of post-secondary graduates in the province by program area.¹⁸



Total GDP (in basic prices) for the public administration sector in Nova Scotia was \$2,333.7 million in 2003, a 2.5% increase over 2002. Public administration contributed 10.2% to Nova Scotia's total GDP in 2003. During 2003, capital investment in public administration in Nova Scotia was \$504.0 million, an 18.0% decrease over 2002. Revised intentions of capital expenditures in public administration indicate an expected increase of 16.4% between 2003 and 2004 to \$586.5 million. In 2003 employment in public administration was 27,400, an increase of 18.6% over 2002. This figure is based on Statistics Canada's Labour Force Survey that represents civilian non-institutional population 15 years of age and over only. According to an unrelated source - Public Sector FMS Reports of the Public Institutions Division of Statistics Canada, - in 2003, 12.7% of Canada's military employment or 10,599 persons, were in Nova Scotia. Nova Scotia military employment in 2003 increased 0.7% over the previous year.¹⁹

¹⁸ Nova Scotia Department of Finance, Nova Scotia Statistical Review

¹⁹ Ibid.

DND is the largest employer in Halifax and defence services directly account for over 3 percent of Nova Scotia's GDP. DND cutbacks over the last decade have slowed the growth of Nova Scotia's economy. In the early nineties, full-time employment at DND was double the current level. Six sites were identified for closure removing \$1 billion from the local economy. Nova Scotia lost 3,665 defence jobs in the 1995-96 fiscal year alone. It was estimated that the combined direct and indirect impact to the Nova Scotia included: the loss of 7,200 person-years of employment; a reduction of \$290 million of household income; and provincial government revenue losses of \$30 million.

Table 6: DND ESTIMATED EXPENDITURES BY PROVINCE FOR FISCAL YEAR 2002-2003
(Source: Department of National Defence)

Province	Personnel Data				Operations & Mainten. \$M	Capital \$M	Grants & C. \$M	Total Spending		
	# Regular	# Civilian	# Reserves	Gross Income \$M				Total \$M	% of Canadian Spending	Total \$ per Capita
Newfoundland	604	128	1,072	50	81	4	1	136	1.3%	256
Prince Edward Island	43	7	326	7	70	0	1	79	0.8%	148
Nova Scotia	8,545	3,037	2,814	663	212	51	6	931	9.1%	1,752
New Brunswick	3,846	833	1,406	248	71	12	1	333	3.3%	626
Quebec	10,842	4,172	6,920	831	968	142	1	1,943	19.1%	3,654
Ontario	18,808	8,118	10,440	1,614	2,172	892	26	4,704	46.2%	8,849
Manitoba	2,685	861	1,241	207	126	41	6	380	3.7%	715
Saskatchewan	563	167	789	48	18	7	0	74	0.7%	139
Alberta	7,051	1,783	2,601	469	384	76	0	928	9.1%	1,746
British Columbia	5,662	2,205	3,014	452	132	57	1	643	6.3%	1,209
Yukon	5	2	2	0	1	1	-	3	0.0%	5
Northwest Territories	115	14	30	9	22	0	-	31	0.3%	58
Nunavut	1	-	1	0	6	-	-	6	0.1%	11

Often overlooked is the contribution volunteers make to an economy. Nova Scotia has over 250,000 volunteers who make enormous contributions to their communities. However, this sector is also facing challenges due to issues such as changing demographics, rising costs of liability insurance, and difficulties obtaining organizational funding. Between 1997 and 2000, Nova Scotia experienced a loss of over 30,000 volunteers. During the same period, total volunteer hours in Nova Scotia increased by 18%.²⁰

²⁰ 2000 National Survey of Giving, Volunteering and Participating

Figure 2.26a

Employment and Average Employment Income by 1997 North American Industry Classification System

Source: Statistics Canada, 2001 Census, Cat. No. 97F0012XCB2001046

Average 2000 Employment Income (\$)

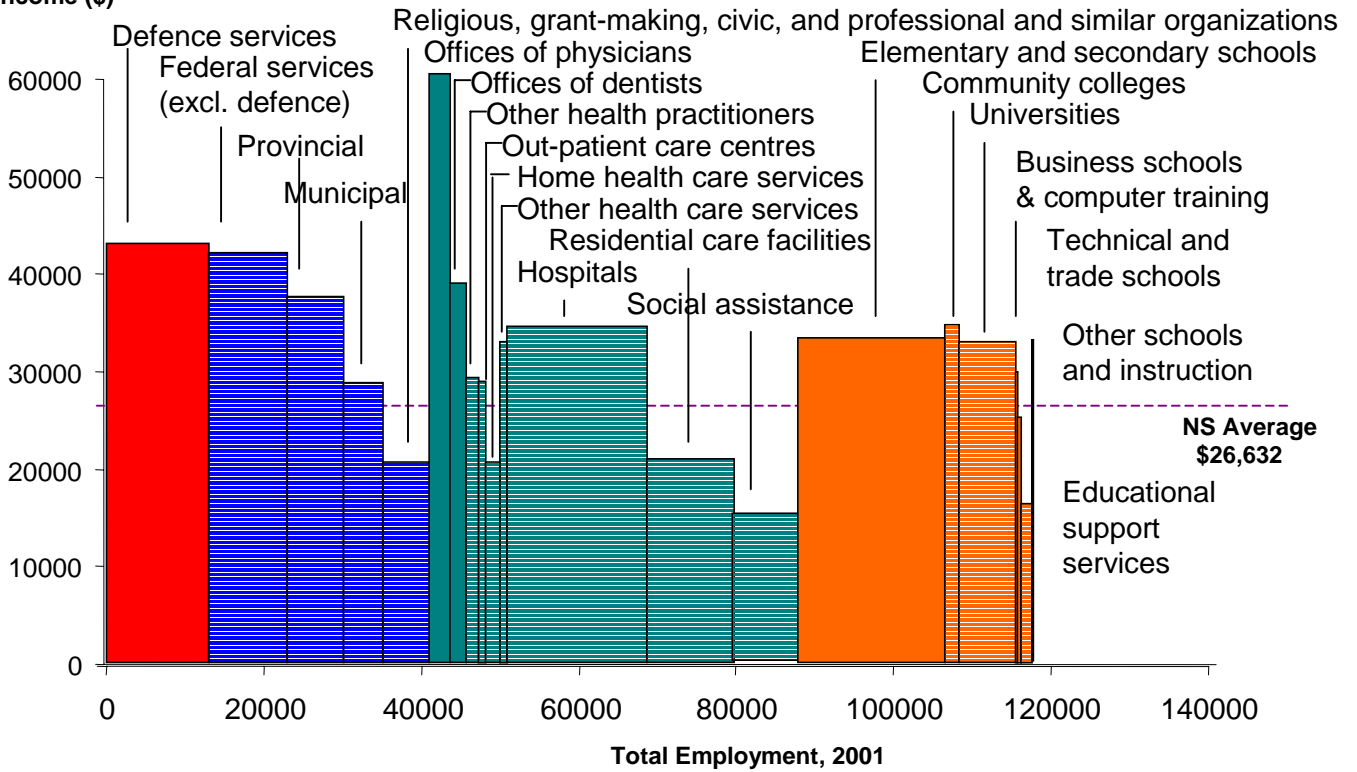
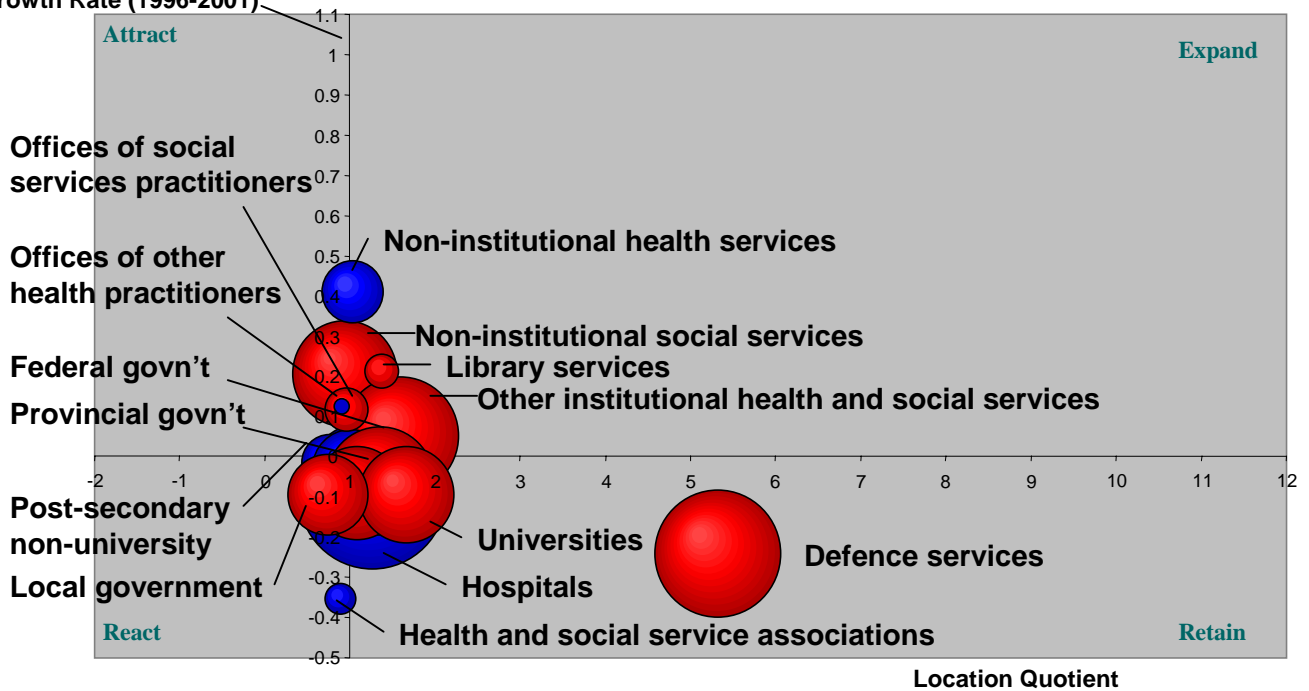


Figure 2.26b

Competitive Dynamics, 1996-2001 by 1980 Standard Industrial Classification

Source: Statistics Canada, 2001 Census, Cat. No. 97F0012XCB2001016

National Industry Growth Rate (1996-2001)



● NS industry is "Leading" national average
 ● NS Industry is "Lagging" national average
 Size of circle = Relative employment of NS industry

3.0 The New Business Model

Nova Scotia’s success over the past decade can be attributed to a number of factors, many of which are now changing. The pace of globalization has accelerated in recent years. Markets are becoming much more open; competition is more international; technology is enabling global trading and value chains are spread across the globe with individual business functions located in their most economic or strategic location. As mentioned in section 1, Nova Scotia continues to face increased competition from growing economies such as China and India. Furthermore, the cost of doing business in the province has risen in a number of areas. It is continuing to erode relative competitiveness and reduce the province’s attractiveness to foreign direct investment. Nova Scotia can not depend on the past drivers of growth to sustain and promote further development – these drivers will have to be replaced, modified or reinvigorated.

According to a recent report prepared by the United Nations, the corporate functions that are most likely to be relocated from developed countries to developing countries over the next few years include production, distribution, sales, logistics and support services. Services comprise a growing segment of the corporate functions designated for relocation. The total market for all offshore services exports was estimated at \$32 billion (US) in 2001. Most were reported to be supplied by Ireland, India, Canada and Israel. The greatest opportunity for growth was cited as the outsourcing of IT enabled services that are expected to grow from \$1.3 billion in 2002 to \$24 billion in 2007. These types of business services include: computer and data processing, accounting and bookkeeping, management consulting and public relations, research and development, and training services. A growing percentage of U.S. imports are foreign branches of American companies providing services back to the United States. According to balance-of-payments data, intra-firm trade accounts for more than 71% of all imports of “business, professional and technical services” into the United States. Moreover, during the period 1997-2002, the value of intra-firm imports of such services increased faster than unaffiliated imports.

Figure 3.1 - Corporate Functions that are most likely to be relocated in 2005
UNCTAD : Survey of TNCs

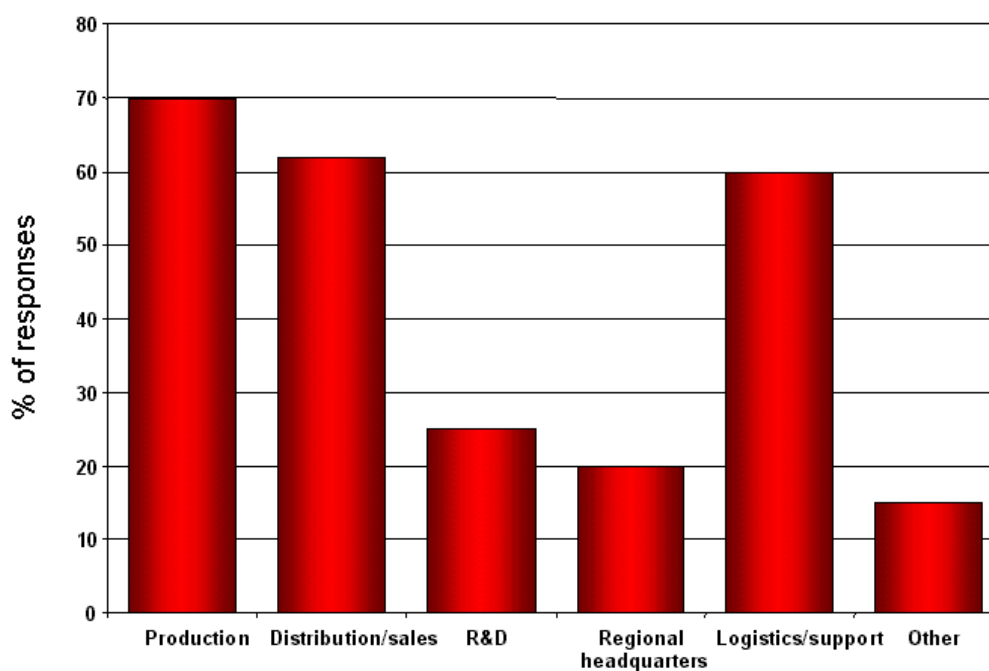
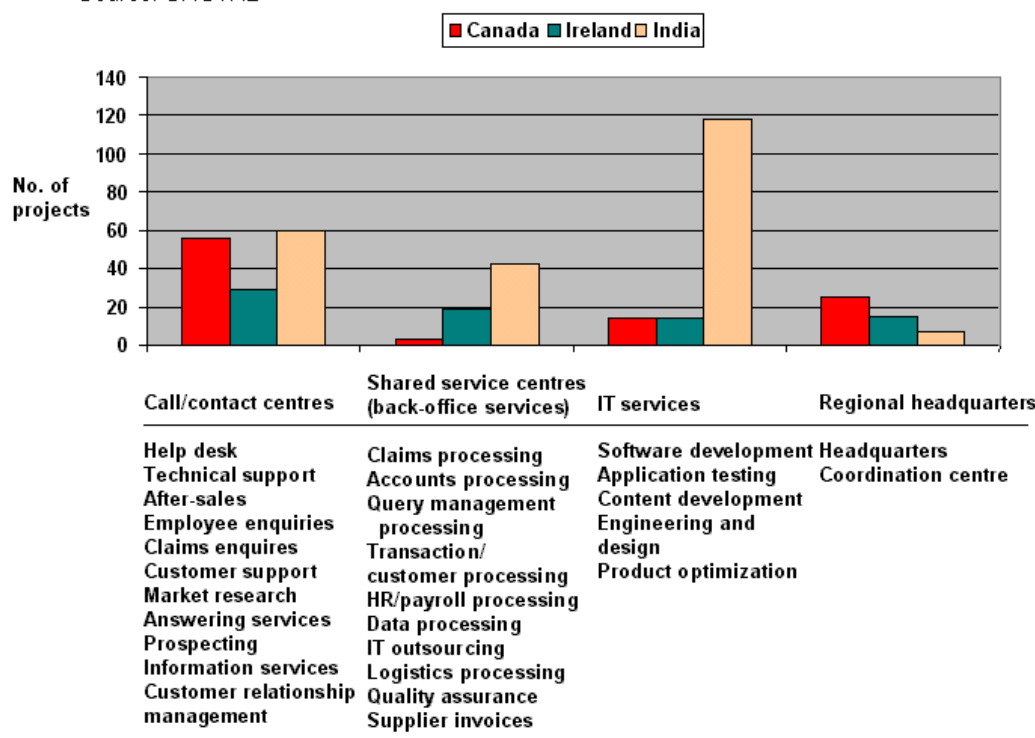


Figure 3.2 Export-oriented FDI Projects in Services, 2002-03

Source: UNCTAD



In light of changes in the global economy, companies will need to identify the precise areas where they have, or can build, distinctive strengths that will enable them to compete effectively. Important elements of competitiveness have been identified in a discussion paper recently released by the Canadian Manufacturers & Exporters. The remainder of this report will discuss some of these elements.

Table 3.1 – Elements of the new business model

Source: Canadian Manufacturers & Exporters

Traditional Manufacturing	New Paradigm
Domestic/North American market	Global markets
Customers sourcing locally	Customers sourcing globally
Production push	Customer pull
Higher costs passed to customers (higher prices)	Higher costs have to be absorbed (falling prices)
Prices are determined by local competition	Prices set by global competition
Competing for market share	Competitive for markets, investments, product mandates
Competitiveness based on cost, quality, time to market	More premium on time, but also on customization, service – price competitiveness is more important than ever
Value based on products	Value based on service
Mass markets	Niche markets/individual customers
Efficiency drives competitiveness	Innovation drives competitiveness
Internal performance standards	World-class benchmarks
Mass production	Customization
Growth with higher volumes	Growth through innovation
Static production process	Flexible production systems
Stand alone discreet technologies	Integrated technologies
Mechanical processes	Automated processes
Long production runs	Short production runs
Cost cutting	Waste elimination
Companies compete	Supply chains compete
Purchasing & materials handling	Supply chain management
Work under specifications	Problems solving
Production management	Lifecycle management
Reactive government	Proactive governance
Pollution control	Environmental sustainability

Cost-Competitiveness

In the face of global competition, operating costs are an important but not sufficient element of competitive advantage for developed countries. A 2004 study by KPMG, entitled *Competitive Alternatives*, compared business costs in North America, Europe, and Asia-Pacific. The report measured the combined impact of 27 cost components that are most likely to vary by location, as applied to specific industries and business operations. The eight-month research program covered 121 cities in 11 countries: France, Germany, Iceland, Italy, Luxembourg, the Netherlands, the United Kingdom, Canada, the United States, Australia and Japan. More than 2,000 individual business scenarios were examined, analyzing more than 30,000 items of data. The basis for comparison is the after-tax cost of start-up and operation for representative business operations in 12 industries, over a 10-year time horizon. Results are based on the combined results for a group of comparable cities in each country and are expressed in comparison to the baseline results of the United States.

Figures 3.3 and 3.4 shows selected analysis of the results for Nova Scotia. Overall, Canada is the most cost-competitive location among developed countries. Furthermore, Nova Scotia is cost-competitive against most areas of Canada. However, two areas where Nova Scotia is not competitive is in taxes and transportation costs.

Figure 3.3 Overall Cost Comparisons

Source: KPMG, *Competitive Alternatives*, 2004

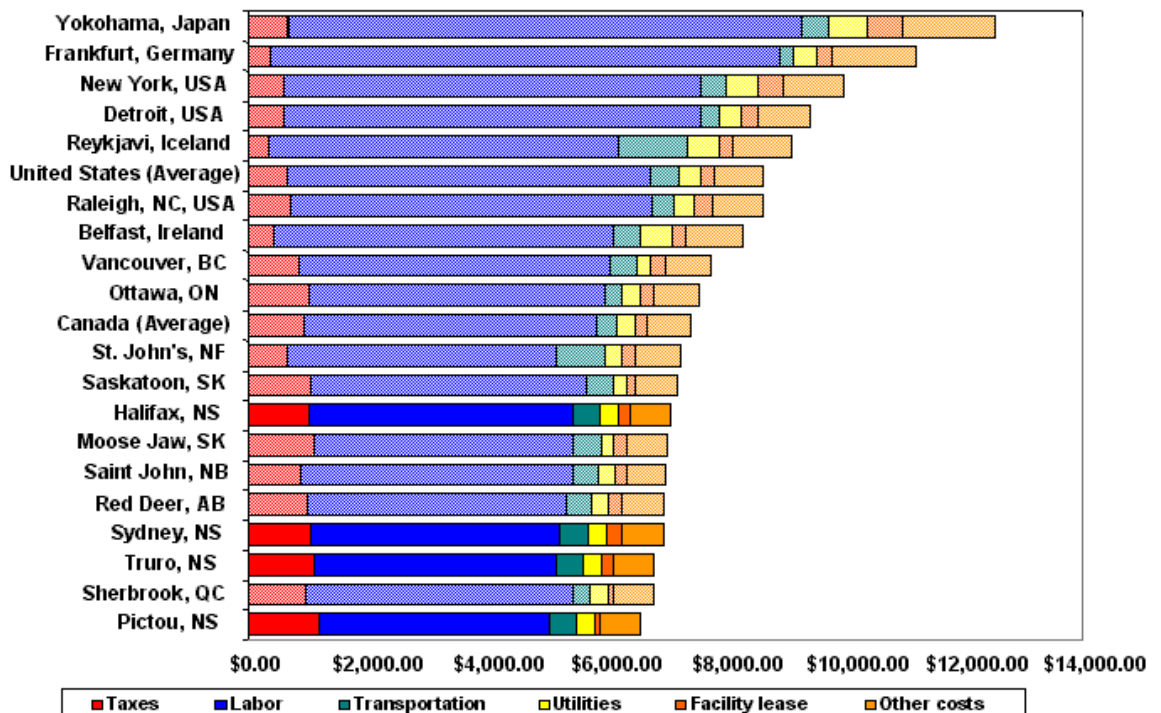
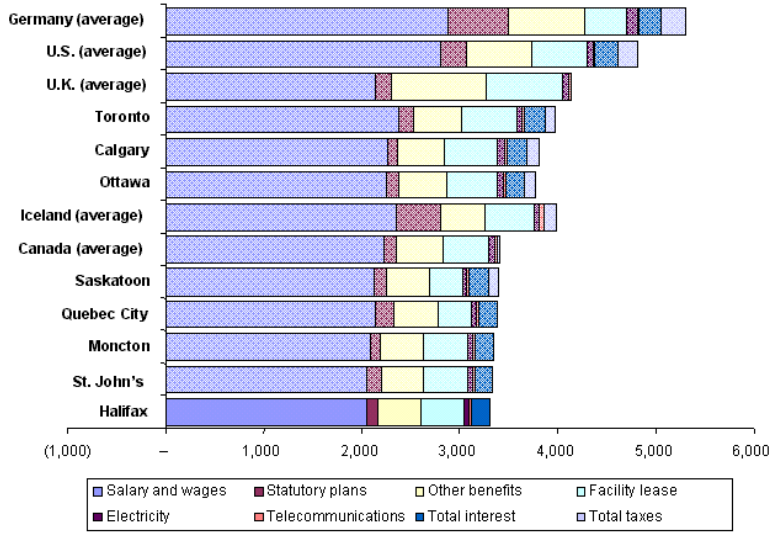


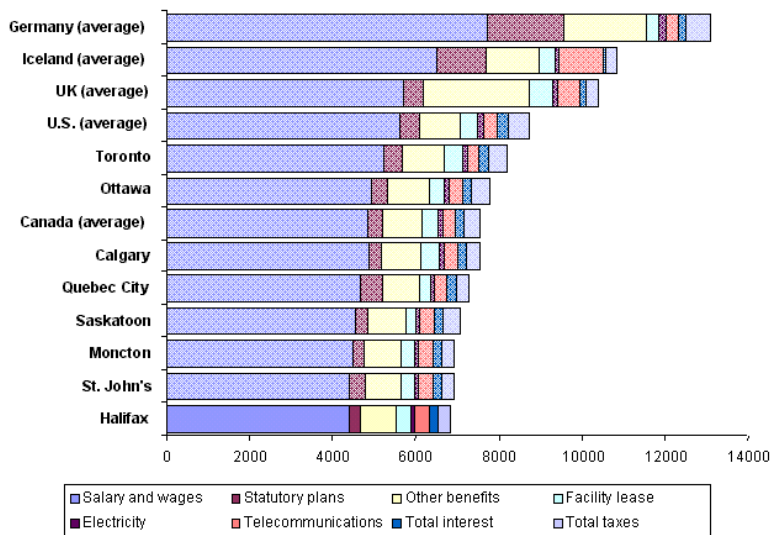
Figure 3.4 – Cost Comparisons by Business Function

Source: KMPG, *Competitive Alternatives*, 2004

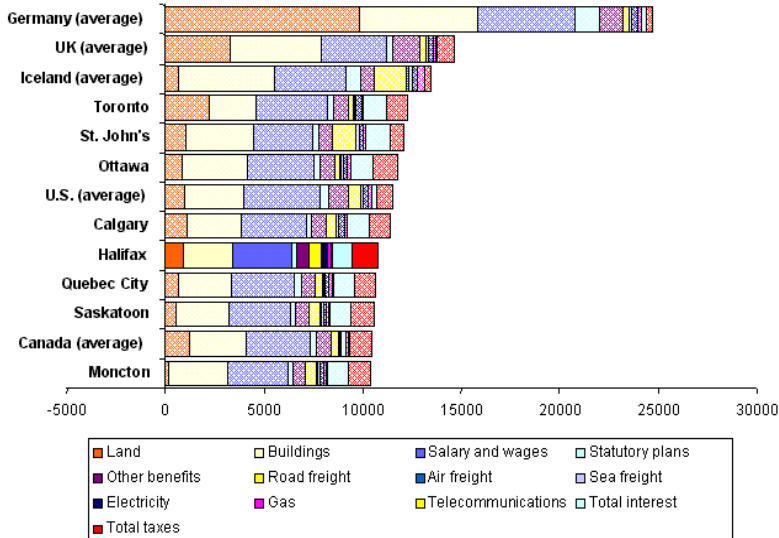
An average R&D facility



An average shared service center



An average manufacturing plant

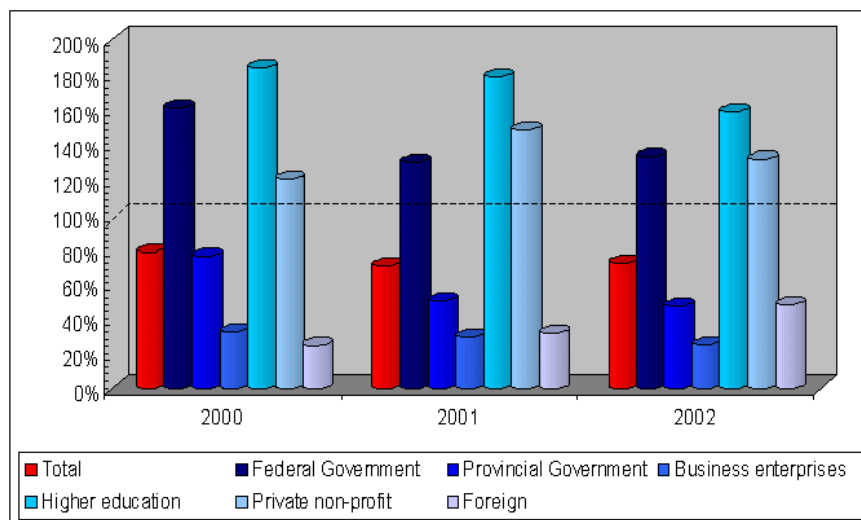


Technical Innovation

Nova Scotia's companies will not be able to compete with China or India on the basis of cost alone. They must identify and build new sources of competitive advantage based on knowledge and expertise. Innovation is the ability to create and commercialize a novel idea or process more quickly than the competition. It is at the core of economic activity and is the most sustainable source of expansion for a small economy like Nova Scotia's. One element of this process involves research and development. Although Nova Scotia scores highly in terms of overall R&D spending as a percentage of GDP, it lags most other provinces in terms of the amount the private sector contributes to R&D spending.

Figure 3.5 Spending on Research and Development as a percentage of GDP, Nova Scotia - relative to the national average

Source: Statistics Canada



There also appears to be weak linkages in the province between university based R&D and the business sector. In Ireland, the potential use of strategic technology platforms is currently being thought of as a way to foster linkages and collaboration between academia and enterprise. Strategic technology platforms are potentially valuable mechanisms for building consistency between the research agenda and enterprise activities. A strategic technology platform is a field of technology that draws on more basic areas of knowledge (such as mathematics, physics or computing) and which can in turn be applied to the development of a range of products and service.

Figure 3.6

Strategic Technology Platforms: An Example

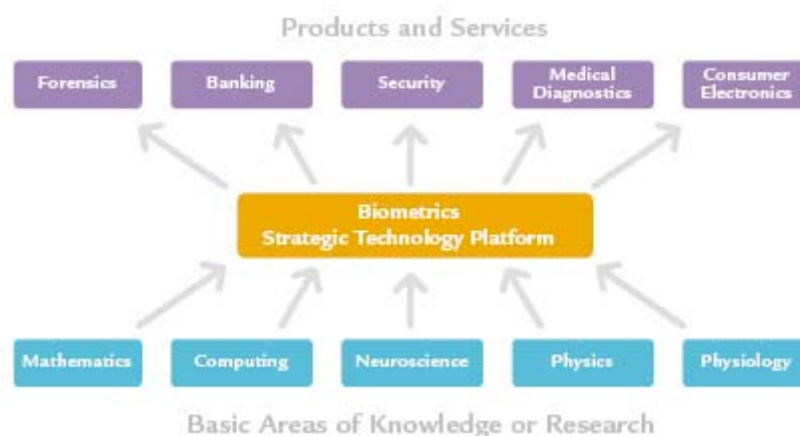


Figure 3.7

[rows=clusters, columns=technologies]

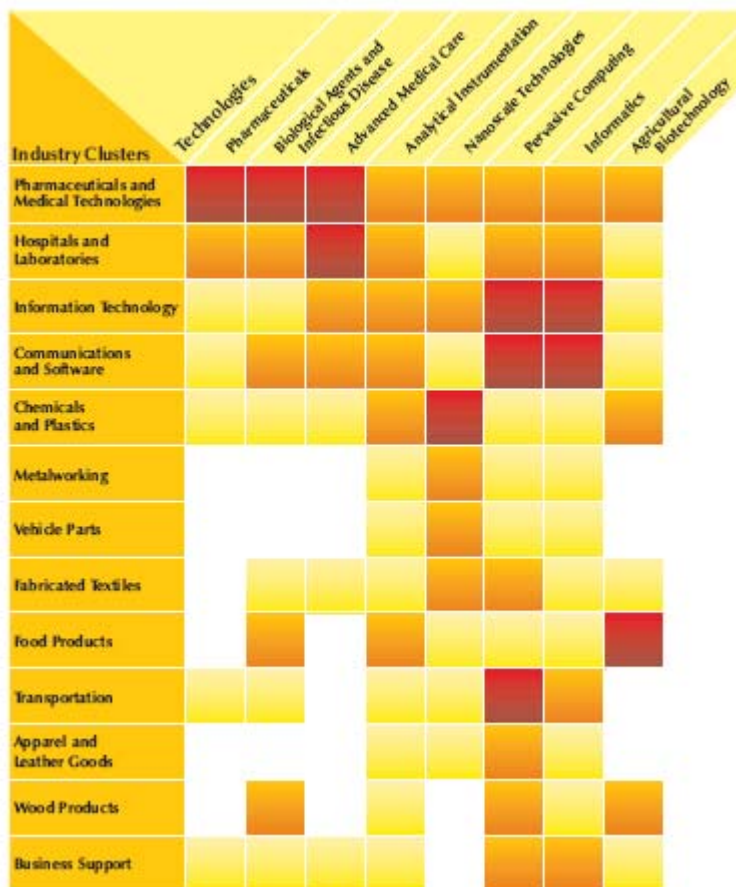


Figure 3.7 illustrates examples of linkages between technology platforms and sectors or clusters. Promising technology platforms to serve Nova Scotia’s economy are information technologies (software, geomatics), marine biotechnology and advanced materials. It appears Nova Scotia may have receptor capacity for commercializing these technologies based on the following findings:

- Nova Scotia’s specialization in terms of manufacturing is in *food processing* (which has linkages to agriculture, fishing, aquaculture, packaging, design & food services) and *transportation equipment* (which includes auto parts, aerospace, ship and boat building, railroad equipment, metalworking, plastics, & tires). The province has an emerging strength in navigational instruments.
- The fastest growing segments of the economy are in services. IT and business services provide the greatest export potential.
- Nova Scotia currently has a critical mass in the oceans sector and the public defence sector. Health care is the fastest growing element of the public sector. Concern over climate change will also expand the market for environmental services.

The abovementioned findings were based on a cluster analysis methodology. According to the Institute for Strategy and Competitiveness at Harvard Business School, the distribution of economic activity can be segmented into three broad groups: local, resource dependent and traded industries. Local industries provide goods and services primarily to the local market, or region in which the employment is located. Employment in resource dependent industries is located primarily where the needed natural resources are found, but these industries compete with other domestic and international locations. Traded industries sell products and services across regions and often to other countries. They locate in a particular region based not on resources but on broader competitive considerations, and employment concentration varies markedly by region. Utilizing statistical analysis, researchers at Harvard were able to identify 41 types of traded clusters in the United States. In 2003, the Institute for Competitiveness and Prosperity in Ontario used the same methodology to identify clusters in Canada. The results revealed that only 34% of Nova Scotians are employed in traded industries compared to 37% of all Canadians. Compared to the national average, more Nova Scotians are employed in the following four clusters: (1) fishing and fishing products; (2) processed

food; (3) motor driven products (motors and generators, batteries, motorized equipment, specialized machinery, and tires); and (4) distribution services.

Figure 3.8 – Emerging Niches

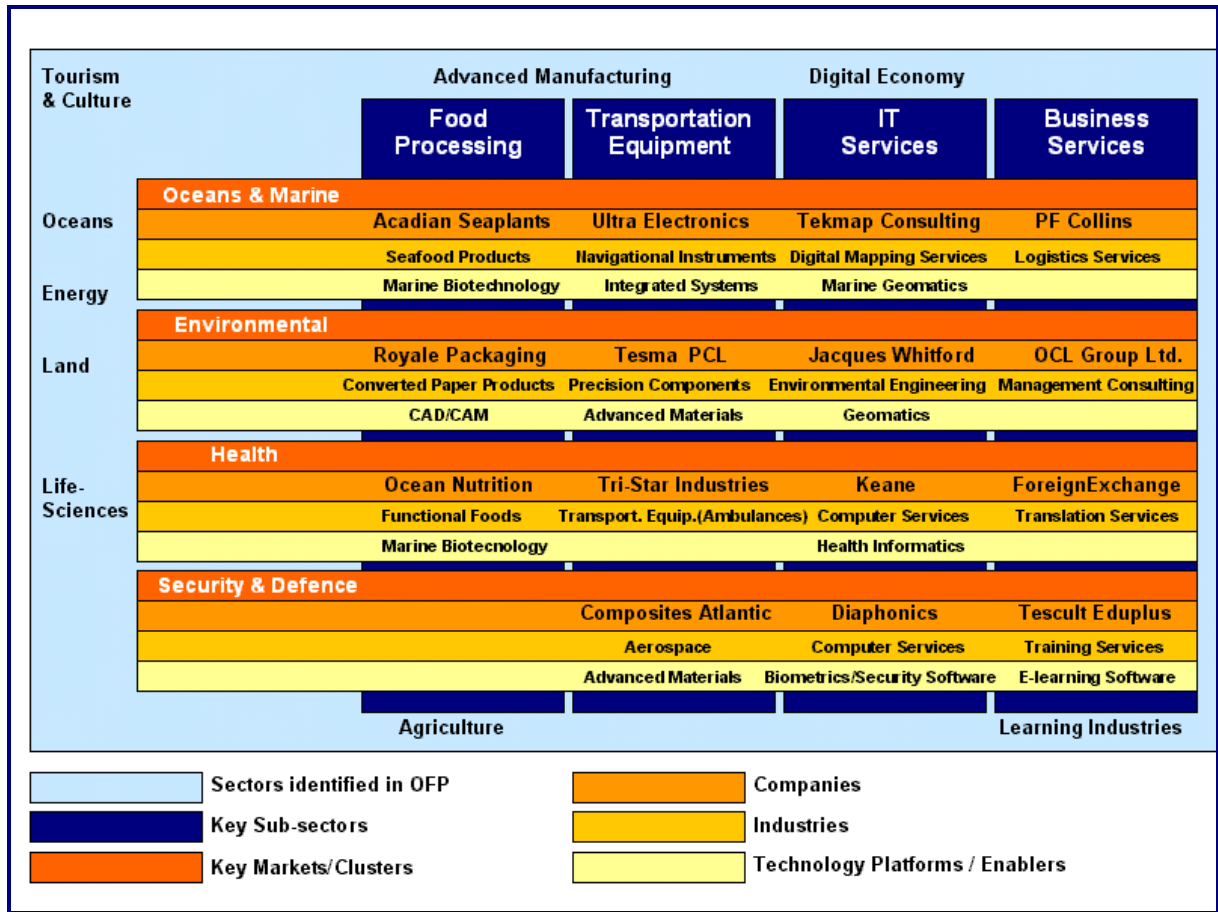
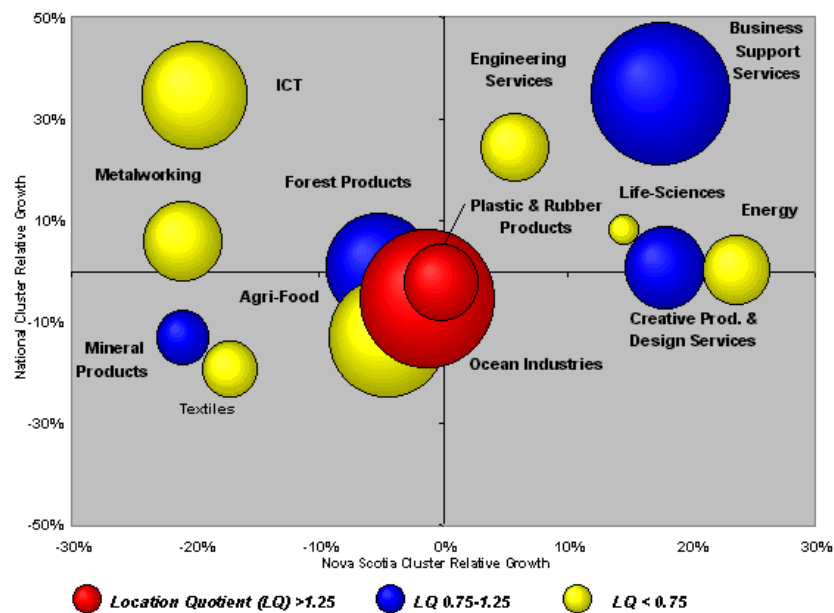


Figure 3.9 - Competitive analysis based on employment trends,1996-2001



Based on employment by SIC 80 from 1996 and 2001 Censuses, Statistics Canada

Location Quotient is a measure of employment concentration based on percentage of provincial employment in a given industry divided by the percentage of national employment in the same industry.

National Cluster Relative Growth is the national employment growth in an industry subtracted by the national employment growth overall from 1996 to 2001.

Nova Scotia Cluster Relative Growth is the provincial employment growth in the industry subtracted by the national employment growth in the same industry from 1996 to 2001.

Non-Technological Innovation

Innovative thinking can be applied to any phase of the product/service lifecycle. Technological innovation is applied typically (but not exclusively or necessarily) to the development of new products and services. Non-technological innovation, which may include for example, design, brand management, business process re-engineering, or new marketing or sales approaches, is often applied to many phases of the lifecycle.

The systematic use of design can offer companies significant benefits, helping them to differentiate their products, deliver efficiencies and reduce costs. Non-technological innovation is of particular relevance to service activities and these are, as we have seen, becoming more important. In services, innovation may result for example, in new financial instruments, new sales concepts and formats, organisational restructuring, or the bundling of new services with existing core products. In the years ahead, success in high value-added services will depend heavily on soft or non-technological innovation.

Services innovation differs from product innovation in a number of respects. While high value-added and knowledge-intensive services are typically very innovative, this innovation is difficult to quantify statistically, because it tends to be incremental and based on informal activities within firms. Nevertheless, formal services R&D is estimated at approximately 30% of total enterprise R&D in Canada. Because of the problem-solving nature of service activities, the customer is the primary source of innovation (universities and research institutes play a lesser role than is the case with product R&D) and innovation is greatly facilitated by networks (both formal and informal).

In the past, suppliers typically produced standard products and made them available at a standard price. More often today, it is the customer who defines specific needs and the supplier delivers a tailored solution, (Figure 3.10). Therefore, in order to succeed businesses must be closer to their customers, building an in-depth understanding of their needs so that they can develop and deliver customized and innovative products and services. Companies also need to understand competitor offerings and strategies, be aware of early indicators of market trends and identify and react to new and emerging market opportunities. Time to market and the ability to be proactive is critical. This necessitates a regular presence in existing and potential markets and continuous tracking of market trends, competitors, technologies, standards, regulations and products. While this is easier for larger companies to achieve, smaller companies are constrained by management capacity - and in some cases management capability and financial resources.

Figure 3.10

The Value Chain Driven by the Customer



Finally, research shows that companies that export typically become more innovative and productive. Many of Nova Scotia's companies may not be as competitive as their counterparts in other jurisdictions due to a lack of depth in local markets combined with a lack of export experience. In 2003, exports as a percentage of GDP was 46 per cent in Nova Scotia compared to a national average of 59 per cent. The province's mix of industries may explain part of this difference. Nova Scotia has a small goods-producing sector and which typically represents the bulk of exporting companies. While the goods-producing sector in Nova Scotia accounts for approximately 24 per cent of the provinces GDP, it contributes 71 per cent of the province's exports.

Figure 3.11 International Commodity Exports, 1995-2004

Source: Statistics Canada

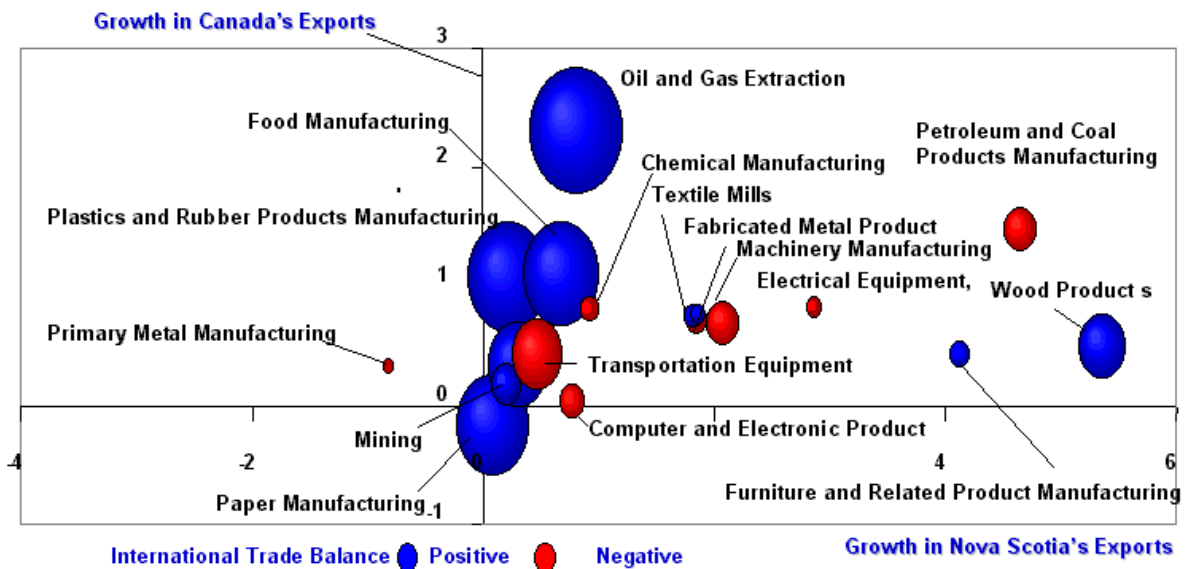


Figure 3.12 - Comparison of Finnish and Canadian Competitiveness

Source: Derived from *The Global Competitiveness Report, 2002-2003*, Micheal E. Porter

