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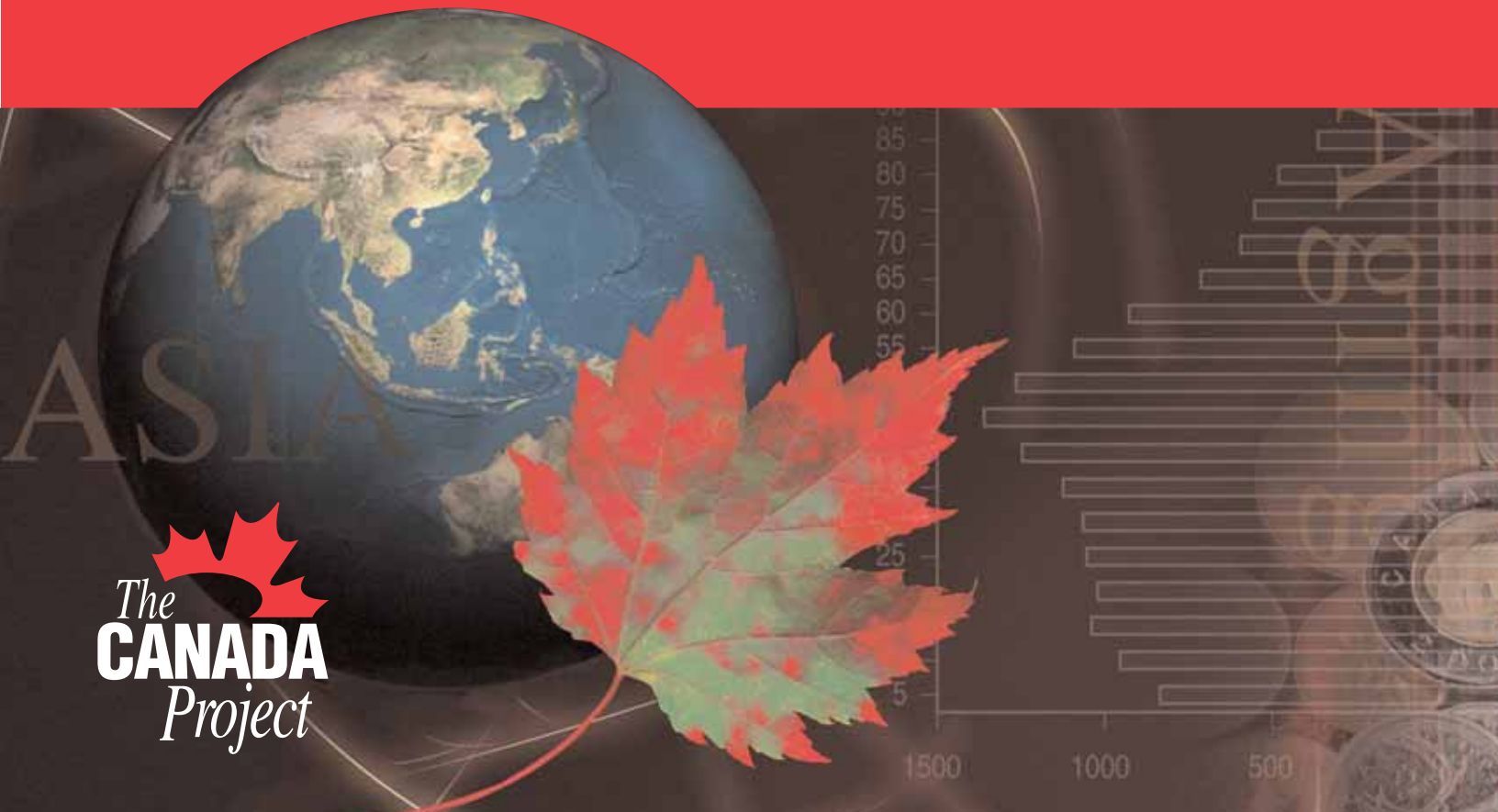
Performance and Potential 2005–06

The World and Canada
Trends Reshaping Our Future



The CANADA Project

The Conference Board of Canada
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Performance and Potential 2005–06—The World and Canada: Trends Reshaping Our Future
by *The Conference Board of Canada*

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Foreword

I am proud to introduce the 10th edition of *Performance and Potential*, our annual report card on Canada.

In this report, we address four aspects of a larger question: how will dominant global trends affect Canada in the short- and medium-term? The topics we've chosen to highlight this year are international trade, resource management, aging populations, and security risks.

As always, we include a benchmarking chapter to assess how Canada is doing across key performance indicators in comparison with other leading countries. Since its inception, our benchmarking work in *Performance and Potential* has provided decision-makers with a concise yearly overview. Over the decade, we've improved the analysis by using an expanded and more sophisticated set of indicators. The comparison class has grown from six to 24 countries, and our assessment has expanded from its original focus on economic indicators of success to the current 110 indicators across six economic, social and environmental categories.

The overall message of this year's report is that Canada's performance is slipping—we are losing ground or stalling in areas crucial for our international competitiveness. Canada has rich endowments of natural, physical, human and social capital, enough to set the world standard for our citizens' prosperity and well-being. However, without concerted action to address structural problems and to develop ambitious, forward-looking policies, we will continue to squander our endowments and opportunities.

It is essential to understand that this publication is the third in a series of four annual *Performance and Potential* reports belonging to The Canada Project, which aims to set out a national prosperity agenda. Issues covered in previous years include innovation, city revitalization and human resource development—all equally vital if we are to sustain Canada's prosperity.

This year's *Performance and Potential* sets the stage for the final compendium report of The Canada Project (to be released in October 2006), which will assemble our most significant findings for a sustainable prosperity agenda for Canada. We have added a sustainability lens to our analysis because, while productivity is clearly pivotal to prosperity, limiting the focus to productivity alone can lead to an overemphasis on efficiency at the expense of effectiveness, social and environmental stewardship, and the long-term viability of our way of life. I urge everyone to read this year's full report, as well as the compendium report next year.

As always, I want to thank the many individuals from across The Conference Board of Canada, as well as the external reviewers, whose contributions bolstered the quality of our analysis. This year's report has been directed by Charles Barrett, Senior Executive Advisor to The Conference Board of Canada, with the significant support of project managers Brenda Lafleur and Joanne Warren, as well as other researchers acknowledged at the front of this publication. I am grateful to all these colleagues for their sterling work.

Anne Golden
President and Chief Executive Officer
October 2005

KEY FINDINGS

The World and Canada
Trends Reshaping Our Future

INTRODUCTION

In this, the 10th edition of The Conference Board of Canada's annual report on our country, we take a retrospective and prospective look at the critical factors affecting the quality of life of Canadians. Looking back, we examine changes in Canada's performance since the mid-1990s and we look at the evolution of our knowledge and understanding of the key issues. Looking forward, we examine the global trends that are reshaping our future performance, prosperity and well-being.

Canada is not living up to its brand as a wealthy, environmentally responsible, socially conscious, healthy society.

Since 1996, the heart of each year's *Performance and Potential* has been our benchmarking of Canadian performance against that of other members of the Organisation for Economic Co-operation and Development (OECD) across a broad range of comparable economic, social and environmental indicators. While the Canada of 2005 is, in many respects, a better place than the Canada of 1996, our relative performance has slipped. Canada is not living up to its brand as a wealthy, environmentally responsible, socially conscious, healthy society. This is as much the result of other countries rising to the challenge of intense global competition—and gaining ground—as it is of Canada falling behind. It may also reflect the Conference Board's more nuanced understanding of the issues and our more sophisticated method of measuring performance.

Since we first published *Performance and Potential*, the Conference Board has emphasized the synergistic relationship among economic, social and environmental performance. All are mutually reinforcing and must work in harmony to sustain our prosperity. Canada is not as healthy a society as it could be, nor is it as caring, equitable or non-violent as we like to believe. Our economic performance is constrained by underlying structural weaknesses—mainly our low productivity growth—which could undermine future prosperity. In short, Canada has a number of deeply ingrained issues that we must address.

This anniversary edition of *Performance and Potential* also gives us the opportunity to look ahead to the world of tomorrow, examining four major global trends that will shape Canada's future: economic transformation, growth in demand for resources, aging populations, and new and increased security risks.

First, the vitality of the global economy has shifted its centre from the aging industrial economies of Europe and Japan to the expanding economies of the larger emerging countries. This transformation brings new opportunities in the form of enhanced markets for our goods and services, but it also poses challenges as Canadian business and policy-makers adjust to the changed competitive landscape.

Second, strong demand driven by growth in China and India will keep resource prices high. Managing Canada's rich resources presents both lucrative economic opportunities and difficult environmental challenges. Three areas in particular illustrate the opportunities and dangers ahead: "black gold" (oil and gas) is in high

Sources are not generally footnoted in the Key Findings. For detailed sources, please see the relevant chapters in the full report, *Performance and Potential 2005–06: Trends Reshaping Our Future* (Ottawa: The Conference Board of Canada, 2005).

demand, but its use is a leading culprit in climate change; "green gold" (forest products) could mitigate some greenhouse gas problems, but parts of the industry are in economic trouble; and "blue gold" (water) is plentiful in remote parts of Canada, but conveniently located sources are heavily stressed, and water is a political flashpoint as a trade issue.

Third, the world's population continues to age. The demographic shift towards an older population, caused by lower birth rates and increased life expectancy, will dramatically affect everything from labour markets and capital to trade and geopolitics. It will challenge the long-term health of public finances and seriously affect economic growth. Canada must review policies and practices that were designed for an era of labour surplus, and realign them with the new era of labour shortage.

Change, growth and integration will increase opportunities for wealth and well-being, but they will also create new channels for risk and insecurity.

Finally, in 2020, the world will be a more interconnected, complex and turbulent place than it is now. Globalization will create rapid and expansive shifts in the geopolitical, economic, social, environmental and biological landscapes. While change, growth and integration will increase opportunities for wealth and well-being, they will also create new channels for risk and insecurity. Canada must recognize this and take steps to mitigate the effects.

The fundamental message in each issue of *Performance and Potential* has been that the goal of society is to sustain a high quality of life for its citizens. Canada's future is dependent on our understanding of the global trends and influences that connect us to the world and to prosperity. We need to embrace rather than resist change, identify and manage risks, and adopt policies that will result in higher and more sustainable productivity, all the while being effective stewards of our abundant natural resources. Increasing productivity—a theme explored in previous reports—is central to our future well-being. Doing so will ensure that we have the resources we need to support both private consumption and the public good. We must embrace and act on the messages of this and previous years' Report Card on Canada. (See next section.)

To protect our future prosperity, we need to strengthen our business presence in key emerging markets, while recognizing the fact that the United States will remain Canada's top international economic priority over the next two decades. We must develop a coherent set of international economic policies that:

1. Further liberalize trade to strengthen overall economic performance;
2. Pursue new business in emerging high-potential markets, while sustaining our principal economic relationship with the United States;
3. Promote Canada's attractiveness as a site for inward foreign investment, while building the capacity of Canadian firms to invest overseas;
4. Expedite the passage of goods across the Canada–U.S. border and other ports of entry and exit;
5. Promote exports of high value–added services, including financial, professional and educational services; and
6. Become a central part of a wider circle of influence, such as the G20.

We also need to take full advantage of projected high natural resource prices through new investment and more effective resource stewardship. Environmentally sustainable economic development will ensure that future generations inherit a world in which physical assets have been maintained and even enriched. Policies should aim to:

7. Address the projected shortage of skilled workers in the resource sector;
8. Boost investment in resource sectors by changing the capital tax regime and removing remaining internal trade barriers; providing clear, efficient and predictable regulatory regimes; and removing impediments to the closure of uncompetitive mills;
9. Develop a long-term climate change strategy to both reduce net greenhouse gas emissions and capture economic opportunities; and
10. Improve governance and management of watersheds to ensure an adequate supply of water, while protecting ecosystem integrity.

Governments and employers must also respond to issues posed by Canada's aging population and declining fertility rates. Encouraging later retirement and eliminating ageism must be key objectives in Canada. To do so:

11. Governments should remove legislative and structural barriers to those opting to work beyond age 65, and should reduce the financial incentives for early retirement in the Canada and Quebec pension plans; and
12. Organizations should adapt their human resources policies to the needs of an older workforce and focus on diversity programs targeting older talent, work redesign, work flexibility and training.

Encouraging later retirement and eliminating ageism must be key objectives in Canada.

We will face a more turbulent world in the future. Canadian leaders, policy-makers and citizens can take steps to mitigate the risks that we will confront. We should:

13. Allocate resources to manage new risks to human security in Canada—many of which will come from developments outside our reach—by investing in prevention and containment, and by ensuring that we have adequate capacity in critical infrastructure;
14. Enhance social programs that target vulnerable populations—such as Aboriginal communities—in a sustained and comprehensive manner, including improving the quality and accessibility of health care, education, employment, housing and other social services; and
15. Become more deeply engaged in select international institutions to address the full range of global challenges that affect Canadian security and well-being.

Combined with the findings from the decade of *Performance and Potential* reports, these constitute the priorities for Canada's public policy agenda.

CRUNCHING THE NUMBERS: REPORT CARD ON CANADA

How is Canada faring relative to other advanced countries? To assess Canada's relative performance, we compare ourselves with the top countries in the OECD. (As data become available, we will add relevant comparator countries, such as Brazil, Russia, India and China—the BRIC nations.) We use 110 indicators in six categories: Economy, Innovation, Environment, Education and Skills, Health and Society. We begin by assembling and comparing data on 24 countries. For each category, we single out the top 12 countries and assign "gold," "silver" and "bronze" standings within that group.

Canada is once more a top-12 performer in all six categories. As Table 1 shows, we rank 12th in Economy, fifth in Innovation, eighth in Environment, third in Education and Skills, 10th in Health and 11th in Society. However, we lost ground this year in four categories, relative to the comparator nations, and gained in only two: Environment and Education and Skills. Moreover, our toehold in the top 12 grew more precarious in the Economy and Society categories.

Table 1
Canada's Socio-economic and Environmental Performance, by Category
(number of gold-, silver- and bronze-level rankings)

Categories	Canada's overall performance level	Gold	Silver	Bronze
Economy	12th	1	7	6
Innovation	5th	5	7	6
Environment	8th	9	5	8
Education and Skills	3rd	7	5	4
Health	10th	5	11	6
Society	11th	2	7	9

Source: The Conference Board of Canada.

ECONOMY

Once again, Canada's performance places us in the top 12 in the Economy category—but just barely. From our third-place finish in 2003, we dropped to sixth place in 2004 and to 12th place in 2005. While Canada can take pride in remaining one of the most

dynamic and wealthy countries in the world, our current economic record of one gold-medal performance, seven silver-medal performances and six bronze-medal performances loses its shine next to the two leading countries. Norway and Ireland each earned six gold-medal rankings.

Canada is not keeping pace in the growing competition for global trade and investment.

Three forces are causing us to lose ground. First, we are chronic laggards on several important economic indicators. Productivity is our most significant weakness, but investment is also a weak spot. In 2004, business sector labour productivity in the United States grew by 3.6 per cent—more than triple Canada's 1.1 per cent rate—a result that parallels historical averages and translated into an annual income gap with the United States of US$8,086 per person in 2004. But Iceland, Sweden, Norway and Finland all surpassed the United States in productivity growth.

Second, other countries are not standing still. Many are outperforming us, even in areas that have been a source of strength for Canada.

Third, Canada is not keeping pace in the growing competition for global trade and investment. The ascendancy of integrated global supply chains—in which production processes are distributed around the globe in search of higher efficiency and lower costs for each component of the final good—means that Canada must compete vigorously for such business. The Foreign Direct Investment (FDI) Confidence Index provides an indication of probable trends in future flows. Of the top 12 performers in our Economy category, the United States leads the pack. Confidence in Canada as a destination for investment is much weaker, earning a bronze-level ranking. Another indicator of our global ranking is the FDI Performance Index, which measures the extent to which a country is both an FDI recipient and investor, relative to its size. The best performer on the index is Ireland. Although Canada's FDI flows are large for our economic size, we lag behind the top performers, mainly because of lower FDI flowing into our country.

INNOVATION

More innovative firms generate significantly higher revenue and profit growth rates than do less innovative firms; they also outperform their counterparts on other business performance indicators. At the international level, there is good reason to believe that more innovative countries enjoy superior social and economic outcomes.

Overall, the country rankings for innovation are similar to those in previous years. Finland and Sweden tie for top spot, replacing last year's leader, the United States, which moves to third position. Canada slips from fourth to fifth place. The United Kingdom falls off the top-12 list and is replaced by Japan. Korea makes the largest jump, moving from 11th to sixth place.

Canada achieves five gold-medal performances, seven silver and six bronze. We rank gold for openness to foreign ideas, technological cooperation, the percentage of patents with foreign co-inventors, entrepreneurship, and research and development (R&D) tax treatment.

Canada ranks among the lower-performing countries on R&D spending.

While we rank high on R&D tax treatment, our investment in R&D does not score as highly. Spending on R&D is a regularly cited indicator of innovation. It is critical to building knowledge and fuelling breakthroughs. Canada ranks among the lower-performing countries; since 2001, Canadian R&D expenditures as a proportion of gross domestic product (GDP) have been decreasing, albeit slightly, whereas those of several Western European countries have steadily increased.

More innovative countries appear to be better at extracting value from their investments. The country rankings for contribution of information and communications technology (ICT) to labour productivity growth suggest that Finland, Korea and the United States—all gold-performers on this indicator—are better at extracting value from their investments in ICT.

ENVIRONMENT

This year, Canada moves up to eighth place from ninth last year in the Environment category, using a slightly revised set of environmental indicators. Nordic countries continue to dominate the top tier, with Sweden, Finland and Norway taking three of the top four places, as they did last year. Portugal and Germany, last year 11th and 12th respectively, fall to 13th and 14th this year. Pushing them out of the top 12 are the Netherlands, which jumps to an eighth-place tie with Canada, and Japan, which climbs into 12th spot.

Canada continues to perform well on several key measures, especially water indicators, where we earn three gold medals in the pressure area—the use of nitrogenous fertilizers, the discharge of industrial organic pollutants, and the intensity with which we use our freshwater resources. Canada takes gold on two indicators of water quality: concentrations of phosphorous and suspended solids.

Canada also manages gold-level placements on the number of threatened species of birds (an indicator of biodiversity), intensity of use of forest resources, municipal waste generated per capita, and pesticide use. This brings our total to nine golds out of a possible 22. We rate silver on five indicators, and bronze on eight.

Environmental indicators must be interpreted carefully. Canada's immense geography, cold climate and relatively small population can cause a positive or negative bias on many environmental indicators. Localized environmental issues may be a problem, even where national averages are fair to good.

EDUCATION AND SKILLS

Finland and Norway are in first and second place, respectively, in the Education and Skills category. Sweden and Canada tie for third. Canada earns five of its seven gold medals on indicators of education outcomes. We rank gold for both the high proportion of our population that has completed secondary education and post-secondary education. But the latter is weighted towards college and vocational institutions; we rank only silver on university and other advanced research graduates.

More revealing are indicators that measure the actual skills of a population. According to an OECD international study that assesses the skill level of 15-year-olds, Canadian students are among the best in the world when it comes to mathematics and reading. Canadian students ranked fifth among the 24 OECD countries in standardized mathematics testing and third in reading. One caveat: while our student scores are high relative to other countries, 36 per cent of Canadian students in math and 28 per cent in reading were not capable of completing tasks above a "basic" level of complexity—a finding not inconsistent with complaints by university officials that incoming students lack basic writing and math skills.

Canada's weakest performance is on indicators of lifelong learning, as it has been since we began tracking these indicators in 1999.

Canada's adult population ranks silver on document and prose literacy, and bronze on quantitative literacy. A 2003 update of the literacy study for Canada found that the proportion of the population at the lowest skill levels had not changed much since 1994. The 2003 survey also revealed that lower literacy levels were more prevalent in older-age cohorts.

Canada's weakest performance is on indicators of lifelong learning, as it has been since we began tracking these indicators in 1999. Bronze levels in participation in continuing education and training (both job-related and other) will not be enough to ensure a globally competitive aging workforce.

HEALTH

Canada falls to 10th place in the Health category, down two rungs from last year. In 2005, we score six gold, 10 silver and six bronze. For the second consecutive year, Iceland, Sweden and Norway take the top three positions.

Similar to previous years, Canada is a bronze-level performer in three of the four indicators of health-care resources. The number of magnetic resonance imaging (MRI) units in Canada almost doubled between 2000

and 2004, from 2.5 MRI units per million population to 4.7, but this pales in comparison to Japan's rate of 35.3 MRI units per million population. Canada's number of radiation therapy units per capita is also lower than that of the top performers. Our rate of 2.1 physicians per 1,000 population is half that of Italy, the leader in this indicator, with 4.1 physicians per 1,000.

Canada remains a mid-level performer in measures of health-care spending, though total expenditures continue to escalate. Last year, Canada spent about $130 billion—roughly 10 per cent of GDP—on health care. The United States is by far the biggest spender of the 24 countries we studied, with outlays per person of US$5,635—almost 50 per cent higher than those in Norway, the biggest spender among our 12 medalists, with US$3,807. Though Canada's total health-care spending per person increased last year to US$3,096, we drop to fourth place from third. In terms of public expenditures on health, we move up to sixth place from seventh.

Despite this, our health outcomes are quite good. Canadians have relatively long life expectancies, with women living an average of 82.1 years and men 77.2 years. Canada's death rates from cancer and from heart and circulatory diseases are low compared with those of other countries. On self-assessed health status, 88.2 per cent of Canadians aged 15 years and over said they were in good health—the highest proportion of any country.

Canada's weak performance in the Society category reveals that our public record does not live up to our international brand.

Canadians still rank well in healthy lifestyles, earning one gold medal (for relatively low tobacco consumption) and two silvers (for relatively low alcohol consumption and obesity). Canada's smoking rate is the lowest of the 24 countries we studied. One area of weakness that may be cause for concern is our relatively high rate of infant mortality.

SOCIETY

Canada's weak performance in the Society category may surprise those who take pride in Canada's reputation as a fair, just and cohesive society. Our public record does not live up to our international brand.

Canada's child poverty rate—almost six times that of Denmark—is a special concern for governments and communities.

In this category, we chose 18 indicators to reflect three underlying goals of social performance: self-sufficiency, equity and social cohesion. Five self-sufficiency indicators measure the autonomy of individuals within the society, as well as policies that promote autonomy. Six equity indicators measure equity of access, opportunities and outcomes. Seven indicators of social cohesion measure social isolation, crime and citizen engagement.

Denmark places first overall, with a total of 13 gold-medal performances, four silvers and only one bronze. The Netherlands comes in a close second, with 11 gold-, seven silver- and no bronze-level performances. Rounding out the top three is Sweden, with 11 gold-, three silver- and one bronze-level rankings. Canada is in 11th spot (just ahead of New Zealand), with only two gold-level performances, seven silver and nine bronze.

Canada's rankings on the self-sufficiency and equity indicators are poor—improving over time, but lagging behind those of other countries. Child poverty is a special concern for governments and communities. Canada ranks bronze, with a child-poverty rate that is almost six times that of Denmark! Overall poverty rates are also high. Over 10 per cent of Canadians live in poverty—a stark contrast to Denmark and Sweden, where poverty rates are 4.3 and 5.3 per cent, respectively. Canada is much better at ensuring an adequate standard of living for the elderly. The poverty rate for people in Canada aged 65 years and over is the third lowest of all 24 OECD countries.

Canada has mixed results on indicators of social cohesion, placing gold on one indicator, silver on four, and bronze on two. Our worst performance occurs on two crime indicators: homicides and assaults. Although Canada's homicide rate has been declining since the mid-1970s, it exceeds that of most of the top performing countries.

LOOKING OUT, LOOKING BACK

Our 10th annual benchmarking exercise presents Canadians with a portrait of themselves in a broader context. It is worth looking back to see how Canada's position has changed since the mid-1990s.

A good overall measure to track this change is income per capita—a measure of living standards. In 1985, we ranked fourth out of 24 OECD countries, behind Switzerland, the United States and Iceland. By 1995, we were down to seventh. Over the same period, our GDP per capita showed a striking decline, falling from 87 to 81 per cent of the U.S. level. In 2004, our level of GDP per capita moved us up to sixth position, yet we still lost ground to the United States—achieving only 80 per cent of the U.S. level of GDP per capita.

Compared with the United States, our standard of living in 2004 was lower than a decade earlier, but during this time Japan and Germany also slid precipitously, ending up well behind Canada. We "gained" not because we did better, but because others did much worse.

Our current system of scoring—comparing 24 countries and awarding medals to the top 12 in each category—began in 2002. Although we have changed some of the individual indicators, the six categories have remained the same. This gives us a solid basis for comparison. Since we examine data for up to two dozen countries for each indicator, any nation that makes it into the top 12 in any category has already done better than half the countries surveyed.

Canada's recent record, from this perspective, is very strong. We have won medals in all six categories in three of the past four years (2002, 2004 and 2005), and in five categories in 2003, when we fell to 16th in Environment. Since 2002, our benchmarking has offered all countries 24 opportunities to win a medal, and Canada met the test on 23 occasions!

No country has managed a clean sweep of medals in all categories in all four years. Only three countries—Finland, Sweden and Switzerland—have matched Canada's record. Year after year, they turn in a solid display of strength in all of the elements that contribute to the well-being of their citizens: a sound economy, innovative behaviour, a clean environment, good health, high-quality schooling and training, and a just society.

The six other Group of Seven (G7) countries, with which we so often compare ourselves, fared significantly worse than Canada. Out of 24 opportunities to win medals, Germany managed to find a place in the top 12 only 16 times in the past four years, the United States 12, Japan 11, France 10, the United Kingdom nine, and Italy five. The United States is consistently strong in the measures of the Economy, Innovation and Education, but won no medals at all in the past four years in our Environment, Health and Society categories.

In the Economy category, only seven countries managed to achieve a top-12 placement in all four years: Canada, Denmark, Ireland, Korea, New Zealand, Norway and the United States. The G7, usually described as a collection of the world's leading economies, includes three countries—Germany, France and Italy—that have yet to earn a single one of our Economy medals, and two—Japan and the United Kingdom—that have won only one each.

Since 2002, our benchmarking has offered all countries 24 opportunities to win a medal, and Canada met the test on 23 occasions!

Overall, Canada occupies a space somewhere between the United States and Europe. Like the United States, we do well in the Economy, Innovation, and Education and Skills categories. Like the Europeans, we do well in the Health and Society categories and spottily in Environment.

Another way of assessing Canada's progress and development since the mid-1990s is to compare today's important issues with the issues highlighted in our first report. The major themes in 1996 included productivity, trade and investment, education, health and innovation—areas that still preoccupy us. While some may find it

depressing that the roster is much the same as it was a decade ago, we have made progress—either the nature of the challenge has changed or our understanding of the challenge has deepened, leading us to search for new solutions.

Canadians can take heart from our progress on one issue to which we devoted a chapter in 1996—government deficits and debt. The perilous state of government finances was a top public policy issue of the day, but the Conference Board was one of the few voices to suggest that the problem was already fading and that it was time to pay more attention to the other issues included in our report. Based on the budgets introduced in 1995, we predicted that deficits and debt would fall; in retrospect, they fell faster than even we could have hoped. Clearly, Canadians are capable of confronting thorny challenges, discarding long-held views, and getting down to the job of finding solutions.

The subjects of our 1996 chapters are as germane today as they were then: productivity, trade and investment, innovation, human resource development, and health care. Productivity is still a key issue, but we now have a richer understanding of its elements than we did in the mid-1990s. Trade and investment also remains on the agenda, as it always will for a trading nation such as Canada. It too is the subject of a full chapter in this year's report, although our perceptions and insights have developed substantially over the years.

In some cases, issues have become even more vexing and difficult. When we flagged our interest in the safety and security of our citizens in 1996, we were not thinking about terrorist attacks and the kind of geopolitical risk that is now a part of our everyday lives. Human security covers a lot of territory, and we explore some of it this year.

The environment, which moved to the background during the 1990s in the light of pressing economic policy issues, reappears in this edition of *Performance and Potential*. Canada still faces tremendous environmental and sustainability challenges—such as urban development, transportation, cross-boundary water governance, natural resource development and agriculture—and recent events suggest that the environmental public policy pendulum may be swinging back.

Since 1996, the specific concerns and details surrounding Canada's prosperity have changed, but the themes, for the most part, have remained the same. So has the broader goal of continuing to build a country that maintains the kind of balance we all treasure: economic growth, continual innovation, a better environment, good health, skilled people, and a society that treats people well.

MAKING CONNECTIONS: THE NEW WORLD OF INTEGRATIVE TRADE AND CANADA

OLD NORTH, YOUNG SOUTH

Growth in emerging markets, particularly in Asia, will drive tomorrow's global economy. The major developed countries are slowing down, with aging populations and labour-force changes lowering their economic growth potential. In major Western European countries, populations have stopped growing. Japan's population could shrink substantially by 2050.

Many of the advanced countries face other challenges. Western Europe, Japan and now the United States all have significant fiscal deficits and rising public debt, while the increasing costs of pensions and health care for an older population compound the impact of an aging population on economic performance. Real incomes will remain high for decades to come, but many industrialized countries have become less attractive as future export and investment markets.

Growth in emerging markets, led by the BRIC nations, will drive tomorrow's global economy.

In contrast, many countries in the developing world have boosted their underlying economic growth potential and made themselves much more attractive places in which to do business. Four large emerging markets—collectively referred to as the "BRIC" nations—are China, India, Brazil and Russia. Due to their high growth potential and increasing economic clout, they offer excellent trade and investment opportunities.

EMERGING GIANTS

One magnet drawing exports and investors to the BRIC countries is a burgeoning middle class of consumers—people with enough income to begin buying durable goods and higher-value food products in quantity. China is now the world's fastest-growing major economy and an emerging superpower. Its urban middle class already exceeds 200 million and could reach 400 million—30 per cent of the country's population—by 2010. Though its growth potential will slow gradually over the coming decades, estimates suggest that China's economy will be able to expand by about 4.5 per cent annually to 2025.

China is now the world's fastest-growing major economy and an emerging superpower.

India's rise has been more gradual. Its middle class represents less than 10 per cent of the country's population, but this translates into 90 million consumers with growing discretionary incomes. India's growth has been fuelled by internal economic liberalization and an expanding role in the global supply chain for information services. Yet the old India persists in an impoverished, overpopulated and traditional agrarian economy. Economic reforms have proceeded unevenly. Successes include a widening of the tax base and a modest easing of foreign investment limits. However, India has shown limited progress in privatization, financial-sector reform, labour-market reform and reductions in subsidies. It continues to be challenged by poor physical infrastructure. An India fully open to trade and investment could achieve a sustainable growth rate rivaling or even surpassing that of China.

Brazil has alternated between periods of strong protectionism and cautious market opening, with hyperinflation, external debt crises and sharp devaluation along the way. Since 1998, however, Brazil has quietly striven to adopt more disciplined fiscal policies and reduce its habitual over-reliance on foreign borrowing, while opening up to more foreign investment. Its middle class numbers 50 million, only a third of the country's population. If Brazil continues to meet the challenge of stimulating economic growth while sharing its benefits more widely, it could finally stop being "the country of tomorrow."

Russia's roller-coaster ride since the 1991 collapse of communism included attempted coups, economic policy drift, hyperinflation, currency crises and a fire sale of state assets; it reached rock bottom in 1998 when it defaulted on its external debt. National governance, though more consistent, still fails to conform to Western concepts of democracy, as Russia struggles with the basics of modern political culture. Although heavily dependent on the oil and gas sector, the economy has performed remarkably well in recent years. Still, with steady growth and a middle class of about 65 million people, Russia's prospects look much brighter today.

THE NEW GLOBAL PRODUCTION SYSTEM

Profound changes are occurring in international commerce. Four trends are prominent: developing countries are gaining at the expense of traditional industrial economies, trade is increasingly integrated within global production systems, foreign direct investment is linked to trade relationships, and global supply chains characterize the activities of many companies.

The BRIC nations and other emerging markets have increased their market share of the global economy. China, Russia and Eastern Europe have gained ground while making the transition from planned, relatively closed economic systems to more open, market-based systems. Mexico achieved a higher market share after signing on to the North American Free Trade Agreement (NAFTA). This rise has been accompanied by a reduced role in global trade for some of the world's dominant economies, including the United States and Japan.

Companies are using investment to build international supply chains, develop closer contacts with foreign partners, and provide better service.

Trade liberalization, more advanced transportation and communications systems, and the integration of many developing countries into the world economy have transformed global patterns of production, investment and trade. FDI has grown faster than both trade and GDP, as companies use investment to construct international supply chains, develop closer contacts with their foreign customers and partners, and provide better service.

In this new world, exports contain an increasing amount of imported content as firms seek the best quality and best-priced components for their products, whatever the source. Exports and imports are integral parts of the same global supply chain, especially in manufacturing. In some sectors, a work-in-process travels back and forth across borders—often remaining within the same company—before the final output is delivered to the customer. Today, close to one-third of world trade is intra-firm trade.

The term "integrative trade" captures all elements used by firms to achieve the lowest possible cost and maximize the return for their products.

Global commerce has entered a new phase of integrative trade, a term that captures all elements used by firms to achieve the lowest possible cost and maximize the return for their products: exports, imports used to create exports, inward and outward FDI, offshore outsourcing and insourcing, and sales from foreign affiliates created through FDI (notably sales of services).

CANADA: FADING TO THE MARGIN

Canada's relative size and status in the global economy is slipping. With an aging population and our economic growth potential slowing, Canada will find it hard to avoid falling farther in the global rankings.

Using the prevailing April 2005 exchange rates, Canada places only ninth in the world, at 2.39 per cent of global GDP. Using purchasing power parity (PPP)—which compares the value of different countries' currencies for the same basket of goods and services—Canada's share slips to less than 2 per cent, and its global ranking slides to 11th place. All other G7 countries also see their GDP shares fall by a third or more when PPP is the scale, but PPP lifts the share of global GDP and the ranking of all the BRIC economies. China's share of global GDP, under PPP rates, exceeds that of all G7 members except the United States.

The Canadian dollar is, at best, a second-tier currency in international trade and finance. Canada ranks sixth in the world in equity market capitalization—but that standing will not last much longer, as China, India and Russia are poised to overtake Canada. There is one notable exception: we are a world leader in raising equity for mining ventures.

HOW CANADA FITS INTO THE GLOBAL SUPPLY CHAIN

The United States continues to be the primary destination for Canada's exports and the primary source for our imports—dwarfing all other bilateral trade relationships. Since NAFTA came into effect in 1989, Canada has become more dependent on exports south of the border. While exports to key emerging markets have taken off, with Canadian consumers and producers taking advantage of lower labour costs, sales to some of Canada's other traditional markets have either stagnated or declined. Most industrialized countries' shares of imports to Canada have dropped markedly from 1990 levels.

Canada's trade reflects the growing importance of global supply chains. The domestic content of Canadian exports fell as manufacturers restructured operations to capitalize on the increasing interconnection between exports and imports. Canadian companies have invested record amounts abroad to build the global supply chains linking their production processes. Foreign investment has sharply increased in Canada. Even so, Canada's global share of inward and outward FDI has fallen since 1990 as other countries have engaged in foreign investment at an even faster rate. What's more, over the past 15 years, Canada has shifted from being a net inward investor to a net outward investor.

The Canadian economy has benefited from the growth in both inward and outward FDI. Inbound FDI creates jobs, and it boosts trade and domestic capacity. The investment and jobs generated elsewhere by FDI from Canada increases profits for Canadian companies and, more importantly, raises export volumes from Canada. The OECD has found that, on average, each dollar of outward FDI generated double that amount in additional exports—and even more for investment in developing countries—while Export Development Canada uses more modest, but still sizable, estimates for Canada. Another result of the surge in outward Canadian FDI has been increased sales from Canadian foreign affiliates, which reached $360 billion in 2002—comparable to total Canadian goods exports.

Conference Board research finds a strong positive correlation (0.95) between total exports and FDI from Canada in the United States—not surprising given the close integration of the two economies. There is also a strong correlation for Mexico (0.83)—Canada's other NAFTA partner—and for China (0.73). Correlations for India, Russia and Brazil are positive but progressively weaker. The correlation coefficient for Japan is negative, indicating that outward Canadian FDI to Japan acts as a substitute for higher Canadian exports to the Japanese market.

To explore Canada's potential role in global supply chains, we analyzed the components of Canada's exports and imports from 1990 to 2004 and developed a 20-year scenario for trade development. We took Canadian exports to, and imports from, 10 different countries and regions and broke them down into three categories: raw products, intermediate goods and finished goods. We assigned each product to a category based on its position in the importing country's supply chain (as opposed to the more traditional assignment based on its position in the exporting country's supply chain).

The changing composition of our exports indicates how Canada fits into other countries' supply chains. A shift toward exports of intermediate products implies a comparative advantage in delivering value-added goods to other countries, and in greater trade integration. An increased export share for finished goods might also represent a move to higher value-added production, though this is not always the case. In the world of integrative trade, a good may be shipped back and forth across borders before the final good is completed; final assembly is not necessarily the stage where the most value is created.

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Historically, Canada has been a heavy exporter of raw materials. Today's reality is somewhat different, and based on our classification method, the share of raw materials in overall exports has declined from 40 per cent in 1990 to 33 per cent today. The share of intermediate goods rose from 20 to 24 per cent, and the share of finished goods increased from 26 to 27 per cent.

Applied to Canadian imports, the same process shows how other countries fit into Canada's supply chain. In 2004, only 14 per cent of imports were raw products, and 70 per cent of our imports were either finished or intermediate goods (35 per cent each). This sizable share of intermediate goods shows that Canadian manufacturers make extensive use of imported machinery, electrical equipment and auto parts to assemble final products in Canadian plants.

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Under NAFTA, both Mexico and Canada appear to have achieved stronger integration with the U.S. economy than with each other. In our exports to the BRIC economies, Canada is moving steadily up the value chain. In nearly all cases, Canadian export shares for intermediate goods rose substantially from 1990 to 2004.

The story for Canadian imports is quite different. Both China and India have increased their role in Canadian supply chains; the share of intermediate goods in their exports to us has grown substantially. However, the growing share of Brazil's sales to Canada is in raw materials.

LOOKING AHEAD

Conference Board research indicates that trade, investment and economic integration are occurring quickly between Canada and the major emerging markets. Nevertheless, Canada's most important future trade and investment relationship will continue to be with the United States. Even if two-way trade and investment with China and other emerging markets grows at an exceptional pace over the next two decades, the share of trade with the United States will remain dominant.

That said, China will be an increasingly important trading partner over the next two decades. Increased East–West trade will put more pressure on Canada's West-coast ports, western railways and other transportation systems, and infrastructure improvements will be needed to handle the ever-rising volumes of traffic.

Moreover, Canada's trade deficit with China is likely to grow. So far, this deficit—a substantial $17 billion in 2004—has not attracted the kind of media attention and demands for trade sanctions that have occurred in the United States. As Canada's trade deficit with China rises, however, pressures to protect jobs in Canada will increase.

POLICY IMPLICATIONS

Canada will need to strike the right geographic balance. It must pursue the growth opportunities offered by the BRICs and other high-potential emerging markets, while nurturing its core trade relationship. It would be foolish and short-sighted not to sustain deeper and more efficient economic linkages between Canada and the United States.

We must pursue the growth opportunities offered by the BRIC nations and other high-potential emerging markets, while nurturing our core trade relationship with the United States.

Recommit to multilateral trade liberalization. The World Trade Organization (WTO) holds the greatest promise for widespread economic gains through enhanced global market access that is supported by legal commitments and rules for adjudicating disputes. Canada must demonstrate its long-standing commitment to multilateral trade liberalization as it participates in the Doha Development Round of trade negotiations. Complex issues, such as trade in agriculture, can be addressed only with the broad-based participation of all key players. But, since real progress is by no means certain in the WTO, Canada must pursue other routes to opening markets, and actively support them.

Implement a comprehensive trade and investment policy agenda. Promoting exports is only one aspect of Canada's trade agenda, which should be enhanced to include all elements of integrative trade.

Use imports to create exports. Imports from emerging markets can reduce our production costs without sacrificing quality and make Canadian businesses more internationally competitive. Import restrictions need rethinking, and we may need to facilitate some imports (for example, through improved access to credit).

Attract foreign direct investment. Last year, we set out a comprehensive agenda to improve Canada's attractiveness as a destination for FDI: increasing post-secondary completion; improving workforce skills; investing in physical infrastructure; reducing various taxes on business; streamlining and easing the burden of regulations; improving the commercialization of innovative technologies; and enhancing international market access. It has become even more urgent to implement the agenda.

Expedite the passage of goods. We must continue to work to develop smarter borders at all frontiers, principally those with the United States. A top priority is to achieve faster, cheaper and more secure customs clearances.

Facilitate outward Canadian investment. Another top priority should be investment protection agreements that improve Canadian investors' access to foreign markets. The failure of multilateral negotiations means we must pursue investment protection bilaterally or regionally, but we should continue to press for broader discussions. We also must strengthen the institutions and policy instruments that can help facilitate FDI in both directions—particularly through Investment Canada and Export Development Canada.

Expand trade in services. Canada should adopt and implement a national strategy in specific services trade sectors, such as business processes and financial services. A cohesive national strategy would allow our country to begin to capture its fair share of the rapidly growing global market.

Recognize sales from Canadian foreign affiliates. In some markets, sales from Canadian foreign affiliates are the preferred way to do business. Small and medium-sized enterprises play a prominent role in the Canadian economy, but they often lack the size and expertise to establish foreign affiliates. They would benefit from trade policy that acknowledges and supports foreign affiliates' sales.

Become a central part of a wider circle of influence. Canada's interests may lie in encouraging an expanded role for the Group of 20 (G20). This should be a long-term priority, even if current geopolitical circumstances do not support the establishment of such a group. At the same time, Canada can use its place at the G7 table to bring forward consequences but unaddressed issues, such as global imbalances.

PURSUING SUSTAINABILITY: GLOBAL COMMODITY TRENDS AND CANADA

Given the expected robust growth of major developing countries, demand for key commodities is likely to increase. This will create economic opportunity for Canada. But as the demand for commodities grows, so will society's expectations for environmental performance. The risk for Canada is that the short-term economic gain could become a long-term economic loss in the form of serious environmental degradation.

BLACK GOLD: OIL AND GAS

Canada's oil and gas sector has a bright future, mainly because of strong demand from the United States and the booming economies of China and India. But high production carries dangers of environmental degradation and rising regional discontent, as some regions in Canada prosper while others suffer.

As the demand for commodities grows, so will society's expectations for environmental performance.

Oil production in countries not belonging to the Organization of Petroleum Exporting Countries (OPEC) will rely increasingly on less accessible sources, such as those offshore, in oil sands or in oil shale. Canadian companies are good at this, having successfully developed exploration, production and management expertise for use in difficult areas. At home, oil sands production will offset the decline in conventional crude oil production and become our major source of oil.

Canada's reserves—mainly in Northern Alberta—are estimated to be second in the world after Saudi Arabia's, but oil sands development poses many challenges. Production consumes a lot of water, leading to concerns about water quality and supply; it is increasingly difficult to attract and retain skilled labour, and community and transportation infrastructure investments are required to service new developments and workers.

Canada has several sources of conventional gas, but it takes years to develop these resources and build the infrastructure to move them to market.

Natural gas, as a clean-burning fossil fuel, will be in high demand. Less certain is the ability to meet that demand. North America's supply of natural gas from conventional sources is in decline. In the short-term, North America must rely on unconventional natural gas resource development. Longer-term, Canada has several sources of conventional gas reserves—including offshore and Arctic sources—but it will take time to develop these resources and build the infrastructure to move them to market.

Oil and gas resource development affects the environment even before it is burned during consumption. Some worry about the environmental and health effects of flaring and venting natural gas by-products during the production process. In Alberta, others are concerned about the industry's increasing use of water.

The industry faces major environmental challenges in reducing emissions of greenhouse gases, but it must do so in the context of a murky future for environmental policies—which remain in flux despite the Kyoto Protocol. While international agreements and domestic policies on climate change are unlikely to affect the Canadian oil and gas industry before 2020, the global policy framework for climate change remains uncertain beyond 2012.

If the world decides to take strong collective action on climate change after 2012, Canada's industry will need to reconsider investment and technology decisions between 2012 and 2020. Some higher-cost oil sands

development or pipeline proposals could become uneconomical, while proposals to accelerate R&D investments on sequestration technologies could become very attractive.

Either way, decisions made in the next 15 years will have a major impact on the next 50. Oil and gas firms may find it wise to reposition themselves as being in the energy business, rather than specifically in oil and gas, as Shell and BP have done. That would give them the strategic flexibility to manage risks and capitalize on opportunities presented by the impending "clean energy" revolution.

High oil prices also have implications for national unity. Policy-makers must avoid repeating past mistakes that would rekindle regional tensions. The most infamous of these is the National Energy Program, introduced in 1980. In the coming decade, we may see widening disparities in regional income growth between net producers of oil and gas and net consumers. The net consumers of energy include Central Canadian provinces, traditionally seen as dominating the federal government, whereas the new producers include the oil-and-gas–rich Prairie and Atlantic provinces that have longstanding grievances over the distribution of political power.

GREEN GOLD: FORESTS

Canada's forest industry faces significant economic, technological and environmental challenges. Investors find current profit levels inadequate, and emerging competitors from other countries offer cheaper labour, newer mills and faster-growing forests. Our old pulp and paper mills need renewal.

Rather than one forest industry, we have several—clustered in Quebec, British Columbia and Ontario. Almost all of Canada's forest land is publicly owned, but the industry manages it on behalf of the provinces, which own the trees and collect harvesting royalties. This ownership and management system is substantially different from those in our competitor countries. This difference has caused trade tensions with the United States, which argues that Canadian practices provide de facto subsidies to the production of timber—a charge that Canada denies. This also makes it difficult for the industry to rationalize operations across provincial borders.

Canada still ranks first in world newsprint production and second in wood pulp and softwood lumber. However, the industry is quickly losing ground in the face of competition from other temperate-zone producers (such as Russia and New Zealand), from tropical countries where trees grow faster (such as Brazil and Indonesia), and from new rivals in China.

Individual mills and forest companies must be big enough to operate efficiently and to compete in the global market. Yet provincial governments discourage mergers by insisting that wood be processed in the province where it is harvested. Governments also often prevent the closing of older, higher-cost mills.

Canada's forest industry spends less on research and development than its competitors, which does not bode well for innovation and future competitiveness. No nation's forest sector is returning its capital costs, but Canada's performance is near the bottom, and Canadian producers will be among the first to close when prices drop. Additionally, Canada's mills are not being renewed due to difficulties in attracting capital. Furthermore, the industry is having trouble attracting and retaining skilled people, many of whom see the industry as a low-tech, cyclical, environmentally irresponsible employer providing work in unappealing mills.

Challenges for our forest industry include inadequate profit levels, competitors with cheaper labour, newer mills and faster-growing forests, and aging pulp and paper mills.

Forest companies are taxed more highly in Canada than in any other OECD country except Germany, and Canadian forest industry regulations increase costs through inefficiency and duplication.

The forest industry has improved both the way it manages forests and its control over manufacturing emissions, but at great expense. Canadian mills have slashed their water consumption, reduced waterborne and airborne pollution discharges, and reduced emissions of particulate, sulphur dioxide and odourous gases. Pulp and paper mills are Canada's largest industrial producer of biomass renewable power and could produce more. The industry has also augmented its recycling efforts.

Forests contribute to the health of the global environment. Growing trees can remove carbon dioxide from the atmosphere through a process called "sequestration." The Kyoto Protocol discusses carbon sequestration in forests, but it is not yet clear how this process applies to Canada. Governments need to clarify this so that any benefits can be realized.

The forest industry needs renewal. Governments must allow interprovincial trade in logs and accept the closure of uncompetitive mills. They must facilitate the growth of productive mills and help them attract skilled people. Such strategies will allow the industry to build a sound domestic base from which it can invest abroad to take advantage of rich offshore timber and rapidly growing markets. Opportunities exist for commodities, for higher value products, for biomass energy and for carbon sequestration, but realizing these opportunities will take creative thinking and action at both industry and government levels.

The forest industry can also capture sequestration credits for those needing "offsets," such as the Canadian oil and gas and power generation industries. As well, forest companies can generate energy from renewable sources for sale to the grid. There is an opportunity to leverage Canada's strength in fossil fuel resources and forest products to maximize our economic opportunities and use domestic sequestration as a contribution to our Kyoto Protocol commitments.

BLUE GOLD: WATER

The issues facing our water resources are in many ways a mirror image of those facing the forest and the oil and gas sectors. Although there is great demand for water, there is neither a commodity boom in the outlook, nor a surplus that can be traded. Moreover, climate change is likely to become a major influence on the availability and distribution of fresh water.

Canada does have an abundance of fresh water, but there is a large difference between having water and being able to use it to satisfy domestic demand. For example, Brazil has the Amazon River, yet is listed as a country with a potential water scarcity.

Overcoming water scarcity will be one of the hottest resource issues in the next 15 years. Typically, nations have "harvested" water with massive dams and irrigation systems, but these have ecological implications. Watersheds—the fundamental unit for protecting freshwater resources—are complex hydrological systems whose intricate relationships are not yet fully understood. Continuous bulk removal of water from watersheds is ecologically damaging and an unsustainable approach to resource development.

Overcoming water scarcity will be one of the hottest resource issues in the next 15 years.

Watershed mismanagement can have global implications because water is part of the finite global hydrologic cycle. It is vital to navigation, recreation, wildlife support and waste assimilation; it sustains the lifestyles of large and small communities alike. Mismanagement of water resources can have an impact well beyond our borders.

Human demand exerts continuing ecological pressure on water resources. This is the context in which we determine how we economically "harvest" our water resources and whether it is ecologically feasible to trade them. A good example is in the United States, which expects a population boom in its arid Southwest. Unfortunately, the main water source for the region—the Colorado River—is already completely allocated to irrigation needs and municipalities.

Canada has about 20 per cent of the Earth's fresh water. But most of our fresh water is underground or locked in glaciers, snow or ice sheets. Furthermore, most of our river water flows north, far from the populated areas where it is needed. Reversing those flows, even if ecologically acceptable, would be enormously expensive.

Three Canadian watersheds—the Fraser, the South Saskatchewan, and the Great Lakes—are prime candidates for water diversions to the United States. But they are already reaching full use. An increase in the stress on these systems through irresponsible removals of water would create irreparable damage.

Canada must pay attention to the potential impact of climate change on these three major watersheds. In British Columbia's interior, more water is already flowing during the spring compared with seasonal flows just a century ago, leaving less water available during the summer for agriculture, recreation and tourism. The glaciers that feed most Prairie rivers are receding. And in the Great Lakes, lower water levels could increase commercial shipping costs, lessen opportunities for recreational boating, and render some marinas inaccessible. The list of potential impacts includes loss of hydroelectric-generating capacity, higher water costs for municipal and industrial water users, and damaged wetland and fishery resources.

The answer to water scarcity is not trade, but better water management.

Canada's fresh water has been at the centre of a long-running debate as to whether it can be treated as a tradable commodity under NAFTA. The federal government has taken steps to prevent the bulk removal of water from major watersheds for either domestic or international use. Canada, Mexico and the United States have agreed that "water in its natural state . . . is not and never has been subject to the terms of any trade agreement." Still, critics fear that Chapter 11 of NAFTA, which was designed to protect the rights of investors by allowing private entities to seek redress for discriminatory treatment on the part of governments, does open a door to bulk water exports to the United States.

The debate may be academic as advances in conservation, improvements in desalinization technology, and the long distance between sources and markets have made bulk water exports a higher-cost option for solving regional water scarcity problems. In addition, maintaining the ecological integrity of Canadian watersheds must be considered when diversions are proposed.

The answer to water scarcity is not trade, but better water management. The stress on our watersheds is greatest where industry and population are growing. Most Canadian watersheds cross provincial and international boundaries; decision-makers for each watershed need strong legislation to prevent bulk water diversions and other removals.

While the world may not beat a path to Canada's door demanding water, we must be prepared for growth in demand arising from both our own and our closest neighbour's needs. Canada must protect its watersheds and remain vigilant about all bulk water diversions, which are a poor substitute for better water management. These efforts should include implementing widespread metering and pricing.

POLICY IMPLICATIONS

Attract and retain skilled workers. The government can help the energy and forestry industries develop skilled workforces by ensuring better access to training programs and by providing incentives to Canadian workers and their employers to improve their employability skills. Governments can also help to attract workers to the geographic areas where they are needed by removing labour market mobility impediments, promoting immigration, and providing good labour market information.

Nurture an attractive investment climate. Governments can help boost investment in resource sectors by changing the capital tax regime; providing clear, efficient and predictable regulations; removing impediments to plant or mill closures; and eliminating the remaining interprovincial trade barriers.

Develop a long-term climate change strategy. To both reduce net greenhouse gas emissions and capture economic opportunities, government needs to clarify sequestration rules to encourage the development of technologies and economic opportunities for the resource sector and use market-based incentives, such as emissions trading, to reach reduction targets at the least cost.

Improve governance and management of watersheds. To protect ecosystems and ensure that Canadians continue to enjoy safe, clean water, governments should ensure the collaboration of water managers with the oil, gas and forest industries on water governance and management; support research on the ecological impacts of climate change and bulk water removals on watersheds; and enhance the use of water metering and pricing.

RETHINKING THE WORKFORCE: AGING POPULATIONS AND CANADA

By 2050, the number of people in the world over age 65 will triple, and this trend will be nowhere more apparent than in Canada. The post-war explosion in fertility rates that created Canada's baby boom was followed by decreasing rates, and there is no sign of a rebound. Our population is growing more slowly, and most of the growth will come from immigration. Relative to our total population, there will be fewer Canadians under 15 years of age and more who are over 65. For every 100 people in the working-age population today, there are 19 aged 65 or over; only two decades from now, there will be 33. In other words, there will be fewer potential workers available to support the retiring baby boomers, a situation that will be exacerbated by the fact that more Canadians are retiring early.

Canada is not the only country in which these trends are evident. What lies ahead for most nations is an elderly, retired world with fewer children. People almost everywhere are living longer. By 2050, those aged 65 and over are projected to account for 25.9 per cent of the developed world's population, compared with 15.3 per cent now. But falling fertility rates also ensure that there will be fewer children, not just in developed nations, but also in countries such as Brazil, Turkey and Iran. The prospect of many more pensioners in relation to the number of workers seriously threatens the viability of pension systems and the well-being of the elderly. It also lowers labour force growth, undermining economic potential.

PUBLIC POLICY OPTIONS

Nations that try to respond to an aging population generally choose from three public policy options: more immigration, family-friendly policies to produce more babies, and policies and practices to increase the labour force participation of the older people. Two of the three do not work now, and they will not work in the future.

More immigrants. Immigrants are, on average, younger than the overall population and come from cultures with higher fertility rates. However, developed countries would need very high numbers of immigrants to prevent population decline and preserve the existing ratio of workers to retired people. At the same time, sources of immigration will dwindle as fertility rates in many developing countries fall below replacement levels. Also, as these countries develop, increased affluence will make emigration less attractive.

More babies. Many European countries are changing their tax systems and employment laws to make it easier for women to have children while pursuing a career. However, any financial incentives the governments can afford seem a mere pittance compared with the cost of raising and educating children in developed societies. Similar policies failed to make a difference in Quebec.

Nations trying to respond to an aging population can choose from three public policy options, two of which don't work.

Later retirement. A more successful and increasingly popular approach to buffer the effects of an aging population involves labour-market programs to increase the supply of and demand for older workers. Several types of measures are central to this approach: reducing incentives for early retirement, encouraging later and more flexible retirement, passing legislation to counter age discrimination, and helping older workers find and keep jobs.

Japan, Sweden, the United Kingdom and Finland offer the best examples of coherent, nationwide strategies to keep older workers in the workforce. Each has developed an integrated framework to remove both demand-side barriers (to motivate organizations to employ older people) and supply-side barriers (to encourage older people to continue to work).

Other developed countries have employed various measures that focus on the demand-side barriers. By 2006, countries belonging to the European Union are required to pass legislation to prohibit age discrimination in the workplace. The United States prohibited age discrimination in the workplace in 1967, and in 1986 it eliminated mandatory retirement, passing laws that significantly improved the employment rates of older Americans. Other laws that affect older workers include those dealing with mandatory retirement, notice period, severance pay, and the definition of unfair dismissal. However, legislation can change attitudes only if

accompanied by policies to educate both employers and older workers about their obligations and their rights. In most countries, there are deeply ingrained biases against older workers, and dispelling them is not easy. In many places, employing older people means higher costs, because an individual's wage often rises with length of service. Many governments have responded with subsidies for employers who hire or retain older workers.

In most countries, there are deeply ingrained biases against older workers, and dispelling them is not easy.

Removing supply-side barriers is more complex. Encouraging older people to work is not easy. Among the barriers are attitudes, financial disincentives, skills issues and workplace conditions.

Improving attitudes. Many of those aged 55 to 64 who are not currently in the workforce are quite content to remain on the sidelines. Although older people might be induced to see work in a more positive light through public opinion campaigns, they are unlikely to look for, or take, a job unless it is financially worthwhile.

Balancing income support and work incentives. Generous pension systems for the elderly in many OECD countries encourage early retirement. Governments can replace these incentives to retire with incentives to stay on the job. Increasing the eligibility age for a full pension is one solution, perhaps with financial incentives for working longer.

Reducing the generosity of unemployment and disability benefits. Many countries have tightened the eligibility requirements and reduced the generosity of unemployment and disability benefits to prevent workers from using these social security programs as a route to early retirement.

Teaching old dogs new tricks. Given the rapid obsolescence of older workers' skills and employers' preference to train and develop younger workers, European governments have overhauled their approaches to adult education and training to enhance older workers' employability.

Improving working conditions to meet the needs of older workers. Older workers sometimes need a less physically and psychologically demanding workplace if they are to work at all. Governments can help employers by offering management guidelines and various forms of incentive-based funding.

Helping older workers find employment. Once out of work, older people typically have a harder time finding a new job than younger people. Governments can help prevent older workers from becoming discouraged by providing active employment services that help minimize the duration of unemployment following job loss.

ORGANIZATION OPTIONS

Companies and other employers have their own work to do. Creative employers have found business opportunities among the challenges of an aging workforce. Five initiatives are common:

1. *Age as part of a diversity program:* As the population ages, organizations will have to modify their products and services to meet the needs of an older customer base.
2. *Attraction, recruitment and retention:* As the pool of talented and experienced workers shrinks, organizations will have to attract older workers if they hope to meet their staffing demands in the future.
3. *Work design and organization:* Job redesign is promoted in Japan and Scandinavia as an effective organizational response to the aging workforce. Firms reorganize the division of labour within work teams so that individuals with less physical capability can contribute to the work process.
4. *Work flexibility:* Older employees experience significant social and psychological shifts as spouses retire, children leave home, and health concerns arise. Progressive organizations establish flexible working arrangements that allow employees, of all ages, to meet personal and familial demands.
5. *Training and professional development:* Continuous learning remains a key ingredient in individuals' development and productivity. Older employees, if they are to be creative and current, need to maintain a reasonable level of learning. Employers, if they are to remain vital and viable, must provide those employees with opportunities to learn.

THE RETIREMENT DECISION—CANADA

Recent studies in Canada have found that the people most likely to retire are those who already have a retired spouse (retirement is a family decision) or are in poor health. However, the most significant determinant in the retirement decision is money. Retirement is more likely among those who have been able to save enough to generate an adequate post-retirement income. Pension plan coverage, interest income, high-prestige occupations and post-secondary education make the task of saving for retirement easier, so people with some or all of those advantages are more likely to retire early. One recent survey found that over one-quarter of retirees contacted would have kept working if they could have cut back their work hours without reducing their pension benefits. Another revealed that the most important thing an organization can do to retain older employees is to recognize and appreciate a job well done.

In Canada, the average retirement age fell from 65 years in 1976 to 61 years in 1998, and then stabilized at between 61 and 62 years from 1998 to 2004. The Conference Board of Canada conducted its own empirical research to determine the relative importance of factors that influence the retirement decision. Our results were conclusive, if not surprising.

Retirement is more likely among those who have been able to save enough to generate an adequate post-retirement income.

First, as per capita net financial assets rose, the average age of retirement fell. The most recent pause in the decline in average retirement age was traced to low interest rates and the bursting of the high-tech stock market bubble. The second factor was poor health. As more days of work were lost to illness or disability among workers 55 and over, the more the average retirement age tended to fall. Third, the popularity of early-retirement incentive programs in the mid-1990s very likely affected the average retirement-age statistics. Fourth, a more generous public pension plan affected the average retirement age. Once workers could get retirement benefits from the Canada Pension Plan (CPP) and Quebec Pension Plan at age 60, the average retirement age dropped.

The CPP's early retirement incentives fall near the midpoint among those of other OECD countries. Canadians can start receiving their CPP retirement pension any time from the age of 60, with the pension benefit adjusted downward for each month the person retires before the age of 65, and upward for every month between 65 and 70. The Chief Actuary of Canada has concluded that the system is too generous for those who begin collecting before age 65, but penalizes those who continue working past 65. More than 40 per cent of Canadians begin taking the CPP retirement pension at age 60.

The impending retirement of so many Canadians is putting private retirement plans under pressure.

Retirement decisions are also affected by the tax system's treatment of private retirement savings. This has become less generous over time, so in this case, the incentives run in the opposite direction. Since their introduction in the early 1980s, the real value of tax-deferred/tax-sheltered retirement savings has eroded. Limits on tax-deductible retirement savings are now very low, whether through a registered retirement savings plan (RRSP) or a registered pension plan (RPP) sponsored by an employer. Many Canadians cannot save enough on a tax-deferred basis to maintain their standard of living in retirement.

But the impending retirement of so many Canadians is putting private retirement plans under pressure, especially defined benefit (DB) plans. Many of the large DB pension plans are extremely generous, often allowing for retirement on full pensions well before the age of 65. Many of those plans are also facing large funding deficits, due to the fall in share prices from March 2000 to October 2002 and to recent low interest rates that reduce investment fund returns. To meet their future pension liabilities, companies will be forced to put up cash to restore solvency levels, which will reduce their ability to pay dividends and to invest. Given the problems associated with DB plans, many employers have moved to defined contribution plans, which shift the bulk of the financial risk onto employees.

Given the time lags involved, Canadian policymakers and organizations must act now. We have, at most, another 10 years before the accelerating aging of the population begins to undermine economic performance and social well-being.

FACING THE RISKS: GLOBAL SECURITY TRENDS AND CANADA

In 2020, the world will be an increasingly interconnected, complex and turbulent place. Globalization will create rapid and expansive shifts in the geopolitical, economic, social, environmental and biological landscape. While change, growth and integration will increase opportunities for wealth and well-being, they will also create new channels for risk and insecurity.

In 2020, the world will be an increasingly interconnected, complex and turbulent place.

Canada's prosperity and strength are linked to our openness and engagement in an increasingly interdependent world. Our growing interconnectedness will bring a healthy flow of capital, trade, people and knowledge; it will also bring conflict, violence and uncertainty. Three major areas of risk will arise from the trends dominating the world in 2020:

1. *Conflict risks* based on violence, including conventional threats (such as wars), and new or non-conventional menaces (such as terrorism);
2. *Social and health risks*, including increased vulnerability to disease and crime; and
3. *Economic and technological risks* and insecurities emanating from globalization and the shift to market-driven decision-making processes, including disruptions to economic and resource infrastructures, greater disparities between the rich and the poor, and weakened global governance.

CONFLICT RISKS

By 2020, the geopolitical landscape will have shifted significantly, creating tensions, ruptures and hot spots that will have an impact on global, as well as Canadian, security. While a major global conflict is not likely, changing demographic, economic and political realities will put pressure on existing structures and relationships.

The rise of Asia will have momentous security implications. A very cold peace will prevail, with skirmishes erupting between the larger powers and their smaller neighbours. Most Asian political systems will probably be in transition, with few consolidated democracies and a whole slew of political hybrids oscillating between authoritarianism and more liberal political arrangements. While the region will be rife with tension, its political institutions will have a limited ability to deal with them.

As China grows more prosperous, its citizens will exert increasing pressure for more political say. One cannot predict whether China will reform its political institutions to align with its market-based economy; however, it will be under considerable pressure to do so.

Asia's rise will also heighten global competition for natural resources—particularly energy. There will be an emphasis on protecting and securing access to vital resources, which will create potential risks for conflict and further raise resource costs.

Higher prices for primary products are not always an unmitigated boon for producing countries, and resource dependence in underdeveloped ones is strongly associated with poor governance, corruption, instability, civil war and state failure. Many weak states will become weaker, while some stronger ones will struggle.

An emphasis on protecting and securing access to vital resources will create potential risks for conflict and further raise resource costs.

Terrorism will continue to be a significant danger as borders and barriers will have become more permeable. The world will show a strong degree of resiliency, but terrorism will fundamentally alter how countries interact with their citizens. Encroachments on privacy, some restrictions on civil liberties, and a higher degree of leeway for security agencies will become important security concerns in liberal democracies.

A significantly larger number of states and non-state organizations will have access to extremely powerful weapons of mass destruction (WMD). While balances of power will limit the use of WMD in traditional conflict situations, the risk of dangerous accidents will increase.

There will be a global governance deficit, which will not be able to offset the security risks stemming from inter-state wars, weak states, terrorism and WMD proliferation. Asia will not be adequately reflected in existing international institutions, and the United States may often take "unilateral action," further weakening the credibility of international law and the opportunities for smaller countries to influence outcomes.

The United States will continue to be the most powerful military force in the world. Insulated from the main areas of inter- and intra-state conflicts, the United States will have opportunities to build provisional alliances, playing countries against each other to limit any unrestrained growth of power. In an increasingly Asia-centred world, this partial referee will hold a disproportionate amount of power.

Canada: Partially Sheltered

Canada will be a "taker," not a "maker," of global security trends. Canada's shelter will not be perfect, but our stability, resources and geographical location will help to insulate us from the more traditional threats to world security that will exist in 2020.

In 15 years, Canada will have less than 2 per cent of the world's GDP, only 1 per cent of the world's military expenditure, and only 0.5 per cent of the world's population. Our role in global dynamics will be marginal; the global governance deficit will further frustrate any desire we might have to exert influence. However, our demographic, economic and military marginality does not have to mean irrelevance or impotence—if we engage in focused efforts with highly competent people and excellent national-level institutional support.

While we will have to adapt to and manage the impact of global trends, we might also profit from certain risks and insecurities. This is especially true for the growing global competition for natural resources. As a massive producer of resources and energy, Canada will benefit immensely from rising prices. Paradoxically, higher global security risks will increase Canada's appeal to investors and lead to potentially greater profits and economic gain. While Canada has the resources and the ability to manage and contain the tensions that flow from resource dependence, the best scenario for Canada and Canadians is a stable world where commodity and energy prices remain high.

Our proximity to the United States will increase the risk of a terrorist assault. In particular, Canada will be vulnerable to attacks meant to disrupt North American or global communication networks, or oil and energy supplies to the United States. But the United States is unlikely to leave itself open to attack through Canada, so it will continue to take a strong interest in the security and defence of Canada's territory—consistent with its own national security interests. Managing our relations with the United States will be a perennial source of concern, especially since the primary market for our resources will remain the United States.

The United States is unlikely to leave itself open to attack through Canada, so it will continue to take a strong interest in the security and defence of Canada's territory—consistent with its own national security interests.

SOCIAL AND HEALTH RISKS

The social implications of current global dynamics and integration will create new sources of insecurity for individuals and nations. The most important trend is the growing disparity between and within countries—a gap that shows no signs of reduction despite the growing wealth produced by globalization. Accelerated growth in Asia will make hundreds of millions of poor people richer and push global poverty statistics downwards. GDP per capita will rise in most countries, and the absolute number of destitute people will fall. However, revenues in almost every country will become more concentrated, with small segments of the population capturing a growing portion of the wealth. State capacity to govern and provide services will also be widely divergent.

In the spaces created both within and between countries, two big security threats are likely to thrive: infectious diseases (including pandemics) and transnational crime (including drug trafficking).

There is a growing consensus that a large-scale, and possibly catastrophic, flu epidemic is imminent. While it will not be the only health crisis threatening world populations, it will be the most menacing. This long-awaited flu virus is expected to be so contagious that any attempt to close off borders and control migration

would be ineffective. The consequences would be devastating, with the estimated number of victims ranging between 180 and 360 million. Aside from the sheer dent in the global workforce, an epidemic of medium proportions would break global production chains, shatter trade and impede the delivery of services involving human contact. A flu pandemic on a large scale would throw the world into a sudden and possibly dramatic global recession.

An epidemic of medium proportions would break global production chains, shatter trade and impede the delivery of services involving human contact.

While the pandemic would spread throughout the world, the impact would be highly skewed. Asian and African countries would be the hardest hit. A pandemic would also feed on and heighten existing inequalities. It would not only kill millions of people, it would have the power to close borders, destabilize economies and topple unstable governments. It would elevate the more traditional security risks and help shape a world where other threats could blossom.

Criminal organizations do not need an epidemiological disaster to enrich their coffers. Current estimates put the value of criminal activities at between US$500 billion and US$1.5 trillion. This value is likely to increase in coming years, riding the many waves of globalization—from the increasingly efficient transportation and communication networks, to the growing inequality and the perpetuation of pockets of extremely poor governance and weak administrative and repressive capability. Drug production and trafficking will remain the most significant illegal activity in the world, with transfer patterns shifting from the traditional South–North towards a South–South and South–East orientation.

Technological progress will further enhance criminal activity by providing efficient transportation and communication networks. Corruption, poverty and weak law enforcement will make it easier for criminal networks to exploit governance holes.

Canada: Victims and Vectors

While Canada can be typified as a "sheltered taker" in the face of traditional threats, we will be poorly protected when we begin to confront non-traditional threats. This is partly because the ground in which these threats will develop lies within our boundaries.

Canada would not escape the imminent pandemic, and unless the level of global preparedness improves, panic will reign. In the worst-case scenario, an H5N1 avian flu epidemic could kill as many as 1.6 million Canadians, based on pro-rating published U.S. estimates. It would paralyze our manufacturing sector; border disruptions would shatter integrated production lines and could last for more than a year. Direct medical costs could surpass hundreds of millions of dollars.

Health crises and criminal activity will worsen existing inequalities in Canada. Concentration of income and regional disparities will increase. The continuing challenges confronting Canada's public health-care system will create profound differences between those who can afford private care and those who cannot. Above all, the gap between the living conditions of Aboriginal people and the rest of the population will still exist and, in many areas, will have widened.

Health and social issues could very well represent the most important human security challenges confronting the Canadian government and society. These challenges will likely pivot around the most marginalized groups and individuals in society—as vectors, but especially as victims. Successful policy interventions will need to address social exclusion itself.

ECONOMIC AND TECHNOLOGICAL RISKS

As the world relies increasingly on market forces to allocate resources within and among national economies, different, and possibly greater, risks to our individual and collective well-being will emerge.

Over the next 15 years, many of the world's economies will keep growing, but growth rates will vary greatly and the market itself will be in flux. Competition will enhance both prosperity *and* vulnerability. Specialization will increase rewards *and* risks of displacement. Technology and integration will allow us to take advantage of global opportunities *and* make us more vulnerable to accidental or intentional interruptions.

Five trends will affect the economic and technological environment of the future: growth, innovation, specialization, liberalization and integration. All five are interdependent and have become collectively embedded in most conceptualizations of globalization. These five trends will feed off each other, with the consequences rippling and interacting at international, national and individual levels.

An integrated, technologically advanced and market-based global economy will create new opportunities. It will also generate risks and insecurities. As we become increasingly dependent on sophisticated logistics to move goods, capital and resources and information, we will be increasingly vulnerable to disruptions in flow and supply. There will be a strong incentive to protect the infrastructure of global supply chains, but competitive pressures to reduce costs may result in a lower degree of redundancy that could leave countries, corporations and individuals less diversified and therefore less protected against risk. It could also potentially weaken governments' ability (or will) to confront, proactively or reactively, the major security risks or crises that arise.

Canada: The Prosperity Disparity

While many of the global economic trends should enhance the overall prosperity of Canada and Canadians, their distributional consequences may well be less benign.

A resource boom will lead to increased incomes and wealth, but they will not be distributed evenly, and the boom may also create economic and political pressures.

As countries continue to grow, specialize and integrate, Canada's primary resources will be in greater demand, particularly in the energy sector. While this resource boom will lead to increased incomes and wealth, they will not be distributed evenly, and the boom may also create economic and political pressures. However, the resource sector accounts for a falling share of Canada's economy, so this may limit the overall negative impact.

Canada may also experience an expansion of the service sector beyond its current two-thirds share of GDP. While Canada will increasingly specialize in the production and export of high value-added, knowledge-based services, Canadians may view this trend with mixed feelings. Even for those Canadians able to take advantage of the opportunities presented by the economic transformation, the emerging labour market will be both dynamic and demanding. Highly skilled workers may face greater short-term uncertainty and vulnerability to market pressures, even if their long-term prospects for rewarding employment remain promising. A growing reliance on technology, as well as the enhanced integration of communications systems, will also present greater challenges and risks to Canadians with lower levels of education and fewer resources.

As Canada's economy becomes more closely tied to our continental and international partners, there will be an increased impetus for infrastructure integration to handle the increased flow of people and products.

Income disparities may become more dramatic and entrenched. How governments tackle poverty and social polarization will influence our susceptibility to risks such as pandemics and criminal activity.

As Canada's economy becomes more closely tied with our continental and international partners, there will be an increased impetus for infrastructure integration. Integration will bring both security costs and benefits.

POLICY IMPLICATIONS

Sheltered within our continent, protected for the most part by our proximity to the United States, Canada will be more secure than most places in the world as we face traditional and emerging security challenges.

Allocate resources strategically. The dominant sources of risk for Canadians will come from the less traditional threats to human security, many of which will stem from events and developments occurring outside our reach. As we allocate resources to manage

risks, we must weigh our choices carefully, creating a balance between costs and results. Investments in prevention, remediation, redundancy and collective security require broad debate and strong political direction.

Enhance social programs that target vulnerable populations. There is some evidence that economic insecurity and poverty in Canada will be concentrated in distinct groups, particularly Aboriginal peoples and recent visible-minority immigrants. The consequences of their vulnerabilities will generate wider social ills that will affect all Canadians. As a result, policies will have to target these vulnerable populations in a sustained and comprehensive manner.

Our limited weight and influence will hinder our ability to control global trends and events.

Become more deeply engaged in select multilateral institutions. As an open, liberal and democratic society, Canada will never be, nor should we want to be, completely protected from global trends and influences. Our geographical location, wealth, education, stability and integration with the largest economic and military power on the planet will provide a degree of shelter and stability. But our limited weight and influence will hinder our ability to control global trends and events. The transnational nature of current risks to human security requires stronger intergovernmental coordination at a time when multilateral institutional arrangements are weak and global governance increasingly constrained. In the end, ongoing resource constraints mean that Canada will need to set priorities and become more deeply engaged in institutions that serve our interests while making a difference internationally.

CONCLUDING THOUGHTS

As we have stated in each of the ten *Performance and Potential* reports, Canada remains one of the best countries in the world in which to live. Our economic, social and environmental performance stacks up well against the world's best. Along with a handful of Nordic countries, and unlike other members of the G7, we consistently rank in the top-dozen performers in all the Conference Board's six benchmarking categories. But although our overall performance is decent, our star does not shine to the degree that it once did. There are three reasons for this.

First, other countries are not standing still. Canada has lost rank on a number of indicators, not because our performance has slipped, but because other countries have improved. Second, Canada's performance in certain categories—notably Health and Society—could be better. Third, our economic performance is slipping, despite the relatively strong economy of recent years. Some structural issues are still very much in evidence, particularly our lacklustre productivity growth.

We have repeatedly pointed out in *Performance and Potential* that sustaining increases in productivity is the key to sustaining a high standard of living. Higher productivity levels will increase the resources available for future investment, for the ongoing provision of public services, and for private consumption.

The world is changing more rapidly than ever before, and Canada must position itself to respond and act. Looking to the future, projected trends will offer both opportunities and challenges.

Higher productivity levels will increase the resources available for future investment, for the ongoing provision of public services, and for private consumption.

Rapid structural changes in the global economy will create new competitors, but they will also create new markets with the potential to enhance Canadian incomes and productivity through increased trade and investment links. Asia's rise will provide a window of opportunity during which high resource prices could ensure ongoing Canadian prosperity—if we act as good stewards of our resource wealth.

The aging of the Canadian workforce will create serious pressures in Canadian labour markets, but if we embrace and adapt to it, we have the potential to make many of our older citizens more productive—enhancing both their incomes and lifestyles.

Finally, the world around us will become a riskier place. Canada will manage to avoid the full impact of traditional security threats, such as war, and is well positioned to thwart terrorism. Still, we will not be immune to the newer risks spawned by increased global interconnectedness—such as the rapid spread of infectious disease or international crime. However, we cannot escape these risks through isolation. Indeed, their existence provides a compelling case for Canada to embrace the world around us and to work in cooperation with other countries to identify and manage these threats to our individual, national and collective security.

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HIGHLIGHTS

- *Canada's relative performance in the world continues to slip. This is as much the result of other countries gaining ground as it is of Canada faltering due to ongoing structural weaknesses and policy drift.*
- *In benchmarking Canada's performance against that of 23 developed countries, Canada is, once again, a top-12 performer in all six categories tracked: Economy, Innovation, Environment, Education and Skills, Health, and Society. However, Canada lost ground in four of these categories: Economy, Innovation, Health and Society.*
- *Our drop to 12th place in Economy is due to low ratings in productivity growth and investment, failure to keep pace in inbound and outbound foreign direct investment, and the fact that other countries are outperforming us, even in areas that have been sources of strength for Canada.*
- *In Society and Health, our public record does not live up to our international brand. Our 11th spot in Society reflects our poor performance on indicators that measure self-sufficiency and equity. The drop from 8th to 10th spot in Health is partly due to our comparatively low ratio of health-care resources to population. Pressures on the health-care system will only intensify as our population ages.*
- *In our 10th year of* Performance and Potential *benchmarking, we find that top issues from 1996 are still prominent, though our understanding of the challenges has deepened. The target is always moving, of course, as other countries move ahead in finding solutions. That said, the decade-long story is one of gradual slippage.*

CHAPTER 1

Crunching the Numbers

Report Card on Canada

How are we doing? The question is deceptively simple, but Canadians are always looking for answers. We want to know if we are doing better or worse than we did last year or a decade ago, and we want to know how we stack up against other countries.

Canada must remain open to the world and its ideas for improvement. That is why this year's *Performance and Potential* continues to benchmark Canada's performance against that of the world's leading countries.

Benchmarking against other nations allows not just simple comparisons, but an insight into lessons that we can learn and use. Depending on the measure, others do some things better and some things worse than Canada. Whether their experience and practices serve as examples or warnings, they offer valuable pointers on policies and practices to emulate or avoid.

We lost ground this year in four categories and gained in only two.

To assess Canada's relative performance, we compare ourselves with the top Organisation for Economic Co-operation and Development (OECD) countries in six broad categories: Economy, Innovation, Environment, Education and Skills, Health, and Society. Our benchmarking is based on 110 separate indicators under these six headings.[1] We begin by assembling and comparing data on 24 countries altogether, but in each category we single out the top 12 as the countries that outshine the rest. (See box, "The Conference Board of Canada's Benchmarking Methodology.") We also highlight issues that we think should attract the attention of Canadians looking to other countries for best practices to emulate.

The list of indicators is little changed from last year, though we have dropped a handful and added a few as we refine our methodology. (See box, "What's New? New Indicators for 2005–06.")

Happily, Canada is once more a top-12 performer in all six categories. As Table 1 shows, we rank 12th in Economy, 5th in Innovation, 8th in Environment, 3rd in Education and Skills, 10th in Health and 11th in Society.

Less happily, we lost ground this year in four categories relative to the comparator nations and gained in only two, Environment and Education and Skills. In 2004, our worst showing was a 10th-place finish in the Society category; the fact that our toehold in the top 12 grew more precarious in the Economy and Society categories this year shows that there is no room for complacency.

The building blocks of the broad rankings in each category are the scores recorded for individual indicators. We can use those 110 measures both to help us identify the areas where we can do better, and to identify the countries whose solutions we might want to adapt to Canada's specific needs.

Table 1
Canada's Socio-economic and Environmental Performance, by Category
(number of gold-, silver- and bronze-level rankings)

Categories	Canada's overall performance level	Gold	Silver	Bronze
Economy	12th	1	7	6
Innovation	5th	5	7	6
Environment	8th	9	5	8
Education and Skills	3rd	7	5	4
Health	10th	5	11	6
Society	11th	2	7	9

Source: The Conference Board of Canada.

The Conference Board of Canada's Benchmarking Methodology

A strong benchmarking analysis requires sound and reliable data on the various indicators that measure a high and sustainable quality of life. Yet assessing Canada's performance on such a wide range of quality-of-life factors is a complex task, and there remain areas in which we still do not have solid data. In some cases, indicators have yet to be developed, so we rely on proxies that substitute for the desired indicator. In other cases, data are not available for all jurisdictions. Despite these challenges, the Conference Board believes its benchmarking analysis continues to be groundbreaking.

The methodology for allocating gold, silver and bronze rankings remains consistent with previous *Performance and Potential* reports.

Countries

We choose to compare Canada to other Organisation for Economic Co-operation and Development (OECD) countries because they are the leading industrialized countries and serve as a worthy peer group. As a starting point, we examine the data of all 30 OECD countries. Based on data availability and reliability, we drop five countries from the analysis (Czech Republic, Hungary, Poland, Slovak Republic and Turkey). We also exclude Luxembourg on the basis of its economic union and integration with Belgium. This leaves 24 OECD countries, including Canada. We then take the top half of this group in each category for further analysis. The top 12, then, vary from one category to another.

Categories

We compare performance in the following categories: Economy, Innovation, Environment, Education and Skills, Health, and Society. These categories reflect the fact that a high and sustainable quality of life depends on having assets in several areas: human assets, human-made assets, natural assets, knowledge assets, and social assets.[1]

Indicators

This year's report examines 110 indicators: 14 in Economy; 18 in Innovation; 22 in Environment; 16 in Education and Skills; 22 in Health; and 18 in Society. In selecting them, we were guided by the following three criteria:

- Is there a general agreement that a movement in the indicator in one direction is better than in the other?
- Are the data available for Canada and for an adequate number of countries?
- Are the data comparable across countries?

There are a few instances where the three criteria cannot be rigorously applied. For example, expenditure levels on education, health care and social services may not be a good thing if the funding is not being used effectively or efficiently (e.g., long wait times, a high number of hospital readmissions). Our analysis assumes implicitly that a higher level of spending is positive. Unfortunately, data at the international level that assess spending effectiveness and efficiency is absent. Efforts are underway to rectify this situation, and we will incorporate these results once they become available. The OECD supplies more than 80 per cent of the data we used. We draw the remaining data from other reliable sources such as the United Nations and the International Institute for Management and Development (IMD), which are involved in compiling data on a regular basis (as opposed to a one-time study).

Ranking

We use the 110 indicators to examine Canada's recent performance relative to the performance of other countries.

First, we exclude countries from the category if data are not available for a minimum of 80 per cent of the indicators in that category. For example, data must exist for at least 18 of the 22 Health indicators for a country to be included.

Because the individual indicators use different units of measurement, we created an index for each of the six categories. Performance in each category is expressed as a value by applying a formula to each of the individual indicators:

Standard score = (actual value – mean) ÷ (standard deviation) + 100

In the case of indicators where a lower score is "better," we calculated the standard score using an inverse of the above formula:

Standard score = (mean – actual value) ÷ (standard deviation) + 100

Calculating the mean of the standard scores for all of the indicators in that category produces the overall category index for each country. We then rank the indices from highest to lowest, and choose the top 12 countries for further analysis within that particular category.

The next stage of analysis entails comparing the performance of the 12 countries and determining whether the country is a gold-, silver- or bronze-level performer on each indicator. To do this, we take the difference in scores between the 1st and 12th performers and split this difference into thirds. A country achieves a gold-level performance if its score on a given indicator is in the top third, a silver-level performance if its score is in the middle third, and a bronze-level performance if its score is in the bottom third. For example, the top performer on labour productivity is Iceland, with 6.6 per cent growth in 2004. The country with the lowest growth rate in labour productivity of the top 12 is Canada, with 1.1 per cent. Using our method, the ranges for gold-level, silver-level and bronze-level performances are:

Gold: 4.78–6.6 per cent Silver: 2.94–4.77 per cent Bronze: 1.1–2.93 per cent

(cont'd on next page)

The Conference Board of Canada's Benchmarking Methodology *(cont'd)*

We use this methodology, rather than a simple ordinal ranking, to ensure that the countries designated as top performers—in our methodology by designating them as gold-level performers—are truly the best. As an example, consider a hypothetical case of ranking productivity performance if Ireland's productivity growth was 8 per cent, U.S. productivity growth was 2.5 per cent, Canada's was 1.0 per cent, and the other nine countries had productivity growth between 1 per cent and 0.5 per cent. Ordinal ranking would designate Canada as being the third-highest productivity performer. It would not convey to the reader a sense of the substantial gap between Ireland's performance and that of Canada. Our methodology takes into account the performance distance between countries—ranking Ireland as a gold-medal performer, the United States as a silver-medal performer and the rest, including Canada, as bronze-medal performers.[2]

The ranking of gold, silver, and bronze reflects the fact that the 12 comparator countries are already the best in the world in that particular category. Even if the country is ranked at the bottom of the top 12 countries, it is still among the top performers. This is analogous to a runner at the Olympics who comes last in a race: that athlete is still one of the top runners in the world. It would be misleading to label that athlete as a "poor" runner.

Category-Wide Ranking

Once we determine the performance levels for the top 12 countries on each indicator, we then assign a weight to identify the overall ranking of the countries for each category. The weighting is as follows: two points for gold, one for silver, and zero for bronze. We recognize that this may be an imperfect process, but we have chosen to do this in order to give the reader a concrete indication of how Canada ranks against its top competitors and where it can improve.

Comparing Results from Year to Year

Year-to-year changes in the category rankings across editions of *Performance and Potential* often reflect data revisions, methodological enhancement, and the adding or dropping of indicators, rather than real changes in country standings. For this reason, caution should be exercised when comparing country rankings over time.

1 World Bank, *World Development Report 2003: Sustainable Development in a Dynamic World* (Washington, D.C.: World Bank, 2002), p. 18.

2 For a comparison of The Conference Board of Canada's approach to benchmarking with other approaches, see *Performance and Potential 2002–03*, p. 18.

What's New? New Indicators for 2005–06

Our methodology and choice of indicators have been under continual development since we first reported Canada's scorecard in 1999. We have made important changes to our list of indicators this year in order to arrive at a more comprehensive and pertinent benchmarking analysis. There are now a total of 110 indicators.

Economy Category

A new indicator this year tracks whether Canada is keeping pace with the sweeping recent changes in global trade and investment. The Foreign Direct Investment (FDI) Performance Index measures the extent to which a country is both an FDI recipient and investor. Another new indicator is the labour force participation rate, of vital importance to countries, such as Canada, experiencing the aging of their workforces.

Innovation Category

Two new indicators replace the Connectedness Index (a measure of the overall ability to use information and communications technology (ICT) to interact and transact with one another). Broadband penetration measures the proportion of a country's population that are broadband subscribers. The second indicator assesses the contribution that the production and use of ICT makes to labour productivity growth.

Environment Category

Last year we completely overhauled the Environment category to align with the OECD's Pressure-State-Response framework. We continue the modification this year by dropping four indicators and adding two new ones. The percentage of country under severe water stress, along with the measure of internal renewable water per capita, have been replaced by an indicator measuring the intensity of use of freshwater resources. Two other indicators—hazardous waste production per unit of gross domestic product (GDP) and the proportion of fish species threatened—were removed. An indicator measuring the sustainability of use of forest resources has been added.

Education and Skills Category

One new indicator was added to this category: post-secondary completion of type A programs. This indicator measures the proportion of the population that has completed a university degree rather than a college diploma. Two indicators that measure student class size in primary and secondary schools were dropped. This is in response to recent studies that conclude that there is no solid evidence to suggest that smaller class sizes boost student achievement.

Health Category

A health status indicator, mortality rate due to HIV/AIDS, was dropped.

Society Category

We have modified and expanded the social cohesion indicators. Because we are using an updated source for crime statistics, the indicators have been slightly modified: "property crimes" has been replaced with "burglaries" and "assaults and threats" has been replaced by "assaults." Two new social cohesion indicators have been added: the first measures social isolation and the second is a measure of subjective well-being.

ECONOMY: CANADA SQUEAKS INTO THE TOP 12

Once again, Canada's economic performance places it in the top 12 ranking—but just barely. From our third-place finish in 2003, we dropped to sixth place last year and 12th place this year. (See Table 2.) While Canada can take pride in remaining one of the most dynamic and wealthy countries in the world, our current economic record of one gold-medal performance, seven silver-medal performances and six bronze-medal performances loses its shine next to the two leading countries. Norway and Ireland each earned six gold-medal rankings.

Three forces are causing us to lose ground:

- We are chronic laggards on several major measures. Productivity is the most important, but investment is also a major weakness.

Table 2
Economy Indicators

Rank	GDP per capita	GDP growth	Productivity growth	Unit labour cost growth	Inflation	Deficit-to-GDP ratio	Employment growth	Standardized unemployment rate	Long-term unemployment rate
1 Norway	G	S	S	G	G	G	B	G	G
2 Ireland	G	G	B	B	S	S	G	G	B
3 Switzerland	G	B	B	G	G	B	B	G	B
3 New Zealand	B	G	B	B	S	S	G	G	G
3 United States	G	G	S	S	B	B	S	S	S
3 Sweden	S	S	S	G	G	S	B	S	S
7 Iceland	S	G	G	S	B	B	B	n.a.	G
8 Korea	B	G	B	S	B	S	S	G	G
8 Netherlands	S	B	S	G	S	B	B	G	B
10 Denmark	S	B	B	B	G	S	B	S	S
10 Finland	S	S	S	S	G	S	B	B	S
12 Canada	S	S	B	B	S	S	S	B	G

Rank	Labour force participation rate	Gross fixed capital formation as a % of GDP	FDI Confidence Index	Openness to Competition Index	FDI Performance Index	Gold	Silver	Bronze	Weighted count
1 Norway	S	B	n.a.	S	B	6	4	3	16
2 Ireland	B	S	n.a.	G	G	6	3	4	15
3 Switzerland	G	S	n.a.	S	S	5	3	5	13
3 New Zealand	S	S	n.a.	S	B	4	5	4	13
3 United States	S	B	G	S	B	3	7	4	13
3 Sweden	S	B	n.a.	S	S	2	9	2	13
7 Iceland	G	B	n.a.	G	B	5	2	5	12
8 Korea	B	G	B	B	B	4	3	7	11
8 Netherlands	S	B	B	S	G	3	5	6	11
10 Denmark	S	B	n.a.	G	S	2	6	5	10
10 Finland	B	B	n.a.	G	B	2	6	5	10
12 Canada	S	B	B	S	B	**1**	**7**	**6**	**9**

Note: G = gold; S = silver; B = bronze.
Source: The Conference Board of Canada.

- Other countries are not standing still. Many are outperforming us, even in areas that have been a source of strength for Canada.
- Canada has failed to keep pace in the growing competition for global trade and investment.

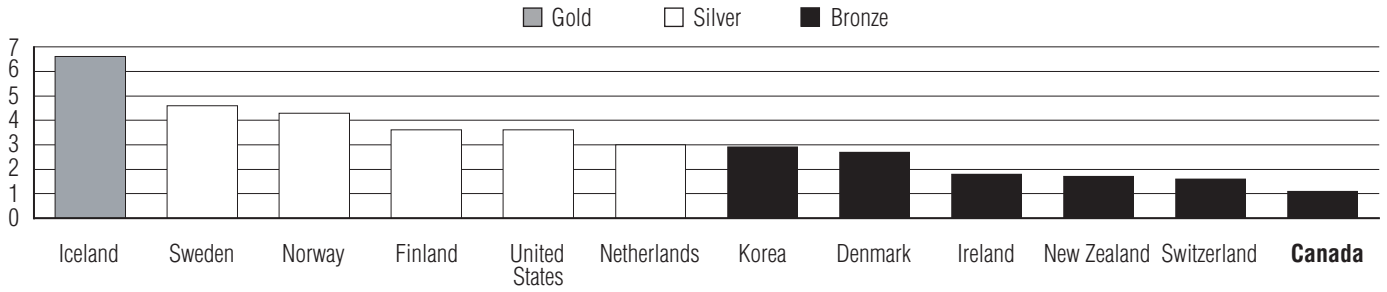
Other countries are not standing still. Many are outperforming us, even in areas that have been a source of strength for Canada.

CANADA LAGS ON PRODUCTIVITY AND INVESTMENT

First, our lagging performance shows up in several key areas, notably productivity, one of the main sources of economic growth. In 2004, business sector labour productivity in the United States grew by 3.6 per cent, more than triple Canada's 1.1 per cent rate—a result that parallels historical averages. Canadians naturally compare this country with the United States—our closest neighbour and most important trading partner. We mislead ourselves with such a narrow focus to the south. It causes us to lose sight of the powerhouse economic performances of countries one might not expect to be in the lead: Iceland, Sweden, Norway and Finland all surpassed the United States in productivity growth. (See Chart 1.) And while Ireland's most recent productivity growth rate is lower than that of the United States, its average performance over the past decade has been far superior.

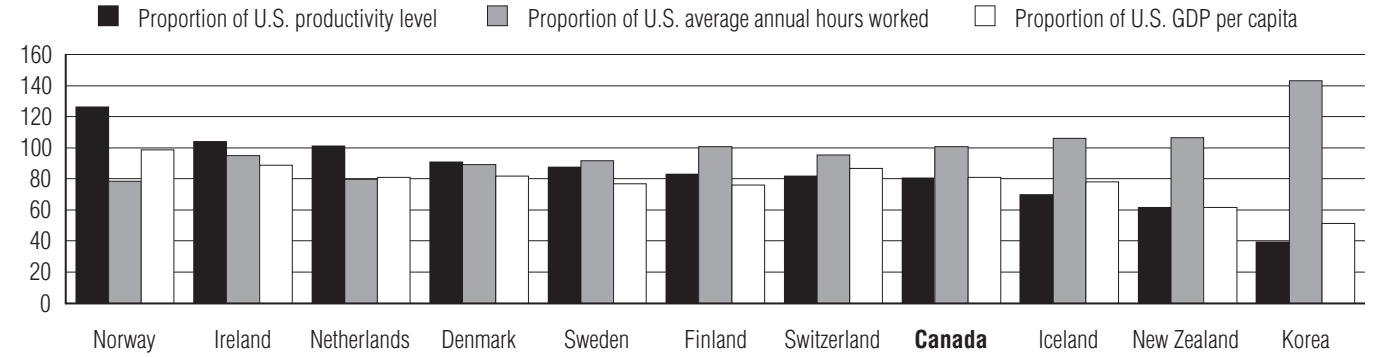
The latest OECD data on labour productivity and hours worked show that Canada's level of GDP per hour worked was 80 per cent of the U.S. level in 2003. (See Chart 2.) Chart 2 also reveals the trade-off that some countries make between their standard of living (defined as GDP per capita) and other quality-of-life factors.

Chart 1
Growth in Labour Productivity, 2004
(per cent)



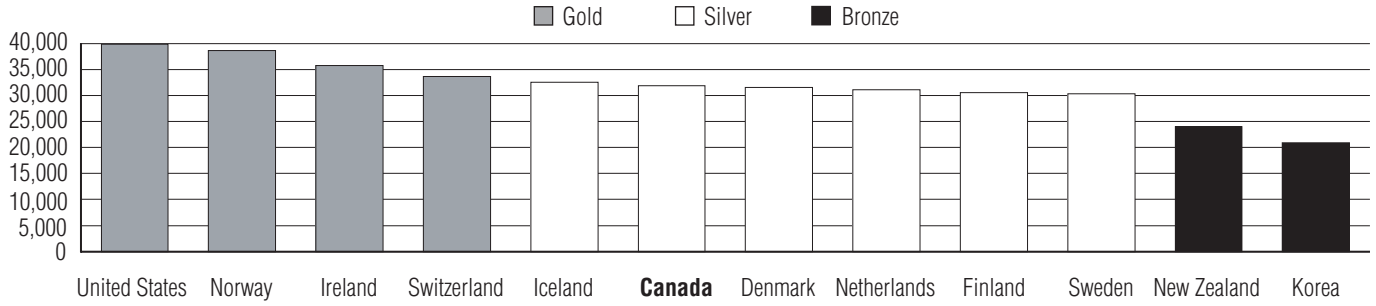
Sources: The Conference Board of Canada; OECD.

Chart 2
Productivity Levels and Hours Worked Relative to Those of the United States, 2003
(per cent)



Source: OECD.

Chart 3
GDP per Capita, 2004
(U.S. $ at purchasing power parity)



Sources: The Conference Board of Canada; OECD.

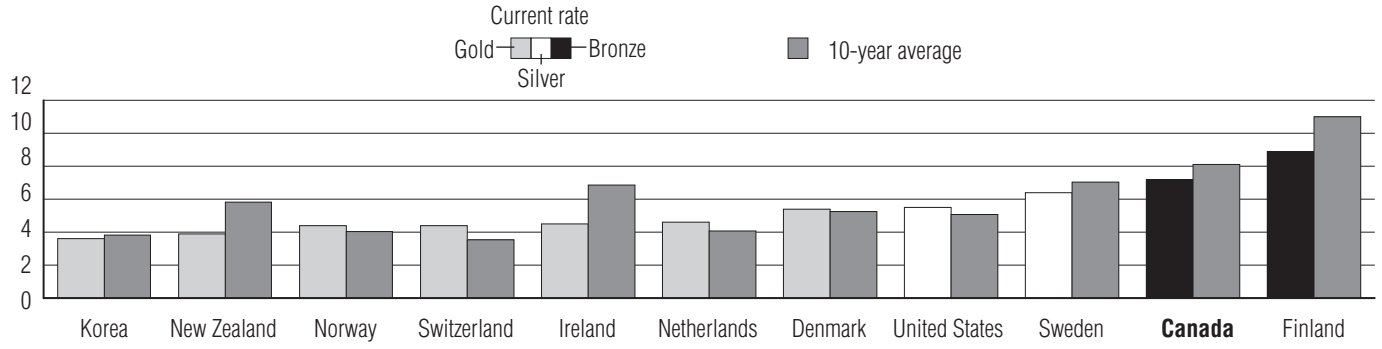
Norway is a striking example. Norwegians are much more productive than Americans, but they choose to work fewer hours, so Norway's standard of living is slightly lower than that of the United States. Ireland and the Netherlands make the same choice, reaping the fruits of their higher productivity in the form of more leisure rather than more income. At the other end of the chart, Korea's labour productivity is only 40 per cent of the U.S. level, but Koreans work 40 per cent more hours on average. These longer hours help to boost Korea's standard of living, but it remains much lower than that of the United States. In the middle, Canadians work comparable hours to their counterparts in the United States, but Canada's productivity is only 80 per cent of the U.S. level, so our income per capita is also only 80 per cent of that of the United States—translating into a gap of US$8,086 per person in 2004. Canada's performance on GDP per capita earned us silver. (See Chart 3.)

One factor noted consistently as contributing to Canada's lower productivity growth is our relatively low capital intensity, defined as the amount of capital stock per worker or hour worked. Countries with high rates of investment in machinery and equipment (M&E) have, on average, higher productivity growth. M&E provides workers with the tools they need to increase output; productivity is then enhanced as the new technology, as well as ideas that are embodied in new M&E, diffuses throughout the economy.

Capital intensity has been lower in Canada for some time—one study estimates that our lower level of capital intensity accounted for about 30 per cent of the differences in productivity between Canada and the United States from 1994 to 2000.[2] No doubt the depreciation of the Canadian dollar during this period was a major cause of the lower rate of capital stock growth in Canada compared with that in the United States; Canadians faced higher prices for investment goods, many of which are imported. With the appreciation of the dollar since 2002, the capital intensity gap between Canada and the United States is expected to narrow as Canadians take advantage of lower prices to buy more M&E. Indeed, real business spending on productivity-enhancing M&E has soared in the past three years. However, in 2003, the latest year for which we have OECD data, Canada's gross fixed capital formation (which includes buildings, houses, and machinery and equipment) represented 20 per cent of GDP, well below that of the leader, Korea, at 30 per cent. Canada earned a bronze on this indicator.

Another sticking point for the Canadian economy is a relatively high unemployment rate. The proportion of our labour force that cannot find work has fallen consistently over the past decade. But even though Canada has enjoyed strong employment growth, our unemployment rate remains higher than those of the top performing countries. This is true for both our current rate (where we earn bronze) and our 10-year average unemployment rate, which is higher than that of 10 other countries. (See Chart 4.)

Chart 4
Standardized Unemployment Rate, Current Rate and 10-Year Average, 1995–2004
(per cent)



Source: OECD.

The paradox of high employment growth and high unemployment can be explained by the increase in Canada's labour force participation rate, driven by our expanding immigrant population. According to Statistics Canada, immigrants who arrived in Canada during the 1990s represented almost 70 per cent of the total growth of the labour force over the decade, and we have not adequately supported their efforts to participate fully in the labour market.

Participation is important because countries that get more of their working-age populations active in the labour market are likely to enjoy a higher standard of living. The aging of the Canadian population and the implications of this trend for the size of the labour force have generated increasing interest in labour force participation indicators.

Clearly, a priority for Canada is to get more people—older workers in particular—participating in the job market.

In this report, we focus on the overall labour force participation rate—defined by the OECD as the proportion of the population aged 15 to 64 who are in the labour force, whether employed or not—rather than on a particular age group of the labour force, such as older workers. (A complete discussion of the impact on the economy of aging can be found in Chapter 4.) Canada's overall participation rate rose in the 1970s and 1980s, dipped in the early and mid-1990s, and then rose again. Canada ranks silver on this indicator, with a participation rate of slightly below 80 per cent. The leader, Switzerland, has a rate of just over 87 per cent. Canada does somewhat worse on the participation of older employees. Had we limited our indicator to those aged over 55, Canada would have earned only a bronze. Clearly, a priority for Canada is to get more people—and older workers in particular—participating in the job market.

OTHER COUNTRIES DOING BETTER

The second factor causing Canada to lose ground on the Economy scorecard is the relatively stronger performance of other countries. For example, we are rightly proud of our record of low inflation and high employment growth. Yet our performance earns us only silvers on these two indicators because other countries are doing better. Canada's 1.8 per cent annual inflation rate in 2004 is higher than that of six other countries. Our employment growth is below that of New Zealand, Ireland and Korea.

CANADA NOT KEEPING PACE IN GLOBAL TRADE AND INVESTMENT

The third factor, and one of increasing consequence, is that Canada is not keeping pace with the sweeping changes in global trade and investment. The growing importance of integrated global supply chains—in which production processes are distributed around the globe in search of higher efficiency and lower costs for each component of the final good—means that Canada must compete vigorously for international trade and investment. (See Chapter 2 for a full discussion of how Canada fits within the new world of "integrative trade.") Three indicators are included in the Economy

category to reflect this changing landscape: the Foreign Direct Investment (FDI) Confidence Index, the FDI Performance Index, and the Openness to Competition Index.

The FDI Confidence Index provides an indication of the FDI attractiveness of a given country. It is based on a survey by the Global Business Policy Council of A.T. Kearney that asked executives of the world's top 1,000 companies for their opinion on risks and opportunities in markets around the globe. The index is a pointer to probable trends in future FDI flows, and the top of this year's list is dominated by emerging markets such as China, Mexico, Poland, India, Russia and Brazil. Of the top 12 performers in our Economy category, the United States leads the pack. Confidence in Canada as a destination for investment was much weaker, earning a bronze-level ranking.

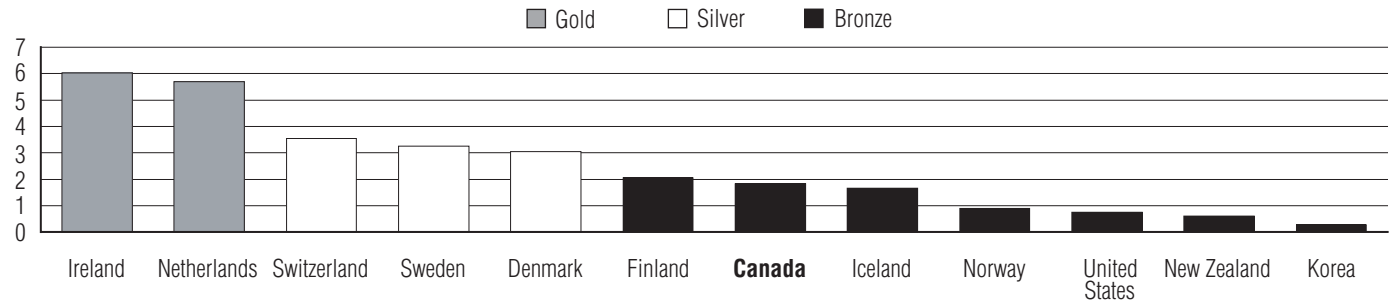
Specific foreign ownership restrictions in various sectors of the economy remain barriers to improving our score on the FDI Performance Index.

A new indicator this year—the FDI Performance Index—measures the extent to which a country is both an FDI recipient and investor. The index is calculated as the ratio of a country's share in global FDI inflows and outflows to its share in global GDP. Given the volatility in FDI flows, we used a three-year average of inflows, outflows and GDP. An index value greater than one indicates that the country is realizing its FDI potential, as measured by its market size. The best performer on the index was Ireland, which continues to attract considerable global investment relative to its size. Although Canada's index was greater than one, we significantly lag behind the top performers, mainly because of lower FDI flowing into our country. (See Chart 5.)

To gauge the extent to which a given country fosters a competitive environment, we used an index comprising 15 factors. The individual factors measure the extent to which executives believe that policies and regulations in a country affect competition. Canada's openness to competition produced a silver medal this year, a drop from our gold-medal performance last year. Although Canada's regulatory environment is generally friendly to business, specific foreign ownership restrictions in various sectors of the economy—such as banking, airlines and telecommunications—remain barriers to improving our score on this index. Furthermore, provincial regulations continue to hinder internal trade and dampen competition. An easing of foreign ownership restrictions and a harmonizing of provincial regulatory trade guidelines would stimulate economic growth, improve the performance of the country's economy by lowering costs, enhance productivity and promote innovation.

Overall, Canada performed well enough on the Economy scorecard to rank in the top 12, but it is at the bottom of the pack of these top countries. To move up in next year's ranking, Canada needs to improve productivity. The three key directions noted in last year's edition of *Performance and Potential* still stand: decision-makers in both the public and private sectors must 1) implement

Chart 5
FDI Performance Index
(per cent; country's share in global FDI inflows and outflows compared to its share in global GDP)



Sources: The Conference Board of Canada; OECD.

policies and practices that support greater openness to competition; 2) improve the level and quality of capital intensity; and 3) support and foster organizational and managerial innovation.

To move up in next year's ranking in the Economy category, Canada needs to improve productivity.

INNOVATION: A POWERFUL TOOL FOR BETTER PERFORMANCE

The development of new products, services or new ways of doing things plays a powerful role in achieving success. Our research reveals that innovation has tangible, positive impacts on the performance of Canadian companies. In our report *Innovation in Corporate Canada*, we demonstrate the extent to which more innovative firms outperform their counterparts in overall business performance.[3]

More innovative firms generate significantly greater growth rates in revenue and profit than do less innovative firms. More innovative firms also outperform their counterparts on other business performance indicators such as improvements in productivity, growth in market share, growth from new products and services, and customer responsiveness.

Meanwhile, innovation systems extend beyond the performance of businesses to encompass many players at the community, provincial and national levels. Furthermore, there is sufficient reason to believe that more innovative countries reap better social and economic benefits as a result of their innovation capabilities.

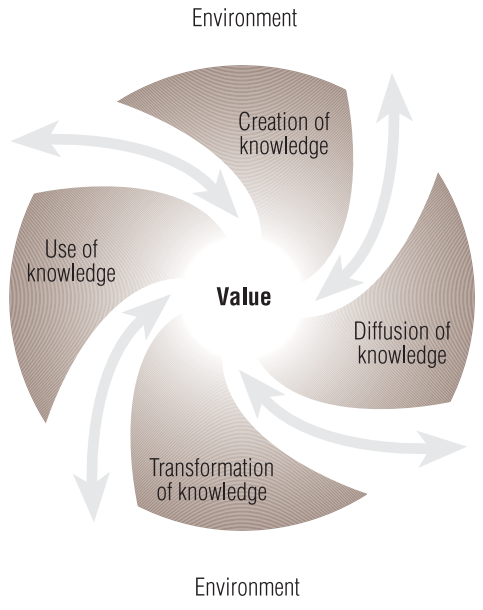
Overall, the country rankings for innovation are similar to those in previous years, with the exception of a few slips and jumps. Finland and Sweden tie for top spot, replacing last year's leader, the United States, which moves to third position. (See Table 3.) Canada slips from fourth to fifth place. The United Kingdom falls off the top-12 chart and is replaced by Japan. Korea makes the largest jump, moving from 11th to sixth place.

THE INNOVATION FRAMEWORK

To assess a nation's innovation level, we use 18 indicators of the four key factors that drive a country's ability to exploit new ideas. These are set out in The Conference Board of Canada's Innovation Framework. (See Exhibit 1.)

- *Creation* refers to generating new knowledge or significantly improving existing knowledge.
- *Diffusion* refers to sharing knowledge.
- *Transformation* is about turning ideas and knowledge into tangible products, services or processes.
- *Use* is the implementation or sale of new or significantly improved products, processes, programs or services, both at home and abroad.
- *Value* refers to the social and economic benefits derived from the commercialization of new and significantly improved products and services.
- The *innovation environment* encompasses all factors that influence innovation in Canada, such as culture, brand recognition, risk tolerance, governance, regulatory environment, taxation, infrastructure, labour skills and global market forces.

Exhibit 1
Innovation Framework



Source: The Conference Board of Canada.

Table 3
Innovation Indicators

	Creation					Diffusion					
Rank	R&D as a % of GDP	Industry-financed GERD* as a % of GDP	BERD** as a % of GDP	Investment in knowledge (R&D, software and higher education) as a % of GDP	ICT expenditures as a % of non-residential gross fixed capital formation	Openness to foreign ideas	Techno-logical cooperation	Researchers per 1,000 labour force	Industry collaboration with governments and universities	Patents in triadic patent families per 1 million population	Percentage of patents with foreign co-investors
1 Finland	G	G	S	G	B	S	G	G	S	G	B
1 Sweden	G	G	G	G	S	S	S	S	B	G	S
3 United States	S	S	S	G	G	B	G	S	n.a.	S	B
4 Iceland	S	B	S	n.a.	n.a.	G	G	S	S	B	G
5 Canada	B	B	B	S	S	G	G	B	S	B	G
6 Korea	S	S	S	S	n.a.	B	B	B	G	B	B
7 Denmark	S	B	S	B	B	S	S	S	B	B	S
7 Netherlands	B	B	B	B	S	G	S	B	G	S	S
7 Switzerland	S	S	S	S	n.a.	B	S	B	n.a.	G	G
10 Japan	S	G	S	B	B	B	S	S	B	G	B
11 Australia	B	B	B	B	B	G	S	B	B	B	S
12 Belgium	B	B	S	B	B	S	B	B	G	B	G

	Diffusion		Use	Innovation Environment							
Rank	Scientific and engineering publications	Contribution of ICT production and use to labour productivity	Degree of entrepreneurship	Investment in venture capital as a % of GDP	R&D tax treatment	Relocation threats of R&D facilities	Broadband penetration	Gold	Silver	Bronze	Weighted count
1 Finland	G	G	S	B	B	S	S	8	6	4	22
1 Sweden	G	S	S	S	B	S	S	6	10	2	22
3 United States	S	G	G	G	S	S	B	6	8	3	20
4 Iceland	S	n.a.	G	G	B	G	S	6	6	3	18
5 Canada	S	B	G	S	G	S	S	**5**	**7**	**6**	**17**
6 Korea	B	G	S	S	G	B	G	4	6	7	14
7 Denmark	G	B	S	B	G	S	S	2	9	7	13
7 Netherlands	S	S	S	S	B	B	S	2	9	7	13
7 Switzerland	G	B	S	B	B	B	S	3	7	6	13
10 Japan	B	S	B	B	G	B	S	3	6	9	12
11 Australia	S	S	G	B	G	S	B	3	5	10	11
12 Belgium	S	B	S	B	B	B	S	2	5	11	9

Note: G = gold; S = silver; B = bronze.
*Gross domestic expenditure on R&D.
**Business enterprise expenditure on R&D.
Source: The Conference Board of Canada.

Relevant and more comprehensive international benchmarks are still under development. Most of the innovation indicators were not being tracked 10 years ago, so the fact that they now exist means real progress is being made in measuring innovation. Nevertheless, the majority of benchmarks measure the creation, diffusion and innovation environment factors of our Innovation Framework. There is currently only one indicator measuring the use of knowledge and no indicators for the transformation of knowledge. Transformation and use are key components of innovation, yet the lack of consistent credible measures for these factors makes it difficult to determine whether we are getting full value for our investments and whether we have improved over time.

This year, we replaced the Connectedness Index—a measure of the overall ability to use information and communications technology (ICT) to interact and transact with one another—with two indicators: broadband penetration (an indicator of the innovation environment) and the contribution that the production and use of ICT makes to labour productivity growth (an indicator of diffusion). Only Korea earns gold on the former indicator, while the United States, Korea and Finland merit gold on the latter. (See Chart 6.)

While the indicators offer a helpful cross-section of factors critical to the innovation process, they cannot fully capture the unique innovation character and culture in each of the selected countries. For example, both Sweden and the United States top the innovation list; yet the former has no research and development (R&D) tax credits and the latter has attractive R&D tax credits.

CANADA'S RANKING

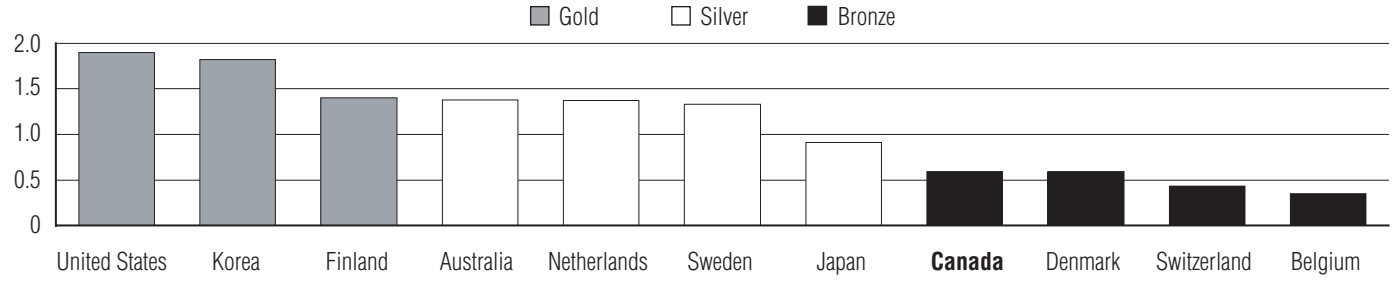
Canada's innovation character unfolds with five gold-medal performances, seven silver and six bronze. Our strengths lie in our collaboration and knowledge-sharing capabilities.[4] We rank gold on three diffusion indicators: openness to foreign ideas, technological cooperation and the percentage of patents with foreign co-inventors. Canada also excels on two other indicators, ranking gold for entrepreneurship and R&D tax treatment.

Real progress is being made in measuring innovation, but the benchmarks continue to focus on the creation and diffusion of knowledge, and on the innovation environment.

This year, we can be proud of some improvements. We moved up to a silver medal on ICT expenditures as a percentage of non-residential gross fixed capital formation and in patents in triadic families per million population.[5] We have maintained our silver rankings on six indicators: investment in knowledge (which includes software, higher education and R&D); industry collaboration with government and universities; scientific and engineering publications; investment in venture capital as a percentage of GDP; relocation threats of R&D; and broadband penetration.

Despite these gains, we still have more work to do. Relative to the innovation leaders, our investment in R&D falls far short, and we are missing opportunities to extract adequate value from innovation-related activities.

Chart 6
Contribution of ICT Production and Use to Labour Productivity Growth, 1996–2002
(contributions to value added per person employed, in percentage points)



Note: Data for Iceland are not available.
Sources: The Conference Board of Canada; Dirk Pilat and Anita Wölfl, *ICT Production and Use: What Role in Aggregate Productivity Growth?* (Paris: OECD, 2004).

THE REASONS FOR SUCCESS

Why do nations differ in their innovation performance? We do not know the whole answer, but research shows that innovation depends both on the innovation environment and on organizational performance. Countries must ensure that they have the right public policies and enabling environment to support innovation. At the corporate level, our research suggests that there are three key determinants of more innovative businesses: leadership and management direction, people with the ability to contribute to innovation, and investments in innovation-related activities.[6] More innovative businesses do better in all three. The rankings of the top performers on indicators such as investment in knowledge and the proportion of researchers in the labour force suggest that having the right type of human capital and investing in innovation-related activities are characteristics shared by more innovative countries.

Two Nordic countries (Sweden and Finland) and the United States, which perennially top the innovation list, earn gold for their investment in knowledge.[7] These countries also perform well on the proportion of researchers in their labour force: Finland earns gold, while Sweden and the United States get silver. (See Chart 7.) Canada is a silver-level performer for its investment in knowledge, and a bronze performer on the proportion of researchers.

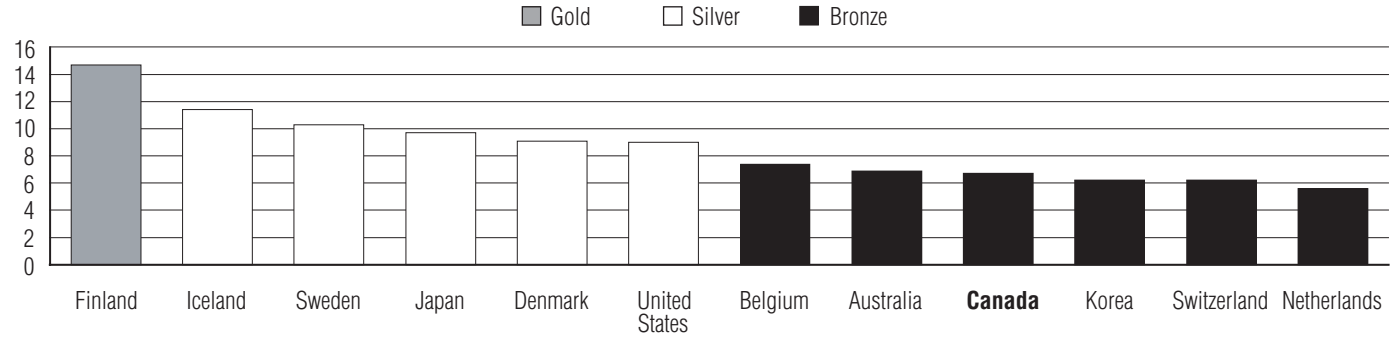
Like more innovative firms, more innovative countries also appear to be better at extracting value from their investments. While it is only one measure, the country rankings for the contribution of ICT to labour productivity growth suggest that Finland, Korea, and the United States—all gold-performers on this indicator—are better at extracting value from their investments in ICT. Canada earns a bronze on this indicator.

Countries must ensure that they have the right public policies and enabling environment to support innovation.

HISTORICAL TRENDS

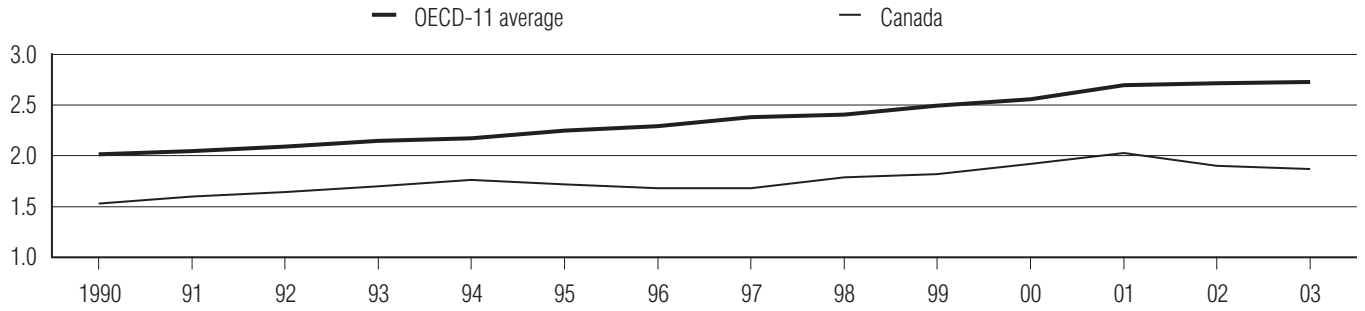
Our understanding of innovation performance and how it has changed over time is limited to indicators such as R&D investments, researchers, publications and patents—these are all inputs to innovation. Data for these indicators date back to the early 1990s. Although Canada's expenditure on R&D as a percentage of GDP moved upward from 1990 until 2001, with a slight decrease between 1995 and 1997, international data from the last 10 years convey that Canada has always ranked among the lower-performing countries in R&D. Chart 8 compares Canada's performance on this indicator with the average of the other 11 top-performing nations in the Innovation category. Since 2001, Canadian expenditure on R&D as a proportion of GDP has been decreasing, albeit slightly. Conspicuously, several Western European countries (Belgium, Denmark, Finland, Iceland and Sweden) have all been steadily increasing their relative R&D expenditures.

Chart 7
Researchers per 1,000 Labour Force
(number of persons)



Sources: The Conference Board of Canada; OECD.

Chart 8
Gross Domestic Expenditure on R&D as a Percentage of GDP
(per cent)



Sources: The Conference Board of Canada; OECD.

While there is more to innovation than R&D spending, R&D is still critical to building knowledge and developing breakthrough ideas. The more other countries invest in R&D, the more challenging it will be for Canada to catch up.

Canada has always ranked among the lower-performing countries in R&D.

NEW THINKING ABOUT INNOVATION

Innovation is still a bit of a mystery. We know it is a vital element of economic growth, but opinions have shifted over time as researchers have tried to identify the key drivers of innovation. Currently, a great deal of emphasis is placed on the transformation and use of knowledge. Some suggest that Canada is weak in this area—that we could do a better job of taking new ideas to market and producing more revenue from new or significantly improved products or services—though, as we noted above, few reliable benchmarks exist to measure the performance of any country.

Much debate has also taken place over the last 10 years regarding the role that government should play in innovation. Many believe that companies drive the commercialization process, so government should play a minimal role. (See box, "An Action Plan for Innovation.") What can government do to help?

An Action Plan for Innovation

The Conference Board of Canada recently established the Leaders' Roundtable on Commercialization—a blue-ribbon panel composed of 49 senior business executives, university presidents and deputy ministers—to make bold decisions and plans regarding commercialization challenges in Canada. The mandate of the Roundtable is this: *to establish a shared commercialization vision for Canada and an action plan that recognizes the unique challenges facing various sectors and regions.*[1]

The Roundtable has a two-year tenure. It will pursue initiatives and actions that can provide more balance among the four key elements that any country must excel at in order to commercialize successfully: people, research, financing and institutions. The Roundtable has already arrived at six quick hits, which are discussed in our report *Six Quick Hits for Canadian Commercialization*. They are: 1) establish collaborative research networks that bring together suppliers, research labs and anchor businesses to improve the level of innovation in supply chains; 2) expand regionally based commercialization internships; 3) endorse and adopt the Innovation and Productivity Tax Credit for small business; 4) establish a pilot program to enhance the effectiveness of the Scientific Research and Experimental Development tax credit by including corporate expenses related to the broader innovation process, not just to R&D; 5) use federal government procurement strategically to foster the development and sale of global-best products and services in Canada; and 6) use the seed capital funds managed by the Business Development Bank of Canada to lever private funds and attract experienced venture capitalists who can provide financing, insight and mentoring to Canadian businesses.

While the quick hits do not yet define an integrated, long-term strategy, they will create momentum and provide opportunities for immediate action while longer-term initiatives get underway. Willing champions are dedicating their efforts to realizing these actions over the next 12 months.

1 Brian Guthrie and Trefor Munn-Venn, *Six Quick Hits for Canadian Commercialization* (Ottawa: The Conference Board of Canada, 2005), p. 1.

It is clear that governments in Canada now appreciate the innovation imperative. Public policy has become much more sophisticated in recent years; more than ever, it takes into account the many players and linkages needed to encourage and promote innovation. Regulatory reform currently in progress will make it easier to bring products to market more quickly, taxes are being reduced, new dollars are being invested in R&D, and cluster development initiatives are under way. Our silver- and gold-performance rankings on all four indicators of the innovation environment mean that we have developed some of the right overarching conditions needed to support and encourage innovation.

MEANS AND ENDS

Businesses have their own commercial reasons to innovate, but for countries, the goal of innovation is improved socio-economic performance and potential. It is a means by which countries can not only strengthen their economies, but also support national priorities such as better health care and a more sustainable environment.

Though some countries regard economic success as an end in itself, others see a strong economy as a means to these other ends. The rankings from the other benchmarking sections of this report suggest that top-performing countries in innovation are also among the top performers on the broader determinants of a high and sustainable quality of life. Sweden, for one, combines first-rate performances on social and environmental indicators with top-12 rankings in both the Economy and Innovation categories.

Top-performing countries in innovation are also among the top performers on the broader determinants of a high and sustainable quality of life.

Some Important Caveats

First, as in all similar exercises, rankings such as these must rely on averages. Localized environmental issues may be a problem, even where national averages are fair to good. Canadian examples include summer air quality in southern Ontario and the B.C. Lower Mainland, water quality at local beaches in populated areas, Toronto's problem with municipal waste disposal, the toxic risk presented by the Sydney tar ponds, and contaminated drinking water in rural areas and smaller towns such as Walkerton, Ontario, and North Battleford, Saskatchewan.

Second, difficult environmental issues are increasingly either global or local in scope. Examples of local Canadian issues may be found in the preceding paragraph. Problems affecting the global "commons" include climate change, biodiversity and fisheries depletion. National environmental policies and regulations still have important roles, but national averages and rankings are not reliable guides to effective solutions.

Third, the results of ranking exercises are highly dependent on the choice of issues, the indicators, and how they are weighted. For example, the 2005 Environmental Sustainability Index ranks Canada sixth on environmental sustainability out of 146 nations.[1] At the other extreme, the Eco-Research Chair at the University of Victoria in 2001 compared Canada's performance on 25 environmental indicators against 29 OECD nations and ranked Canada 28th overall.[2]

1 World Economic Forum, *2005 Environmental Sustainability Index*. <http://www.yale.edu/esi/>.

2 David Richard Boyd, *Canada vs. The OECD: An Environmental Comparison* (Victoria: University of Victoria, 2001).

ENVIRONMENT: GEOGRAPHY AND INDUSTRIAL STRUCTURE AFFECT CANADA'S RANKING

Last year, we introduced a new methodology for benchmarking Canada's environmental performance, which was broadly based on a Pressure-State-Response (P-S-R) model developed by the OECD. This year, we maintain this approach, albeit with a few minor changes.[8] As we explained in our 2004–05 report, this methodology attempts to capture pressures on the environment (from pollution, for example) that have produced the current state of the environment. The potential response from governments, industries and consumers includes actions that will—we hope—reduce the pressures on and improve the state of the environment. As we also noted last year, the population density of a particular country has a significant bearing on many of the indicators under consideration, and one should bear it in mind while interpreting these results.

Any benchmarking exercise must be treated with some caution. Context is vital. The benchmarks should be considered in light of both the source and quality of the indicators used and our ability to use the indicators to inform our policy discussions. (See box, "Some Important Caveats.") Canada's immense geography, cold climate and relatively small population ensure a built-in bias—positive or negative—on many environmental indicators. For example, per capita carbon dioxide emissions are higher in Canada because of heating demands, long distances between population centres, and a relatively large primary resource sector. A bias in favour of Canada's ranking occurs in the indicator measuring the intensity of use of freshwater resources. Canada uses relatively little water compared

with our abundant water resources. Also, both the structure of a country's national economy and its geography influence the indicators for greenhouse gas (GHG) emissions. Canada's resource-intensive economy in a cold climate tends to emit more GHG per unit of production than does an economy that is based on manufacturing products from commodity materials imported from Canada. Bearing in mind these structural realities, policies must be tailored to ensure that these emissions are managed in accordance with international commitments and national economic, environmental and social interests.

WHERE WE STAND

This year, Canada moved up to eighth place from ninth last year in the slightly revised set of indicators. (See Table 4.) The list of top-12 performers remained relatively constant. Nordic countries continue to dominate the top tier of OECD countries for their environmental performance, with Sweden, Finland and Norway taking three of the top four places, just as they did last year. The most substantive change occurred at the bottom, where Portugal and Germany, last year 11th and 12th respectively, fell to 13th and 14th this year. Pushing them out of the top 12 were the Netherlands, which jumped to an eighth place tie with Canada, and Japan, which climbed into 12th spot.

Canada continued to perform well on several key measures, especially water indicators, where we earned three gold medals in the pressure area: the use of nitrogenous fertilizers, the discharge of industrial organic pollutants and the intensity with which we use our freshwater resources. Canada also took gold on two state indicators of water quality: concentrations of phosphorous and suspended solids.

One of those golds, it should be noted, was gained in our new pressure parameter, the intensity of freshwater resource use. Nationwide, Canada uses very little of the vast amount of fresh water that flows through our lakes and rivers. Using this measure, it would be easy to contend that Canada has ample water to satisfy all our agricultural, industrial, municipal and recreational needs, that we are sitting on an immense stockpile of blue gold. Such a simple judgment would be misleading. In Chapter 3 of this year's report, we explore this issue in more detail and arrive at a more subtle conclusion. Canada indeed has plentiful water supplies, but use of those located near major population centres is nearing capacity; the excess water generally flows north and is located far from the farms, industries, municipalities and individuals who need it for economic development and other uses.

Canada has plentiful water supplies, but use of those located near major population centres is nearing capacity.

Canada also managed gold-level placements in threatened birds (an indicator of biodiversity), intensity of use of forest resources, municipal waste generated per capita, and pesticide use, bringing our total to 9 golds out of a possible 22. Sweden, the top country, earned 18. We rate bronze status in eight indicators, the same as last year. This largely reflects the time lags between policy decisions and environmental responses. A policy change made in a particular year will take a period of time to implement, and its effects may not show up in altered economic and social behaviour for several years. It may take even more time for the environment itself to recover, and for that recovery to be reflected in improved state indicators. Before coming to firm conclusions about specific environmental challenges, one must always look past the indicators used here to identify the particular circumstances surrounding each. As much as we should be concerned about our bronze performances, we should also be wary of taking too much comfort from our gold medals.

Canada's only change in the pressure category was a drop to a bronze medal from silver for volatile organic compound (VOC) emissions. (See Chart 9.) VOCs are precursor pollutants that contribute to the formation of ground-level ozone and particulate matter, the main ingredients of the smog that congests Canada's urban centres. Canada dropped rank this year because actual emissions reported in the 2005 Environmental Sustainability Index (ESI) increased markedly to 7.46 kg (from 4.04 kg) of discharge per square kilometre of land area. In addition, Japan and the Netherlands, neither of which was counted last year, entered the top 12 and have lower discharge levels than Canada.

Table 4
Environment Indicators

	State Indicators								Pressure Indicators
	Air Quality			Water Quality		Biodiversity		Climate Change	Air
Rank	Urban sulphur dioxide concentration	Urban nitrogen dioxide concentration	Urban particulate concentration	Freshwater phosphorus concentration	Freshwater suspended solids	Threatened species—mammals	Threatened species—birds	Absolute greenhouse gas emissions	Sulphur dioxide emissions per populated land area
1 Sweden	G	G	G	G	S	S	G	G	G
2 Austria	G	S	S	G	G	S	S	G	G
3 Finland	G	S	B	n.a.	G	G	G	G	G
3 Norway	G	B	S	G	S	G	G	G	G
3 Switzerland	G	S	S	G	B	B	B	G	G
6 Denmark	G	S	B	G	S	S	G	G	S
7 New Zealand	B	G	S	n.a.	S	S	S	G	G
8 Canada	B	S	S	G	G	B	G	B	S
8 Netherlands	S	S	S	S	S	S	S	G	B
10 France	S	B	S	B	S	S	G	B	G
11 Iceland	G	S	S	n.a.	B	n.a.	B	G	G
12 Japan	B	B	S	n.a.	S	B	G	B	G

	Pressure Indicators							
	Air		Water			Biodiversity		Waste
Rank	Nitrogen oxides emissions per populated land area	Volatile organic compounds emissions per populated land area	Nitrogenous fertilizer use	Industrial organic pollutants	Intensity of use of freshwater resources	Major protected areas—% of total area	Intensity of use of forest resources	Municipal waste generated per capita
1 Sweden	G	G	G	G	G	B	B	G
2 Austria	G	G	G	G	G	G	B	S
3 Finland	G	G	G	G	G	B	B	S
3 Norway	G	B	G	S	G	B	G	B
3 Switzerland	S	S	G	S	G	G	G	B
6 Denmark	S	G	G	B	G	B	B	B
7 New Zealand	G	G	B	G	S	G	S	G
8 Canada	S	B	G	G	G	B	G	G
8 Netherlands	B	S	S	G	G	S	S	B
10 France	S	S	G	G	B	B	S	S
11 Iceland	B	G	G	G	G	B	n.a.	B
12 Japan	B	S	G	B	B	S	G	G

(cont'd on next page)

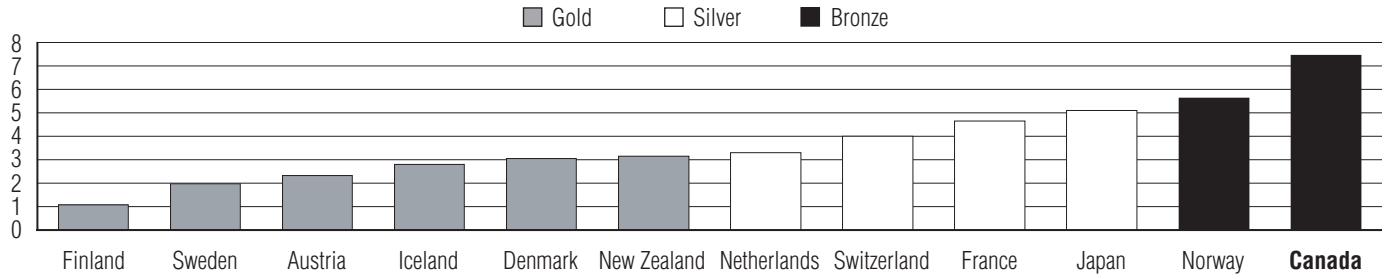
Table 4 ***(cont'd)***
Environment Indicators

	Pressure Indicators			Response Indicators					
	Toxicity	Climate							
Rank	Pesticide use per km^2 of arable land	Carbon dioxide emissions per capita	Carbon dioxide emissions per unit of GDP	Stringency of environmental regulations	Quality of environmental governance	Gold	Silver	Bronze	Weighted count
1 Sweden	G	G	G	G	G	18	2	2	38
2 Austria	G	G	G	S	G	15	6	1	36
3 Finland	G	S	B	G	G	14	3	4	31
3 Norway	G	G	G	S	S	13	5	4	31
3 Switzerland	G	G	G	G	G	13	5	4	31
6 Denmark	G	S	S	G	G	10	7	5	27
7 New Zealand	S	G	S	B	B	9	8	4	26
8 Canada	G	B	B	B	S	**9**	**5**	**8**	**23**
8 Netherlands	S	S	S	G	S	4	15	3	23
10 France	G	G	G	B	B	7	8	7	22
11 Iceland	n.a.	G	G	B	S	9	3	6	21
12 Japan	B	G	S	B	S	6	6	9	18

Note: G = gold; S = silver; B = bronze.
Source: The Conference Board of Canada.

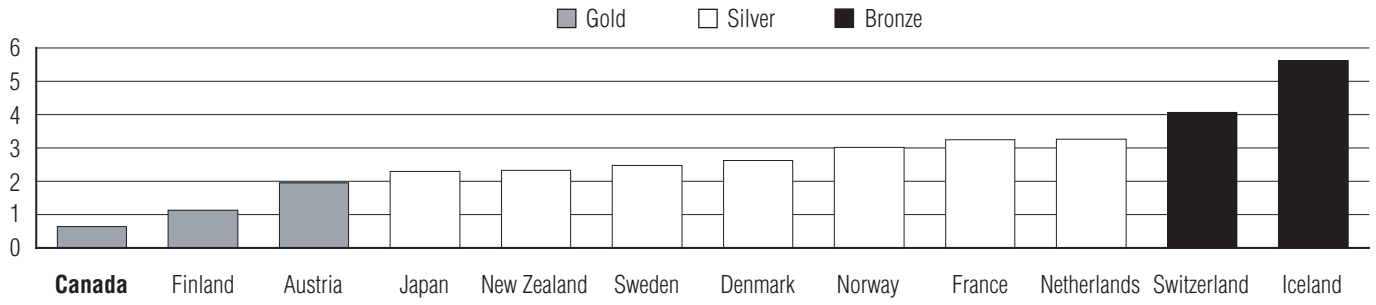
Canada saw an improved showing in one of the state indicators:[9] the amount of suspended solids in our major rivers fell to about one-quarter of its previous value. This not only gave us a gold-level rating (see Chart 10), but also the best performance among all 24 countries in the sample. This huge change was captured in the 2005 update of the 2002 ESI. Because it is not clear what would have caused such a marked change, any euphoria at this improvement should be tempered by the knowledge that the result comes from a limited number of rivers and does not necessarily indicate a major improvement in specific regions of particular water quality concern.

Chart 9
Volatile Organic Compounds Emissions per Populated Area
(kilograms/km^2)



Sources: The Conference Board of Canada; World Economic Forum, *Environmental Sustainability Index*.

Chart 10
Suspended Solids Concentrations in Major Rivers, 1994–2003
(concentration milligrams/litre)



Sources: The Conference Board of Canada; World Economic Forum.

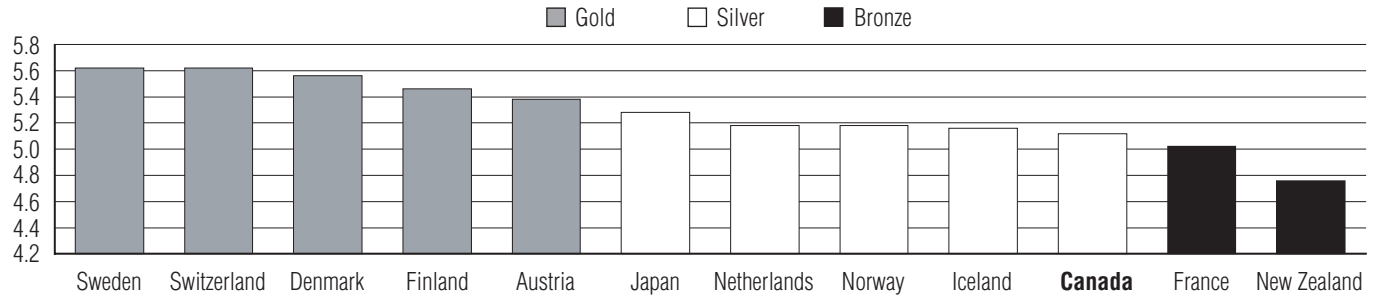
This year, Canada dropped a medal ranking on each of the response indicators. Behind this change was the exit of Portugal from the top level of OECD environmental performers. Portugal has less stringent and lower quality environmental regulations than do most OECD countries, and its inclusion in the top 12 comparator nations changed the scores needed to win gold and silver medals. Even though Canada emerged with the same actual scores as last year, our relative performance suffered by comparison. We fell to silver from gold on the relative quality of environmental governance, and to bronze from silver on the relative stringency of environmental regulations. (See charts 11 and 12.) Expansion of the comparison to all 24 OECD countries placed Canada in the middle of the pack on both measures.

As we have already noted, broad country rankings must be treated with caution. The underlying data are, of necessity, highly aggregated and averaged,[10] a process that smoothes out variations that are inevitable over large land areas. Dozens—even hundreds—of individual measures are transformed mathematically into single indicators of environmental quality, which are then used as international benchmarks. Policy makers and the public should realize, however, that such rankings, while interesting, are not as meaningful as is tracking of specific measurements over time for individual countries.

FOCUS ON WATER AND FORESTS

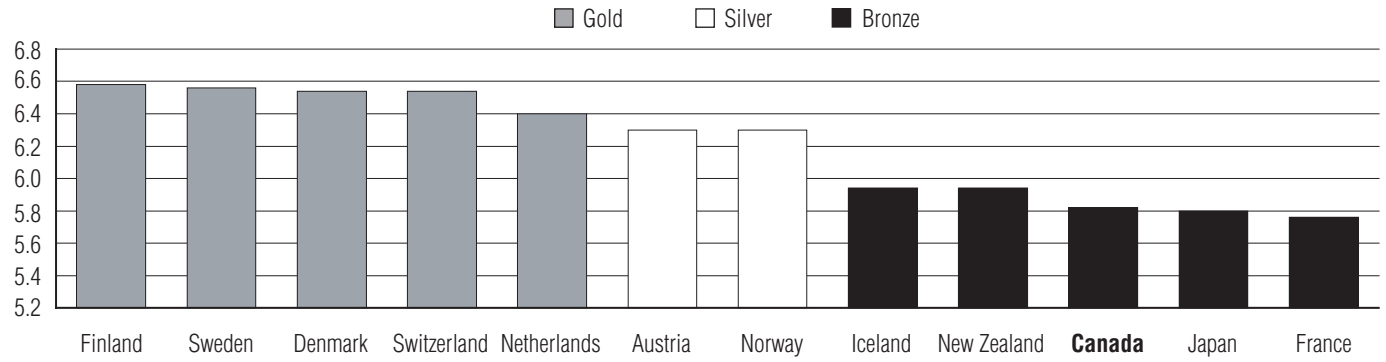
Canada's abundant natural resources have historically been a source of prosperity. Two of those—forests and fresh water—have been the subject of considerable attention in recent years. These renewable resources, which we have dubbed "green gold" and "blue gold," are discussed in greater detail in Chapter 3, but they also deserve attention in this environmental benchmarking section.

Chart 11
Quality of Environmental Governance
(scale of 1 to 7, with 7 being the highest quality)



Sources: The Conference Board of Canada; The World Economic Forum, *Global Competitiveness Report,* 2004–05.

Chart 12
Stringency of Environmental Regulations, 2004
(scale of 1 to 7, with 7 being the most stringent)

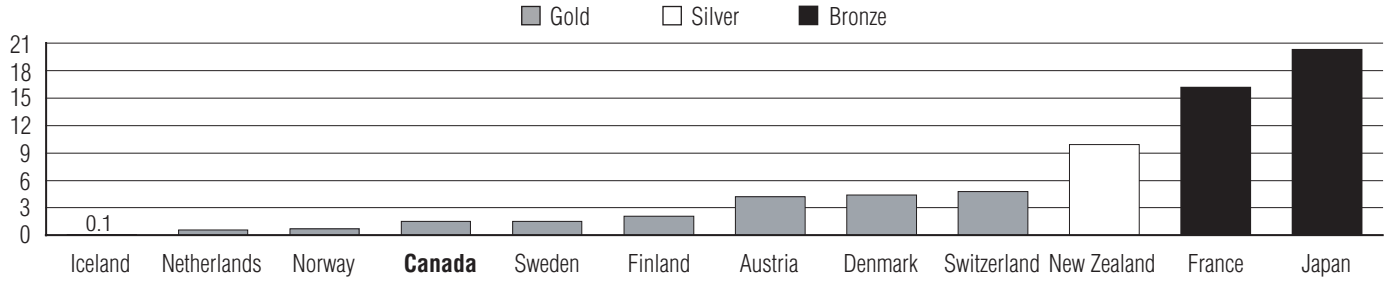


Sources: The Conference Board of Canada; The World Economic Forum, *Global Competitiveness Report*, 2004–05.

A cursory glance at Chart 13 suggests that Canada has plenty of water relative to the amount we use. At the same time, however, the Prairie provinces suffer from drought, southern Ontario is pushing the limits of its available water supply, and rivers in the Rocky Mountains crest earlier in the spring than they did before. Behind this apparent contradiction is the blunt fact that we have already noted: most of Canada's renewable fresh water is not located near centres of economic activity. The significance of these geographic realities has not yet permeated the collective consciousness of the nation, but should: our vast gift of water is not unlimited.

Canada is a major exporter of forest products. Our industry, among the world's largest, needs a sustainable supply of timber to stay in business and keep supporting forest towns across the country. In turn, governments rely on the industry for jobs and tax revenue. Chart 14 shows that as a portion of the total yield of our forests (wood volume added per year), we exploit less of our forest resources than do our competitors in the Nordic countries and the United States. The reason is that we have far greater wilderness areas, which accounts for our image as a country of wide-open spaces. Also, it indicates that with effective management, Canada's forests could continue to sustain industrial use for the benefit of Canadians. In Chapter 3, we examine the forest industry in some detail and conclude that great change is needed to make it economically sustainable. It may be that, in the next 15 to 20 years, forest resource will be used to produce things other than building materials, pulp and paper—such as bioplastics and biofuels.

Chart 13
Intensity of Use of Freshwater Resources
(per cent; use as a share of renewable volume)



Sources: The Conference Board of Canada; OECD.

SHOULD CANADA ACT ON ITS ENVIRONMENTAL BENCHMARKING RESULTS?

This is a complicated question that gives rise to another: Should Canada develop policies that address the indicators specifically or focus on the environmental issues for which the indicators are proxies? Clearly, we should do the latter. This means that we must first set the goals to protect ecosystems and human health at a politically acceptable cost of compliance. This may mean that our ratings on some indicators will not change from year to year. Indeed, our rankings may drop, even though we have adopted policies that are socially and politically acceptable.

Moreover, it must be noted that public policy alone may be able to improve performance on economic, health and social indicators more easily than it can on environmental indicators. Countrywide environmental indicators mask important regional differences, usually rooted in the geographies, population densities and industrial structures of the regions. Consequently, environmental benchmarking on a national basis may have limited value for guiding public policies. For example, the water-quality parameters in OECD reports sometimes use an indicator for as few as two rivers to characterize an entire country's water. But water quality in the Fraser, Mackenzie, South Saskatchewan and St. Lawrence rivers clearly differ. Any two rivers will almost certainly have very different geology and economic development profiles, so water quality similarities or differences may be the result of completely different factors. The same is true for other indicators. It would be folly to base policies to improve national water quality, or other rankings, solely on indicators for one or two rivers, as found in the OECD statistics used in this report. Instead, we need public policies and industrial practices to improve the environment in a way that contributes to Canadian well-being. This, in turn, will lead to better scores on the indicators over time.

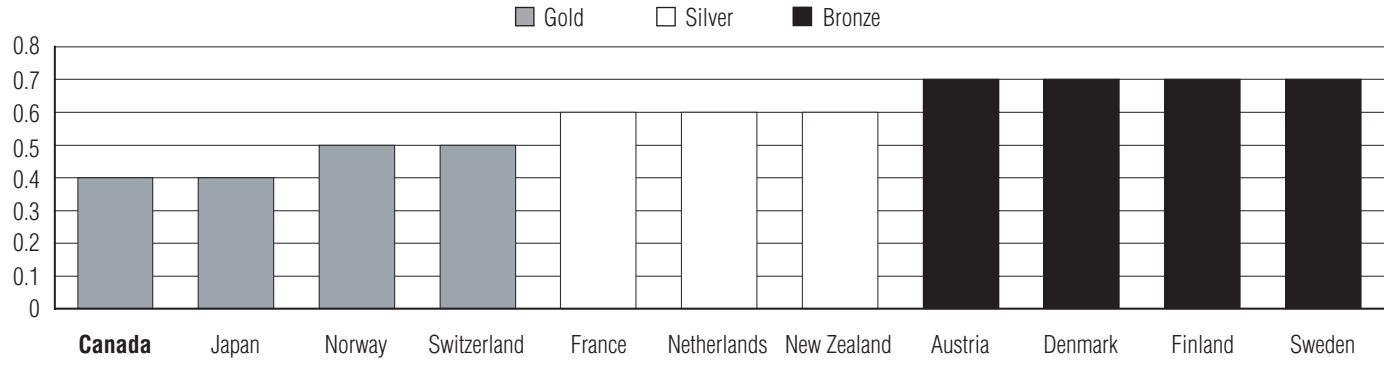
HOW HAS OUR THINKING ABOUT THE ENVIRONMENT CHANGED?

Some issues are not at the forefront of public debate when we discuss them. But any of them can be expected to command the attention of Canadians at some point, even if those issues lie quiet for a while. That alone is reason enough to keep raising issues even when there appears to be little public appetite for such debates.

We need public policies and industrial practices to improve the environment in a way that contributes to Canadian well-being.

The environment is a good example. The past 15 years have seen environmental issues rise and fall in the public's mind, and, in large measure, environmental public policy has followed suit. By the early 1990s, urban smog, acid rain and wildlife protection

Chart 14
Intensity of Forest Resource Use
(per cent; harvest as a share of annual growth)



Note: Data for Iceland are not available.
Sources: The Conference Board of Canada; OECD.

had raised the environment's profile as Canadians came to understand that environmental issues are local, regional and global in scope. The 1992 Rio Summit further galvanized public support of the environment, giving traction to the principle of sustainability.

By the mid-1990s, however, economic conditions had supplanted environmental concerns. Deep spending cuts impaired the ability of environmental departments to develop cohesive policies and to effectively enforce existing environment statutes. Even so, the creation in Canada of an independent Commissioner of the Environment and Sustainable Development, the signing in 1997 of the United Nations Framework for Combating Climate Change, and the revision of the *Canadian Environmental Protection Act* in 1998 marked highlights for environmental public policy in Canada. Businesses also became more active as a growing number committed their companies to the principles of sustainable development and a new level of corporate engagement on environmental matters.

Canada still faces tremendous environmental and sustainability challenges—such as urban development, transportation, cross-boundary water governance, natural resource development and agriculture—but recent events suggest that the environmental public policy pendulum may be swinging back to its earlier heyday. Canada's ratification of the Kyoto Protocol (in face of heavy opposition), its willingness to host the 11th meeting of the Conference of the Parties in late 2005, and the prominence given to the principle of a "sustainable economy" in the 2005 budget show that the environment is increasingly seen as a key ingredient to enhancing Canada's quality of life and improving its global competitiveness. This time, any new wave of public policy interest in environmental protection will be augmented by a business community that has developed substantial expertise in this area and is willing to take an active role in meeting environmental objectives using business principles.

EDUCATION AND SKILLS: NOT YET A CULTURE OF LIFELONG LEARNING IN CANADA

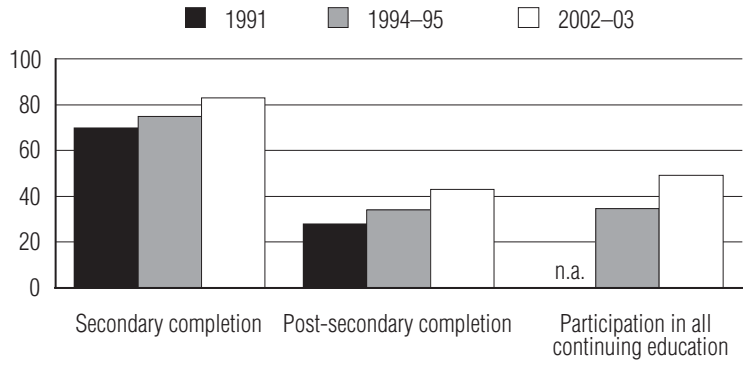
Among OECD countries, Canada traditionally excels in education outcomes that measure secondary and post-secondary completion, but we lag in lifelong learning. A deep culture of lifelong learning has yet to permeate our society, as it does in top-performing countries such as Finland, Denmark and Sweden. Nonetheless, Canada has made steady gains in all three areas over the past decade, as Chart 15 illustrates.

A deep culture of lifelong learning has yet to permeate our society, as it does in the top-performing countries.

Once again, the Nordic countries dominate the Education and Skills category. Finland and Norway are in first and second place, respectively, while Canada and Sweden are tied for third. (See Table 5.) Our strong ranking in this category, with seven gold-level performances, bodes well for Canada's ability to generate and maintain a high quality of life. Improving educational outcomes generally translates into personal benefits (lower rates of unemployment, higher incomes, improved health and reduced probability of next-generation poverty), as well as broader social benefits (greater productivity, increased GDP,[11] higher tax revenues and lower social welfare spending).

The 16 indicators in the Education and Skills category are divided into three types: outcome indicators (11), lifelong learning indicators (3), and resources indicators (2). Outcome indicators assess the "output" of the formal education system, such as secondary and post-secondary completion rates and results on standardized testing of student reading, writing and mathematics skills. Lifelong learning indicators assess the

Chart 15
Canada's Performance on Education Outcomes
(per cent; share of the population aged 25–64)



n.a. = not available.
Source: OECD.

Table 5
Education and Skills Indicators

Rank	Education Outcome Indicators									
	High school completion	Post-secondary completion	Post-secondary completion—university	Student reading—level 1 and below	Student reading—level 5	Student math score	Student science score	Proportion of grads in science/math/computing/engineering	Inadequate document literacy	Inadequate prose literacy
1 Finland	S	S	B	G	G	G	G	G	S	S
2 Norway	G	S	G	B	S	B	B	B	G	G
3 Canada	G	G	S	G	G	G	S	S	S	S
3 Sweden	G	S	B	S	S	S	S	G	G	G
5 Denmark	G	B	S	S	B	S	B	B	G	B
6 U.K.	G	B	S	S	G	G	G	G	B	B
7 Australia	B	S	S	S	G	G	G	S	B	S
7 Netherlands	B	B	S	S	B	G	G	B	S	S
7 New Zealand	S	S	B	S	G	S	S	B	B	B
10 Germany	G	B	B	B	S	B	S	G	S	B
10 Switzerland	G	B	B	S	B	G	S	G	B	B
10 United States	G	G	G	B	S	B	B	B	B	B

Rank	Education Outcome Indicators	Lifelong Learning Indicators			Education Resources Indicators					
	Inadequate quantitative literacy	Participation in all continuing education and training	Participation in job-related continuing education and training	Average hours spent in continuing education and training per participant	Total public expenditures on education as a % of GDP	Ratio of expenditures per pre-primary student relative to GDP per capita	Gold	Weighted Silver	Bronze	count
1 Finland	S	G	G	G	S	B	8	6	2	22
2 Norway	G	S	G	G	G	G	9	3	4	21
3 Canada	B	B	B	G	B	G	**7**	**5**	**4**	**19**
3 Sweden	G	G	n.a.	n.a.	G	B	7	5	2	19
5 Denmark	G	G	G	G	G	S	7	4	5	18
6 U.K.	B	B	G	B	B	G	7	2	7	16
7 Australia	B	B	B	S	B	n.a.	3	6	6	12
7 Netherlands	G	B	B	G	B	B	4	4	8	12
7 New Zealand	B	S	S	G	S	n.a.	2	8	5	12
10 Germany	G	n.a.	n.a.	n.a.	B	S	3	4	6	10
10 Switzerland	S	B	B	B	S	B	3	4	9	10
10 United States	B	B	S	B	B	G	4	2	10	10

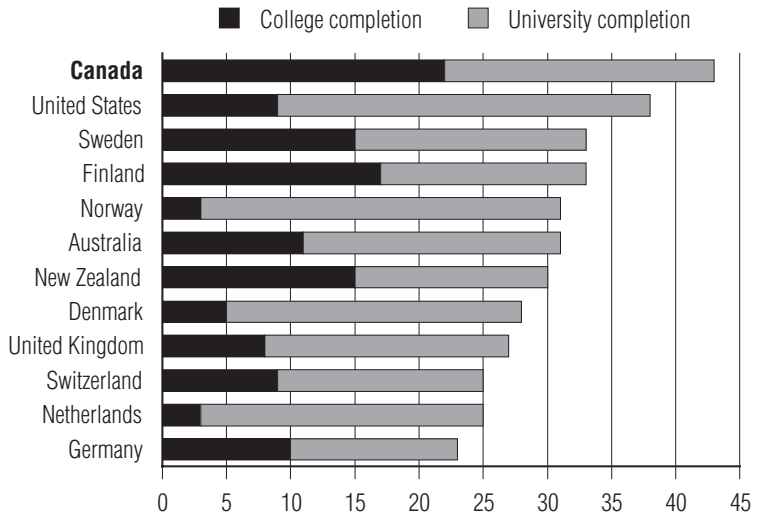
Note: G = gold; S = silver; B = bronze.
Source: The Conference Board of Canada.

participation of adults in further learning and skills development. Resource indicators are "input" measures that assess the level of financial commitment to the formal education system.

CANADA SHINES ON EDUCATION OUTCOMES

Canada earns five of its seven gold medals on outcome indicators. We rank gold for both the high proportion of our population that has completed secondary education and post-secondary education. However, when the post-secondary completion rate is broken down into college diplomas and university degrees, we find that Canada's high completion rate is weighted by more college graduates. (See Chart 16.) We rank gold on overall post-secondary graduates, but only silver on university and other advanced research graduates, raising the question of whether the kind of knowledge gained by Canada's post-secondary graduates makes them competitive with their counterparts in peer countries. In this interconnected global economy, countries with more highly skilled workers will have a competitive advantage.

Chart 16
Post-secondary Completion by Type, 2002
(per cent; share of population aged 25–64)



Source: OECD.

Canadian students excel in reading and math, but our science scores are a source of concern.

Too much emphasis, however, should not be placed on graduation rates. While graduation diplomas are widely used by business and government to screen potential employees, they are only indirect or proxy measures of a person's skills and competencies, and may not reflect their actual skills. For a variety of reasons, the correlation between the quantity of schooling and the quality of skills varies across countries and among schools within each country.

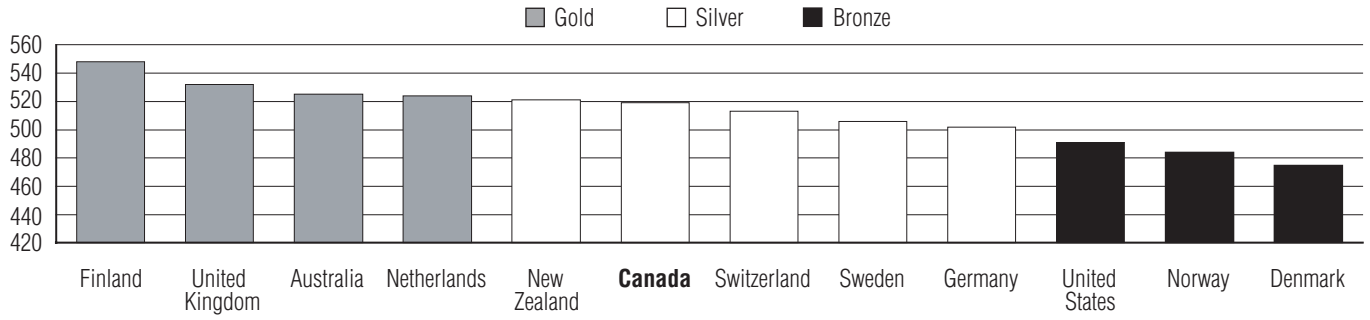
More revealing are indicators that measure the actual skills of a population. Included in this report are seven such indicators—four measuring the reading, math and science skills of 15-year-old students, and three measuring the prose, document and quantitative skills of adults.

According to an OECD international study that assesses the skill level of 15-year-olds, Canadian students are among the best in the world when it comes to mathematics and reading.[12] Canadian students ranked fifth among the 24 OECD countries in standardized mathematics testing and third in reading. We earned gold on both measures. One caveat: while our student scores are high relative to other countries, 36 per cent of Canadian students in math and 28 per cent in reading were not capable of completing tasks above a "basic" level of complexity—a finding not inconsistent with complaints by university officials that incoming students lack basic writing and math skills.

Our science scores are a source of concern—we slipped from gold to silver. (See Chart 17.) Testing focused on students' capacity to use scientific knowledge, identify scientific questions and draw evidence-based conclusions. International student testing has been done only twice—in 2000 and 2003—so the trend may be too short to raise great alarm, but the downgrade is worrisome. It indicates that our flow of new entrants to the labour market may not have the skills that are increasingly important.

Within the adult population, Canada ranks silver on document and prose literacy and bronze on quantitative literacy. A recent update of the literacy study for Canada (2003) found that the proportion of the population at the lowest levels of document and prose literacy skills had not changed significantly in the nine years since the previous major survey was conducted in 1994.[13] Statistics Canada argues that these new results confirm findings from the early study that many adults have

Chart 17
Student Science Literacy Proficiency
(mean score)



Sources: The Conference Board of Canada; OECD.

difficulty coping with the literacy and numeracy demands of modern life and work. Without significant efforts to improve adult skills, we risk being left behind by countries that try harder to raise the literacy skills of their populations and see a return in the form of more productive, adaptive labour forces.

Lifelong learning is an important strategic investment for countries such as Canada with aging workforces and looming labour shortages.

CANADA'S RECORD FALLS SHORT ON LIFELONG LEARNING

The 2003 literacy survey also revealed that lower literacy is more prevalent in older age cohorts, which may be the result of several factors. One explanation is that younger adults benefit from more recent schooling.[14] Whether a person's literacy skills diminish over time depends on whether the person has engaged in lifelong learning activities that support the maintenance of the skills—the "use it or lose it" phenomenon.

Lifelong learning is an important strategic investment for countries such as Canada with aging workforces and looming labour shortages. The changing nature of work—with its growing emphasis on information and communications technology, as well as a shift to a knowledge-based economy—underscores the need to provide people with education and training opportunities throughout their lives.

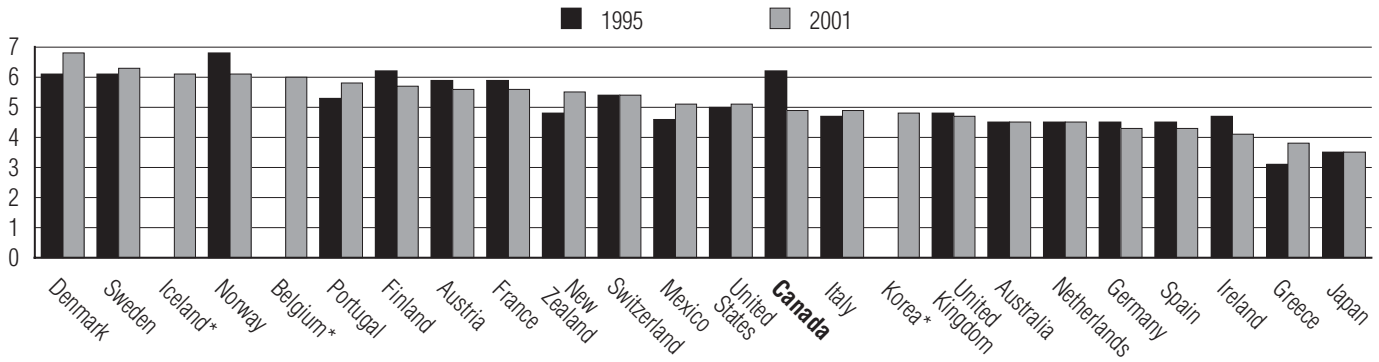
Canada merits one gold- and two bronze-place finishes in the lifelong learning indicators this year. Bronze levels of participation in job- and non-job-related continuing education and training will not be enough to ensure that our aging workforce is globally competitive. We need to enhance the skills of our existing labour force. The last decade has seen increasing government interest in supporting adult learning, which parallels the aging of the labour force.

DECREASING EDUCATION RESOURCES HAS NOT AFFECTED CANADA'S OUTCOMES—YET

Canada has achieved its relatively good performance in education outcomes and lifelong learning despite a gradual decline in public expenditure on education. In 1995, Canada was a leader in public expenditure on education, investing 6.2 per cent of GDP, a sum second only to that spent by Norway. By 2001, Canada's public education spending had fallen to 4.9 per cent of GDP, 14th out of the 24 OECD countries we track. (See Chart 18.) Spending on pre-primary students, however, has improved. Canada now ranks fourth, behind the United Kingdom, United States and Norway.

Despite much discussion in the literature, there is no consensus about the correlation and causality between education expenditures and performance. Although more spending may not necessarily produce better outcomes, the other countries in the overall top five—Norway, Finland, Sweden and Denmark—all invest more in education than Canada. (See box, "Turnaround Through Investment: Denmark.") More work is needed to better understand how further investments might improve outcomes.

Chart 18
Expenditures on Public Education as a Share of GDP, 1995 and 2001
(per cent)



*Data for 1995 are not available.
Source: OECD.

COMMITMENT TO CURRENT WORKFORCE IS NEEDED GOING FORWARD

Today, Canada ranks well in many of the indicators benchmarked in our Education and Skills category. The question remains whether Canada can continue to stay ahead of the significant gains being made by other countries.

Momentum for reforming the public education system has waned in recent years. Government today does not appear to be considering significant new investment at the kindergarten-to–Grade 12 level. More than ever, public education, especially at the elementary and secondary levels, has to fight for the attention of governments in the face of health and other spending priorities.

Based on feedback from business executives in our various networks, interest in public education reform is significantly less today than in the past. Reluctance from teachers' unions—which often view business involvement as a threat to the integrity of the public system—may be reinforcing this waning interest. Where business leaders once saw education as a key issue worthy of focused attention in its own right, they now group it with other important corporate social responsibility issues such as environment, health and community investment.

This view, by government and business alike, is short-sighted. As discussed in Chapter 4, the next two decades will see increasing pressure to ensure that current workers have the skills and incentives to remain in the workforce. This will require a more solid commitment to lifelong learning and continuous skills development. Governments are beginning to explore this issue more seriously and are developing strategies to address it, such as the federal government's Workplace Skills Strategy. Businesses, however, have not yet demonstrated a greater commitment by investing more in training; such spending has remained stagnant. Further progress in lifelong learning is constrained by this lack of commitment.

Turnaround Through Investment: Denmark

Denmark is among the few OECD countries to increase public spending on education recently. In 1995, Denmark committed 6.1 per cent of its GDP to public education. This commitment increased to 6.8 per cent by 2001, making it the top contributor of the 24 OECD countries.

Between 1991 and 2002, Denmark's high-school completion rate increased by nearly 20 percentage points, achieving a gold standing in this year's ranking. Post-secondary completion increased as well, by 10 percentage points, from 18 per cent in 1991 to 28 per cent in 2002.

Currently, Denmark leads the OECD countries in the participation rate of adults in job-related continuing education and training, with 53.7 per cent—an 18 percentage point lead over Canada—and comes in second place for participation in all continuing education and training programs—with a 20 percentage point lead over Canada. For average number of hours spent on adult education and training, Denmark receives a gold standing and ranks third.

Overall, Denmark is doing very well in most categories. It has made significant progress in the areas of educational attainment and continuing education, as well as in document and quantitative literacy. It currently ranks fifth overall in the Education and Skills category, but still lags behind other OECD countries in student reading levels and science scores. Denmark's future progress may help shed further light on the relationship between public expenditure and educational outcomes.

HEALTH: REMEDIES AND REFORMS ARE NEEDED

Canadians seek better practices and innovations in health, partly because our expectations of the system continue to grow and costs are escalating. Our constant drive for remedies that address this underlying tension—a desire to enhance the health of all Canadians while keeping costs in check—is evident in the rapidly evolving initiatives of all governments, which continue to respond with more money and a tighter focus on specific reforms.

More than ever, it is vital to monitor the state of health care, both here and abroad, to track changes as they occur and to highlight possible solutions.

In the past year alone, two major developments—among many—are worth highlighting. In September 2004, First Ministers agreed on a 10-year, $41-billion plan to improve health services. Among their goals were reduced wait times, more health-care professionals and primary care reform.[15] This was followed in January 2005 by the first report from the Health Council of Canada, established by the First Ministers to monitor health issues.[16] It urged improvements in three areas: the health of Canadians, access to health-care services, and the infrastructure to support health-care renewal. More than ever, it is vital to monitor the state of health care, both here and abroad, to track changes as they occur and to highlight possible solutions.

We have assembled 22 indicators to benchmark the state of health, health care and the broad determinants of health. The indicators are divided into six subcategories: **health status**, 10 indicators on the overall health of Canadians; **health-care resources**, with four indicators on the resources being put into the system; **health-care utilization**, where there are only two indicators, on immunization rates, since other comparable data are not yet available; **health-care expenditures**, with two indicators providing a glimpse into health spending; **social protection**, with one indicator measuring the proportion of the country's population with public health-care coverage; and **non-medical determinants of health**, where three indicators provide a picture of lifestyle factors that affect the health status of a country.

CANADA'S RANKING IN HEALTH DROPS

Canada has fallen to 10th place, down from eighth last year, although our overall weighted count remains the same. (See Table 6.) Canada took an additional gold to bring our overall count to six gold, 10 silver and six bronze. For the second consecutive year, the Nordic countries of Iceland, Sweden and Norway took the top three positions. Iceland again turned in an exceptional performance, with gold medals on 13 of the possible 22 benchmarking indicators. Among the factors contributing to its success are a population that is aging slowly, high economic growth, and almost no unemployment. Switzerland tied with Norway for third place. It is worth noting that neither the United States nor the United Kingdom ranked in the top 12 in the Health category.

Compared to last year's performance, Canada moved from silver to gold on the mortality rate due to cancer, from bronze to silver on the proportion of practising nurses, and from gold to silver on the suicide rate. Generally, we are living longer and feeling good about our health. Canadians experience relatively long life expectancies, with women living an average of 82.1 years and men 77.2 years. We ranked ourselves number one among the countries surveyed for perceived health status: 88.2 per cent of Canadians aged 15 and over said they were in good health. This is actually down from five years ago, when a high of 90.4 per cent was reached. Japan had the lowest result for perceived health status, with only 40.6 per cent reporting good health. OECD data show that 30 per cent of the population—a relatively high number—smoke; yet Japan reports one of the lowest death rates and longest life expectancies of any country we examined.

Canada's death rates from malignant neoplasm (cancer) and from heart and circulatory diseases are low compared with those of other countries. However, Iceland had significantly higher rates in its latest reporting year, which may have enhanced our relative performance. Canada once again performed poorly on infant mortality. (See box, "Should We Worry About Canada's Infant Mortality Rate?") Iceland's gold-medal performance of 2.4 deaths per 1,000 live births put it significantly ahead of Canada's 5.4 deaths. The number of injuries due to road accidents in Canada is high. Our rate of 7,027 injuries per million population is more than quadruple Finland's remarkably low record of 1,568 injuries.

Table 6
Health Indicators

	Health Status Indicators										Health-Care Resources		
Rank	**Female life expectancy**	**Male life expectancy**	**Perceived health status**	**Premature mortality (PYLL)***	**Mortality rate due to cancer**	**Mortality rate due to heart and circulatory diseases**	**Infant mortality**	**Suicide**	**Injuries due to road accidents**	**Low birth weight**	**Practising physicians**	**Practising nurses**	**MRI units**
1 Iceland	S	G	G	G	B	S	G	S	S	G	G	G	S
2 Sweden	S	G	G	G	G	B	G	S	G	G	S	S	B
3 Switzerland	S	G	G	S	G	S	S	B	G	S	G	S	B
3 Norway	S	S	G	S	G	B	S	S	G	G	S	S	n.a.
5 Japan	G	G	B	G	G	G	G	B	B	B	B	B	G
5 Spain	G	S	S	S	G	S	S	G	G	S	S	B	B
7 Finland	S	B	S	B	G	B	G	B	G	G	B	S	B
7 Australia	S	G	G	S	G	S	B	S	G	S	B	S	B
7 Italy	S	S	S	S	G	S	S	G	S	S	G	B	B
10 Canada	S	S	G	S	G	S	B	S	B	S	B	S	B
11 Netherlands	B	B	G	S	S	S	B	G	G	S	S	G	B
12 Denmark	B	B	G	B	S	B	B	S	G	S	S	S	B

*Potential years of life lost.

(cont'd on next page)

Table 6 ***(cont'd)***
Health Indicators

	Health-Care Resources	Health-Care Utilization		Health-Care Expenditures		Social Protection	Non-medical Determinants of Health						
Rank	**Radiation therapy equipment**	**Immuni-zation—DTP***	**Immuni-zation—measles**	**Total spending on health care**	**Public spending on health care**	**Share of the population with total health-care coverage**	**Alcohol consumption**	**Tobacco consumption**	**Obesity**	**Gold**	**Silver**	**Bronze**	**Weighted count**
1 Iceland	G	G	S	S	G	G	G	G	S	13	8	1	34
2 Sweden	n.a.	G	S	S	S	G	G	G	S	11	8	2	30
3 Switzerland	S	G	B	G	S	G	B	S	G	9	9	4	27
3 Norway	n.a.	S	B	G	G	G	G	S	G	9	9	2	27
5 Japan	B	G	G	B	B	G	S	B	G	11	1	10	23
5 Spain	B	G	G	B	B	G	B	S	S	7	9	6	23
7 Finland	S	G	G	B	B	G	S	G	S	8	6	8	22
7 Australia	B	S	G	S	B	G	B	G	B	7	8	7	22
7 Italy	B	G	B	B	B	G	S	S	G	6	10	6	22
10 Canada	B	B	G	S	S	G	S	G	S	**5**	**11**	**6**	**21**
11 Netherlands	S	G	G	S	B	B	B	B	S	6	8	8	20
12 Denmark	B	G	G	S	S	G	B	S	S	5	9	8	19

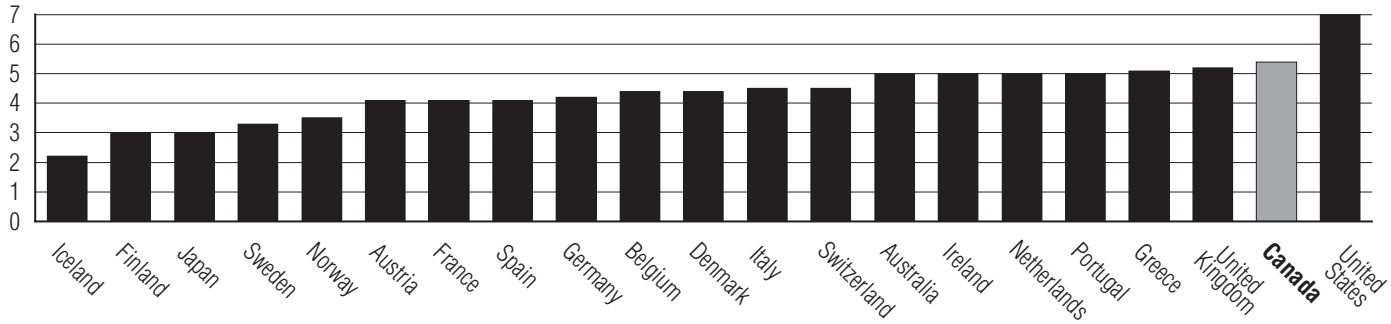
Note: G = gold; S = silver; B = bronze.
*Diphtheria, tetanus, pertussis.
Source: The Conference Board of Canada.

Should We Worry About Canada's Infant Mortality Rate?

In 2002, 1,762 infants died in Canada before their first birthday. This translates into an infant mortality rate—or the number of deaths of infants less than one year of age per 1,000 live births—of 5.4. Infant mortality is recognized by many health experts as a sentinel indicator of child health and the well-being of a society over time, or between populations at a single point in time. In a 2003 article in the *Journal of Epidemiology and Community Health*, professors Daniel Reidpath and Pascale Allotey argue that the causes of infant mortality are "strongly correlated to those structural factors, like economic development, general living conditions, social well-being, and the quality of the environment, that affect the health of entire populations."[1] The most recent United Nations Development Report states: "No indicator captures the divergence in human development opportunity more powerfully than child mortality."[2] And the Canadian Institute for Health Information notes that infant mortality rates are "a long established measure, not only of child health, but also of the well-being of a society."[3]

Between 1960 and 1980, Canada's infant mortality rate fell dramatically. It then tapered off somewhat in the 1980s and 1990s. (See Chart, "Infant Mortality Rate, 2002.") The rate increased slightly in 2002, from 5.2 in 2001, but it is too early to tell whether this rise is a sign of a new trend—in which case we would expect to see the rate continue to increase—or if it is due to "noise" in the data, in which case we can expect to see the rate readjust.

Infant Mortality Rate, 2002
(deaths per 1,000 live births)



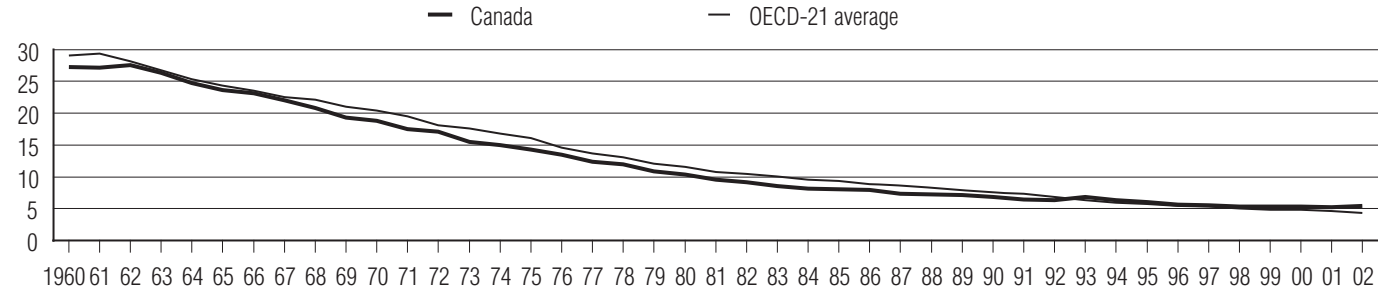
Source: OECD.

How does Canada compare internationally in infant mortality? During the 1980s and early 1990s, Canada recorded lower rates than most other OECD countries—Canada was tied with Switzerland for the fifth-lowest rate among OECD countries in 1990. However, since 1993, Canada's relative performance among OECD countries has dropped. In 2002, Canada ranked 20th out of the 21 countries for which we have data.[4] (See Chart, "Infant Mortality Rates, 1960–2002, Canada and OECD-21 Average.") Six OECD countries now have an infant mortality rate below 4.0, a rate deemed to be exceptionally good.[5] Iceland's rate of infant mortality in 2002 was 2.2; Japan's was 3.0.

Notwithstanding the fact that Canada's rate of infant mortality is lower now than in previous decades, should Canadians be concerned that their country has a relatively higher rate than most other industrialized countries—particularly since this is a leading health indicator? Is Canada falling behind other countries in providing adequate health and social supports for women and families, prior to birth as well as during the first year of a child's life? Are any socio-economic and environmental factors contributing to Canada's performance on this indicator?

Some researchers contend that international differences in infant mortality are due in part to differences in the registration of babies with an extremely low birth weight, and/or countries' classification of stillbirths versus live births. These researchers suggest that comparisons should therefore be interpreted with caution.[6] A European report on perinatal indicators noted that there is a wide variation in how European countries define infant mortality due to differences in birth and death registration

Infant Mortality Rates, 1960–2002, Canada and OECD-21 Average
(deaths per 1,000 live births)



Source: OECD.

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Should We Worry About Canada's Infant Mortality Rate? ***(cont'd)***

practices (that is, differences in the cut-off points for acceptable weight or estimated gestation period to be registered as a birth and subsequent death).[7] This discrepancy can lead to under-reporting of infant deaths by some countries, particularly when compared with countries that use a broader definition for a "live birth." The international discrepancies in data may have existed for some time, but they have been overlooked due to the much higher infant mortality rates. However, now that rates are so much lower, differences in registration might be more important in explaining inter-country differences in infant mortality.[8]

Others suggest that Canada's ability to reduce infant mortality is inhibited by factors that are resulting in the successful delivery of more preterm babies and babies with very low birth weight. These babies face higher risk of death. Statistics Canada reports that the increase in the infant mortality rate in 2002 was entirely due to the deaths of infants less than one day old.[9] The factors underlying an increase in the number of low–birth weight babies could include socio-economic and environmental determinants of maternal and child health, as well as health-system factors such as the use of new technologies in high-risk deliveries. In addition, the advent of new fertility programs means that more multiple births (three or more babies) are occurring. These babies are usually born preterm, with a high risk of early death. The greater number of low–birth weight and preterm babies, coupled with the discrepancies among countries in defining "live births," could be contributing to Canada's relatively higher rate of infant mortality.

These medical and methodological factors undoubtedly play a role in Canada's infant mortality rate. But how much of a role? The fact that Canada does not seem able to break below the rate of 5, while 13 other OECD countries already have, suggests that further attention must be paid to better understanding international differences in infant mortality rates—whether they are due to methodological or socio-economic factors, or a combination of these.

1 Daniel Reidpath and Pascale Allotey, "Infant Mortality Rate as an Indicator of Population Health," *Journal of Epidemiology and Community Health* 57 (2003), pp. 244–246. <http://jech.bmjjournals.com/cgi/content/abstract/57/5/344>, pp. 245–246.

2 United Nations, *Human Development Report 2005* (New York: UNDP, 2005), p. 4.

3 Canadian Institute for Health Information website <http://secure.cihi.ca/indicators/2005/en/defin05_1_e.shtml#>.

4 Mexico's infant mortality rate of 20.1 is far outside the range for developed countries and has been excluded from the comparison.

5 Statistics Canada, *Comparable Health Indicators—38-HLT: Infant Mortality*. <www.statcan.ca/english/freepub/82-401-XIE/2002000/considerations/hlt/38hlt.htm>.

6 See, for example, M.S. Kramer et al., "Registration Artifacts in International Comparisons of Infant Mortality," *Paediatric and Perinatal Epidemiology* 16,1 (January 22, 2002), pp. 16–22.

7 Jennifer Zeitlin and Katherine Wildman, *Indicators for Monitoring and Evaluating Perinatal Health in Europe*, European Union Health Monitoring Programme, 2000; W.C. Graafmans et al., "Comparability of Published Perinatal Mortality Rates in Western Europe: The Quantitative Impact of Differences in Gestational Age and Birthweight Criteria," *BMOJ: An International Journal of Obstetrics and Gynaecology* 108 (2001), pp. 1237–45.

8 M.S. Kramer et al., "Registration Artifacts in International Comparisons of Infant Mortality," *Paediatric and Perinatal Epidemiology*, p. 21.

9 Statistics Canada, *The Daily*, September 27, 2004.

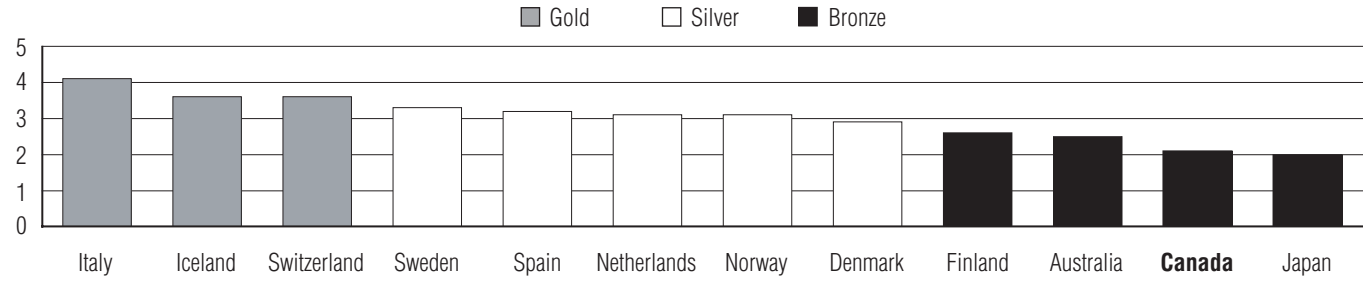
SHORTAGES OF HEALTH PROFESSIONALS CONTINUE

Similar to previous years, Canada is a bronze-level performer in three of the four indicators of health-care resources, not surprising given our ongoing shortages of nurses, physicians and other health professionals. Our rate of 2.1 physicians per 1,000 population pales in comparison to the ratio for Italy, the leader in this indicator, with 4.1 physicians. (See Chart 19.) Longer post-graduate training for physicians accounts for about one-quarter of the decrease in Canada's supply of physicians between 1994 and 2000. Coupled with reductions in the number of funded spots available in medical schools and increases in retirement, the supply problem is exacerbated.[17]

When it comes to practising nurses, the comparison of Canada and Italy is the inverse. Italy took a bronze, with 5.4 nurses per 1,000 population, while Canada's 9.8 nurses was worth a silver, though still well below the gold-medal showings of Iceland (13.7) and the Netherlands (12.8). Canada can expect to lose 13 per cent of its 2001 nursing supply by 2006, assuming a retirement age of 65.[18] A persistent challenge for Canada will be to ensure that we have the right mix of health professionals, especially because younger professionals want a better work-life balance and older ones are reaching retirement age. Teamwork and interdisciplinary collaboration have become the focus for many national and provincial initiatives to address these shortages. By the end of 2005, federal, provincial and territorial governments will have set targets to increase and better monitor the supply of health professionals. A nationwide planning framework is being developed for health workforce issues.

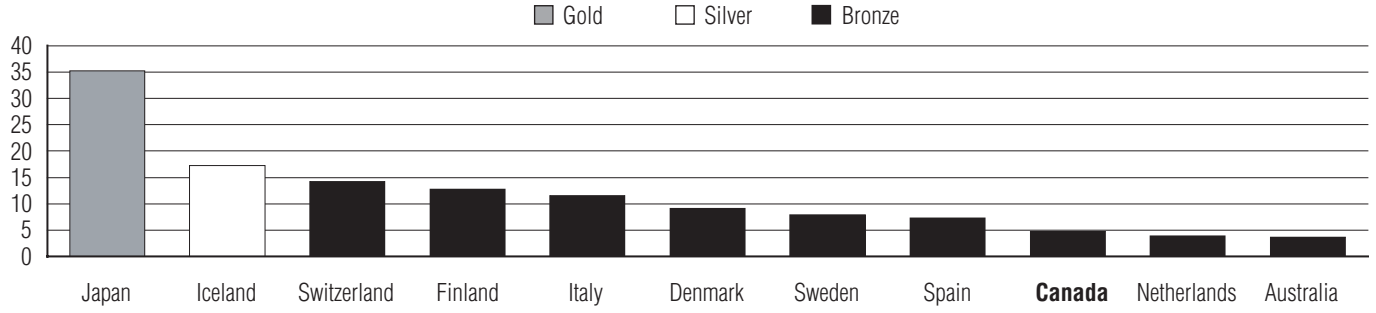
The number of magnetic resonance imaging (MRI) units in Canada almost doubled to 4.7 units per million population in 2004 from 2.5 in 2000. Japan reports 35.3 MRI units per million population, a rate that puts it significantly ahead of developed countries. (See Chart 20.) In Canada, the federal government has provided $1.5 billion over five years for diagnostic

Chart 19
Number of Practising Physicians, 2003*
(per 1,000 population)



*Or most recent year of available data.
Sources: The Conference Board of Canada; OECD.

Chart 20
MRI Units Available, 2003*
(per 1 million population)



*Or most recent year of available data.
Sources: The Conference Board of Canada; OECD.

and medical equipment to improve access to publicly funded diagnostic services.[19] As well, First Ministers agreed to a national wait time strategy to reduce wait times over five years in five areas: cancer, heart, diagnostic imaging, joint replacement and sight restoration.

Canada can expect to lose 13 per cent of its 2001 nursing supply by 2006.

The Chaoulli case ruling provides an additional impetus to address wait times. In June 2005, the Supreme Court of Canada ruled that the Quebec government could not prevent people from buying private insurance and/or paying for procedures covered under the *Canada Health Act*, especially when waiting lists are deemed too long. The ruling (which the Court has since suspended for one year) appears to open the door to a two-tiered health system, and it points to the need for appropriate and reasonable wait times. Alberta continues to test the waters of a two-tiered system with its Third Way, which is intended to provide more choice in health care while maintaining the public system. Alberta's approach provides for enhanced or optional health services for those who both want it and can afford it.[20]

Canada remains a mid-level performer in measures of health-care spending, though total expenditures continue to escalate. Last year, Canada spent about $130 billion—roughly 10 per cent of gross domestic product—on health care.[21] Health costs are also rising relative to population in all countries. The United States is by far the biggest spender of the 24 countries we

studied, with outlays of US$5,635 per person—almost 50 per cent higher than those in Norway, the biggest spender among our 12 medalists. Though Canada's total health-care spending per person increased last year to US$3,096, we dropped to fourth place from third. (See Chart 21.) In terms of public expenditures on health, we moved up to sixth place from seventh. International comparisons of health spending must be made carefully. For example, while U.S. total health-care spending is higher than Canada's, private expenditures account for 55 per cent of the U.S. total health expenses compared to 30 per cent of our total health spending. In addition, only 27 per cent of Americans have public health-care coverage compared to 100 per cent of Canadians.

Canadians can feel positive about our publicly funded health system, but it faces significant pressures to balance improved health with fiscal sustainability.

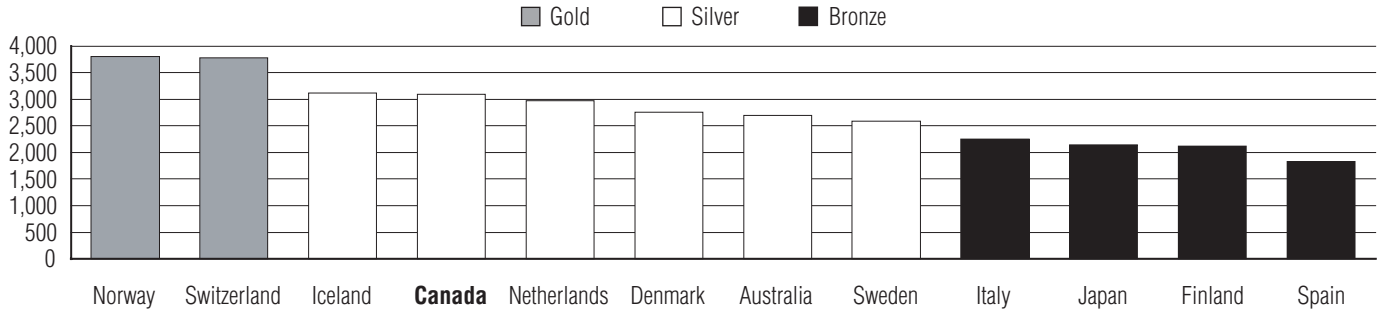
Canadians rank high in healthy lifestyles, earning one gold medal (for relatively low tobacco consumption) and two silvers (for relatively low alcohol consumption and obesity). In recent years, Canada's smoking rate—the proportion of the population over 15 years of age who smoke daily—has declined by about one percentage point annually. The current rate of 17 per cent is the lowest of the 24 countries we studied. The decline in tobacco consumption can be attributed to progressive initiatives such as anti-tobacco health promotion campaigns, taxation, legislation, and what are called "denormalization efforts": public campaigns that aim to reduce the social acceptability of smoking. Teenaged smoking is also on the decline; the latest figures indicate that only 9.1 per cent of teenagers report that they are daily smokers, down from 13.6 per cent in 1994–95.[22]

OBESITY A SIGNIFICANT PROBLEM

Despite Canada's obesity rate being lower than that in some OECD countries, obesity is still a significant cause for concern, especially because there is an escalating trend towards obesity among young children. This has significant policy implications for all levels of government. The World Health Organization has warned that the obesity epidemic will have a crushing impact on health systems in terms of cardiovascular disease, Type 2 diabetes and cancer.[23] Many programs in Canada are focused on reducing excessive food intake and promoting physical activity. The percentage of Canadians reporting increased physical activity levels rose to 51 per cent in 2003, from just under 40 per cent in 1994–95.[24] More research is needed on how to combat obesity. Current data in most countries are based on what people say about themselves during health interviews; however, the United States, the United Kingdom and Australia have moved to a more accurate system of using data obtained during health examinations.

Canadians can continue to feel positive about our publicly funded health system, but it faces significant pressures to continue improving the health of Canadians while remaining fiscally sustainable. Significant challenges include controlling escalating costs and increasing efficiency while enhancing quality and equity of

Chart 21
Total Spending on Health Care, 2004*
(U.S. $ per capita)



*Or most recent year of available data.
Sources: The Conference Board of Canada; OECD.

service. Evidenced-based medicine, technology assessment, interdisciplinary collaboration, quality management and other innovative practices will go far in addressing these challenges. If we want a high-performing health system, however, we must continually compare ourselves with others in all aspects of performance and learn from both pan-Canadian and international experiences. As bright as the future may be, the road ahead will be bumpy.

SOCIETY: SURPRISING WEAKNESSES FOR CANADA

Since the first publication of *Performance and Potential* in 1996, we have seen a growing demand for quantitative evidence on social outcomes and a growing interest in how Canada compares on such measures relative to other countries. Increasingly, governments, businesses and the general population have accepted the premise that the Conference Board first laid out almost a decade ago: a high and sustainable quality of life is much more than a matter of economic success; it requires a healthy and educated population, a clean environment, safe places to live and work, and economic security for all citizens.

Outstanding economic performance does not guarantee outstanding social outcomes. The United States consistently places near the top in the Economy category, yet does not make it into the top 12 in the Society category. Crime, relative poverty and the availability of social programs affect a country's quality of life as much as its global economic status. Emerging economies such as China and India continue to make headlines for their staggering rates of economic growth, yet millions of their people continue to live in extreme poverty and have yet to benefit from their growing global economic presence.

THE GOALS OF SOCIAL PERFORMANCE

In the Society category, we chose 18 indicators to reflect three underlying goals of social performance: self-sufficiency, equity and social cohesion.

1. Five *self-sufficiency* indicators measure the autonomy of individuals within the society, and they illustrate the programs and policies that countries have adopted to promote autonomy. People need autonomy to fully participate in labour markets, communities and families.
2. Six *equity* indicators measure equity of access, opportunities and outcomes. Opinions on what is a "fair" or "just" distribution of resources vary widely, and it is difficult to obtain measurable and comparable information on equity of opportunity. Hence, most of the indicators we use focus on equity of outcomes.
3. Seven indicators of *social cohesion* measure social isolation, crime and citizen engagement. Although there is no commonly accepted definition of social cohesion, the OECD defines indicators in this area as ones that identify "the extent to which citizens participate in 'societal life,' or in some way reflect on the strains put on family relationships and relationships between different groups within society."[25]

Canada's ranking on the self-sufficiency and equity indicators is remarkably poor.

Denmark places first overall, with a total of 13 gold-medal performances, four silver and only one bronze. (See Table 7.) The Netherlands comes in a close second, with 11 gold, seven silver and no bronze-level performances. Rounding out the top three is Sweden, with 11 gold, three silver and one bronze-level ranking. Canada is in 11th spot (just ahead of New Zealand), with only two gold-level performances, seven silver and nine bronze.

Canada's weak performance may surprise those who take pride in Canada's reputation as a fair, just and cohesive society. Our public record does not live up to our international brand.

CANADA RANKS POORLY ON SELF-SUFFICIENCY AND EQUITY

Canada's ranking on the self-sufficiency and equity indicators is remarkably poor. While our performance has improved on some of these indicators over time, we still lag behind other countries. For example, the proportion of Canadian youth aged 20 to 24 who are neither working nor going to school decreased from 23 per cent in 1985 to 14 per cent in 2002, but it remains high relative to other countries. The fact that 14 per cent of our youth are not getting the skills or experience they need to move into a career path with good prospects means that they are more at risk for unemployment, poverty and social exclusion throughout their lives.

Table 7
Society Indicators

Rank	Self-sufficiency Indicators					Equity Indicators				
	Proportion of young people aged 20–24 neither in school nor at work	Personal income of disabled persons aged 20–64 relative to that of non-disabled persons	Active labour market public spending as a % of GDP	Net replace-ment rate	Net social expenditures as a % of GDP	Relative risk of poverty above age 65	Relative poverty	Income inequality (Gini coefficient)	Incidence of low pay	Gender income ratio
1 Denmark	G	S	G	G	G	S	G	G	G	G
2 Netherlands	G	S	G	S	S	G	G	G	S	S
3 Sweden	S	G	G	B	G	S	G	G	G	G
4 Norway	G	B	S	S	S	B	G	G	n.a.	G
5 Germany	B	G	S	G	G	B	B	S	S	S
6 Finland	B	B	S	S	S	B	S	G	G	G
7 Belgium	B	B	S	S	G	n.a.	S	S	G	B
7 Switzerland	G	S	B	G	n.a.	B	S	S	S	B
7 France	S	B	S	S	n.a.	B	S	S	S	S
10 Austria	S	S	B	S	S	B	B	G	S	B
11 Canada	S	B	B	B	S	G	B	B	B	S
12 New Zealand	n.a.	n.a.	B	S	B	G	B	B	B	G

Rank	Equity Indicators	Social Cohesion Indicators										
	Child poverty	Group membership	Voter turnout	Homicides	Burglaries	Assaults	Subjective well-being	Social isolation	Gold	Silver	Bronze	Weighted count
1 Denmark	G	S	G	S	B	G	G	G	13	4	1	30
2 Netherlands	S	G	G	S	G	G	G	G	11	7	0	29
3 Sweden	G	G	G	G	n.a.	n.a.	S	n.a.	11	3	1	25
4 Norway	G	G	G	G	G	G	S	n.a.	10	4	2	24
5 Germany	S	B	G	G	n.a.	G	B	G	7	5	5	19
6 Finland	G	S	S	B	B	S	S	B	4	8	6	16
7 Belgium	G	S	G	B	n.a.	n.a.	S	S	4	7	4	15
7 Switzerland	G	S	B	S	S	n.a.	G	n.a.	4	7	4	15
7 France	S	B	S	G	G	G	B	B	3	9	5	15
10 Austria	B	B	G	G	n.a.	n.a.	S	B	3	6	7	12
11 Canada	B	S	S	B	S	B	G	S	**2**	**7**	**9**	**11**
12 New Zealand	B	n.a.	G	B	B	B	S	n.a.	3	2	9	8

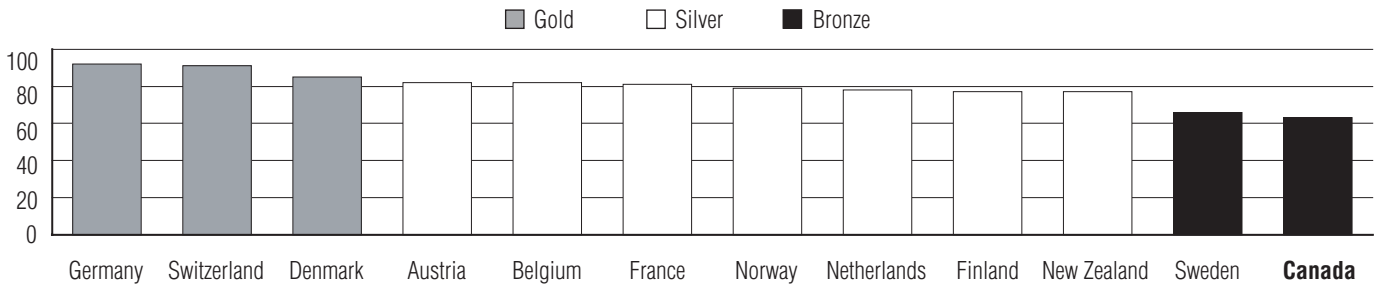
Note: G = gold; S = silver; B = bronze.
Source: The Conference Board of Canada.

Canada's social safety net is less robust than many think. One measure of the level of benefits is the net replacement rate: the ratio of the income of those out of work to a portion (67 per cent, in this case) of the average income people get from working. One of the more dire circumstances in which unemployment affects a family involves a single parent with two children. For this group, Canada's net replacement rate is 63 per cent, the lowest of the top 12 countries. (See Chart 22.) Some argue that too high a level of benefits removes incentives for people to actually seek employment. While this may be true, it is clear that too low a level can leave those who are unemployed in a state of financial and social distress.

Canada's performance on equity indicators is also unimpressive. The OECD notes that "equity has many dimensions, including access to social services, economic opportunities and outcomes."[26] In practice, however, it is difficult to obtain quality data for equity of opportunity. As a result, the available indicators measure equity of outcomes. Of the six equity indicators, Canada earns one gold medal, one silver and four bronze.

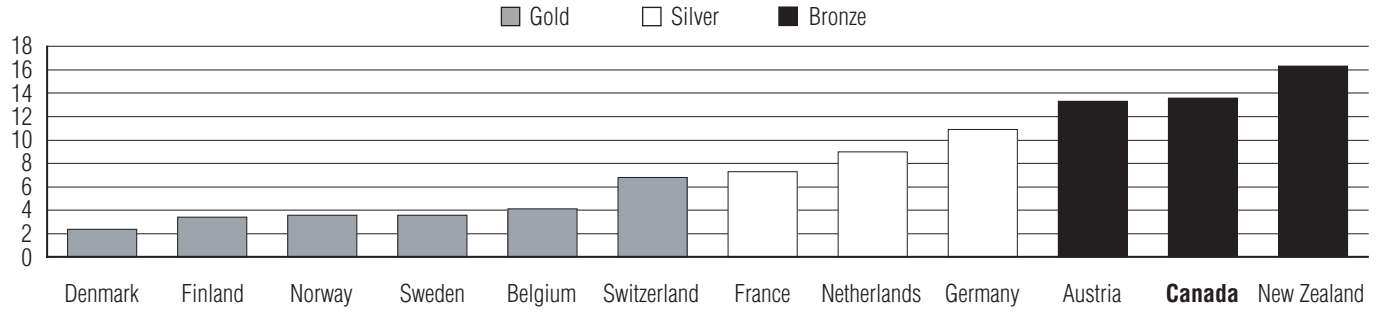
Child poverty is a special concern for governments and communities. No one can ignore the evidence from the multitude of studies that have documented the dreadful effects of poverty on children: children in poverty are more likely to suffer from health problems, have learning disabilities, do badly in school, and drop out of school. Poor children are more likely to become poor adults. Particularly distressing is the fact that these children are not responsible for their situation. Canada's high rate of child poverty is shocking for a country ranked among the wealthiest in the world. Canada ranks bronze on childhood poverty, with a rate almost six times that of Denmark! (See Chart 23.)

Chart 22
Net Replacement Rates, 2002
(per cent; income of single parent with two children—benefit income vs. average income)



Sources: The Conference Board of Canada; OECD.

Chart 23
Child Poverty Rates, 2000*
(per cent; proportion of children living in households where income falls below the poverty line)



*Or most recent year of available data.
Sources: The Conference Board of Canada; OECD.

Individuals are classified as poor if their household income is less than half the national median. By this measure, more than 10 per cent of Canadians live in poverty, a stark contrast to Denmark and Sweden, where poverty rates are 4.3 and 5.3 per cent, respectively. Canada's current poverty rate is lower than it was in the mid-1980s, but slightly higher than in the mid-1990s. (See Chart 24.) There is no common trend among the top-performing countries; for example, Denmark, Sweden and Finland mimic Canada's pattern of improving between the mid-1980s and mid-1990s, followed by a recent increase. France is the only country to enjoy a steady decline in its poverty rate; Austria and New Zealand have experienced consistently rising rates. New Zealand's experience is particularly grim: the percentage of the population classified as poor increased from 5.8 in the mid-1980s to 7.8 in the mid-1990s, to a recent rate of 10.4 per cent.

Canada is much better at ensuring an adequate standard of living for the elderly: the poverty rate for people aged 65 and over is the third lowest of all 24 OECD countries. While the income gap between female and male workers in Canada has narrowed more or less steadily over the last two decades, it has not been eliminated. Women in Canada currently earn 63 cents for every dollar earned by men, rating silver. In Sweden, the top-performing country on this indicator, the ratio is 83 cents for every dollar.

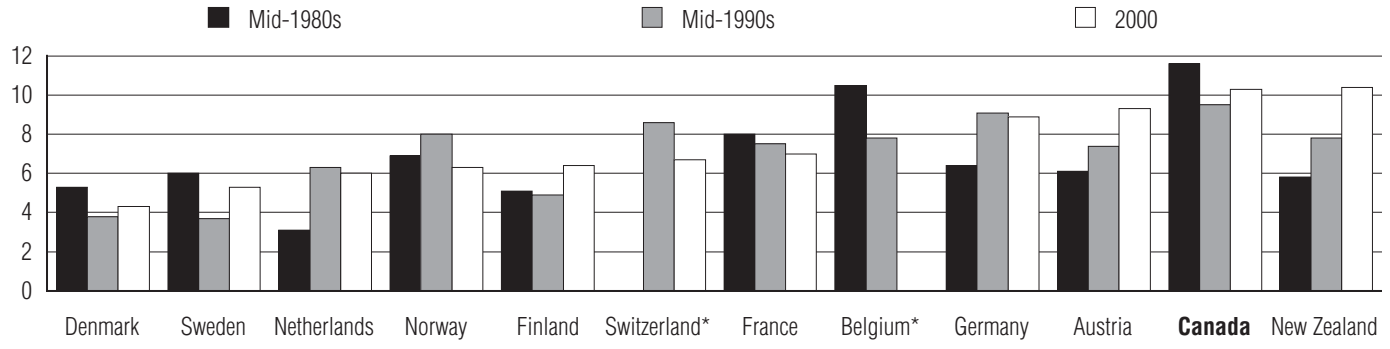
CANADA HAS MIXED RESULTS ON SOCIAL COHESION

Canada has mixed results on indicators of social cohesion. It places gold on one indicator, silver on four, and bronze on two. Our worst performance occurs on two crime indicators—homicides and assaults. Although Canada's homicide rate has been declining since the mid-1970s, some may be surprised to learn that this country's homicide rate exceeds that of most of the top-performing countries in the Society category. (See Chart 25.) Moreover, it has been higher than the average of 23 OECD countries in all but two years since 1960.[27] (See Chart 26.) Despite this relatively weak record, a report by the Canadian Department of Justice states, "Overall, Canadians do not consider crime to be a 'top-of-mind' concern. Public concern has fluctuated little over the years, and has been decreasing as of late."[28]

Canada's homicide rate exceeds that of most of the top-performing countries in the Society category.

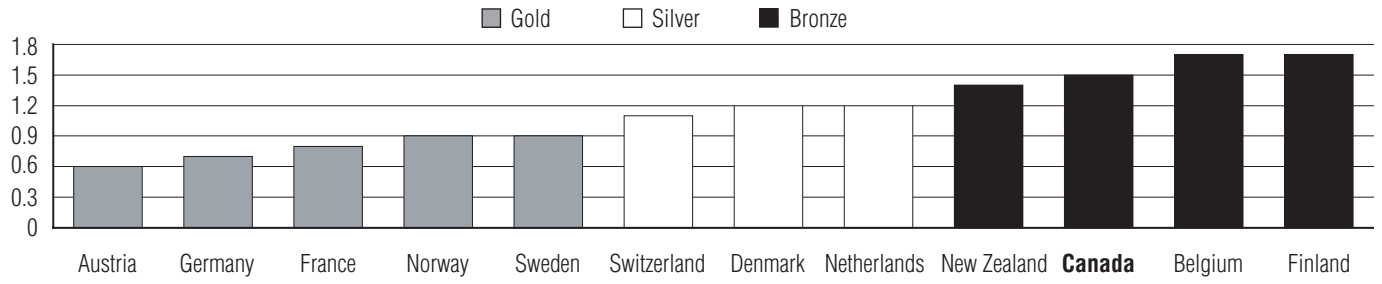
We added two new indicators this year. The first measures the contact individuals have with other people in normal daily living. Social contact occurs in a variety of settings, including the workplace, family, and social activities. The lack of such contact, or social isolation, is, according to the OECD, both a symptom and a cause

Chart 24
Poverty Rates Since the Mid-1980s
(per cent; proportion of population that falls below the poverty line)



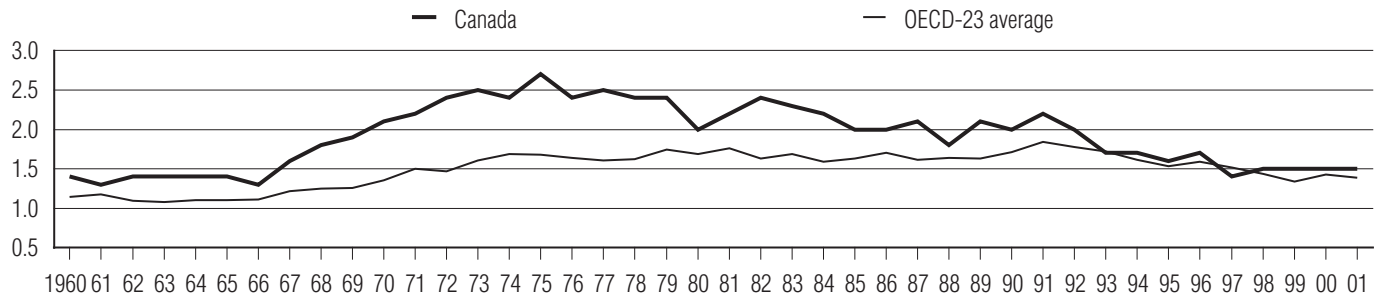
*Complete data are unavailable.
Source: OECD.

Chart 25
Homicide Rate by Country, 2002*
(number of deaths per 100,000 population)



*Or most recent year of available data.
Sources: The Conference Board of Canada; OECD.

Chart 26
Homicide Rate, Canada versus OECD Countries, 1960–2001
(number of deaths per 100,000 population)



Source: OECD.

of social distress. Feelings of exclusion affect morale and eventually result in a reduction in both social and economic opportunities.[29] Almost 6 per cent of Canadian survey respondents said they rarely or never spend time with friends, colleagues or others in social groups. This rate of social isolation is higher than in the Netherlands, Denmark, Germany and Belgium. The United States, which did not make the top 12 in this category, had a rate of only 3 per cent. At the other end, Japan, which is also not in the top 12, had the highest rate: over 15 per cent of Japanese said they rarely or never spend time with others.

The second new indicator is subjective well-being, which measures individuals' perceptions of their own health, education, income, personal fulfillment and social conditions. Such subjective indicators are important because we assume that a person's "quality of life" comprises both the individual's concrete economic, educational and health status, and his or her perception of that status. In 1972, Angus Campbell, a prominent quality-of-life researcher, argued that citizens are the best judges of their own life situation: "Quality of life must be in the eye of the beholder."[30] Today, most researchers agree that subjective perceptions are needed to complement the objective factual measures of living conditions.[31] Canada ranks gold on this indicator, along with Denmark, Switzerland and the Netherlands.

CONCLUSION: LOOKING OUT, LOOKING BACK

Canada, more so than many countries, feels the effects of events and trends elsewhere. As a small nation, we are at the mercy of a global economy that can be kind or harsh or—as it has been recently—both at the same time. Rising commodity prices are a help to some

regions but a hindrance to others. Our stronger dollar, responding in part to the same forces, makes life difficult for exporters but easier for companies that want to invest in imported machinery that will enhance their productivity.

We see the impact on us of the world economy in almost every day's headlines. But we are also acutely conscious of other developments abroad—whether in innovation, health, education, the environment or social conditions. For lessons in what we might do better and what we should avoid, we must look out to the rest of the world.

Many of the indicators we now use are based on data that were not collected a decade ago.

Our annual benchmarking exercise highlights these comparisons by presenting Canadians with a portrait of themselves in a broader context. It is easy to applaud our achievements and lament our failings by looking only at our own record, but this tendency can become a trap that prevents us from taking advantage of other countries' experiences.

At the same time, the benchmarks are but a snapshot of where we stand now. They do not tell us where we have come from relative to other countries. There is always merit to doing better than we have done in the past in absolute terms: more growth, more innovation, less pollution, and better education and health outcomes. But if other nations are making greater strides than Canada, if we are falling behind relative to others, then we should know that and take steps to catch up or keep up—or even move out in front.

FINDINGS FROM 10 YEARS OF BENCHMARKING

This is the 10th time that the Conference Board has conducted some form of benchmarking as part of our *Performance and Potential* report, so it is worth looking back to see how Canada's position has changed since the mid-1990s. No such comparison can be complete, partly because many of the indicators we now use are based on data that were not collected a decade ago. We are also mindful of our own warning—spelled out each year when we explain our methodology—that caution should be exercised when comparing country rankings over time. Year-to-year changes in the category rankings often reflect data revisions, methodological enhancement, and the addition or deletion of indicators, rather than real changes in country standings.

Our first attempt to compare Canada with other countries was launched in 1995 as we began to prepare for the first *Performance and Potential* report, published in 1996. That year, we set Canada's performance against those of six other countries: the United States, Canada's largest trading partner; Japan, the world's second-largest economy and our second-largest trading partner; Germany, the dominant economy in Europe; and three smaller countries—Australia, Sweden and Norway—that had similar industrial bases and were advanced countries with high living standards like Canada's.[32]

Initially, we focused more on economic indicators of success. As we grew more ambitious, we extended our reach, first to more indicators, and then to more countries. By 1999, we were tracking 40 measures for the original seven countries, and grouping them into six categories. Over the next few years, several categories were merged and new categories were added. In 2002, we expanded the list of comparator countries to 24—all leading members of the OECD—and adopted the current lineup of categories. By then, our indicator count was up to 95, and it has since grown to 110.

Although we cannot replicate today's wider benchmarking exercise on the much narrower 1995 data, the task of looking back a decade yields at least a few observations.

Outlook for Canada in 1996 Was Gloomy

In our first report, we noted that Canada's GDP per person—the most often-cited measure of overall national living standards—had slipped in 1995 to fourth out of our seven countries from second (behind the United States) in 1985. Norway and Japan had overtaken us, and Germany was closing in. We seemed destined to fall even farther behind. The mood of the day was gloomy, influenced as it was by large government deficits, high unemployment and a half decade of recession and slow recovery.

Today, Canada's condition and prospects look much better. Last year, Canada was in third place on our original short list of nations, behind the United States and Norway; Japan was down to sixth from third, and Germany to seventh from fifth.

This apparent improvement needs to be qualified, however, for two reasons.

First, when we lost ground in the rankings between 1985 and 1995, our GDP per capita had fallen from 87 per cent of the U.S. level to 81 per cent, a striking decline. Yet by 2004, when we had moved up the list, Canada's relative GDP per head had fallen even farther, to just under 80 per cent of that of the United States. Compared with the United States, we were doing a bit worse than a decade earlier, but Japan and Germany had slid precipitously, leaving both well behind Canada. We "gained" not because we did better, but because others did much worse.

Second, we now subject Canada to the stiffer test of comparison with 23 other countries, not six. In 1985, we ranked fourth on that list of 24, behind Switzerland, the United States and Iceland. By 1995, we were down to seventh, outdone by the United States, Switzerland, Norway, Austria, Japan and Denmark. Last year, we were sixth, behind the United States, Norway, Ireland, Switzerland and Iceland.

Notice the sudden appearance of Ireland on the latest list. A decade ago, even if we had been comparing Canada with all 23 countries, we would barely have noticed Ireland; it then ranked a lowly 18th, though that was up from 21st place in 1985. Ireland's GDP per capita, half that of the United States in 1985, had by 2004 shot up to 90 per cent. Now in third spot, Ireland has become one of the industrial world's leading nations on the economic scale, with lessons for all of us.

Singling out the lessons we might learn, however, can be tricky. Would we have paid more attention to Ireland as an up-and-comer in that first report had we focused on the fact that its productivity—output for every hour worked—had grown by an average of 3.6 per cent annually in the previous decade, four times Canada's pace? Perhaps. But during the same period, productivity in Japan and Germany also grew much faster (3.3 per cent and 2.8 per cent a year respectively) than it did here, yet both, as we have seen, slumped in measures of GDP per person over the next decade. We know—from much research—that productivity gains are the foundation of a rising standard of living, but they are not an infallible guide to a country's economic future.

Canada's Recent Record Has Been Good

If broad comparisons with a decade ago on all our current indicators are scanty, recent years offer deeper ground and perhaps a way of monitoring Canada's performance in a wider fashion in the years ahead. Our current system of scoring—with 24 countries compared and medals awarded for the top 12—began in 2002. Though we have changed some of the individual indicators along the way, the six categories have remained the same through the past four years, so we have a reasonably strong basis for comparison. A medal of any colour is worth winning. Since we compare data for about two dozen countries (the precise number varies according to the availability of each indicator), any nation that makes it into the top 12 of any category has already done better than half the countries surveyed.

Canada's recent record, from this perspective, is very strong. We have won medals in all six categories in three of the past four years (2002, 2004 and 2005), and in five categories in the other year, when we fell to 16th in Environment. Our benchmarking exercise, in other words, has offered all countries 24 opportunities to win a medal since 2002, and Canada met the test on 23 occasions. (See Table 8.)

Any nation that makes it into the top 12 of any category has already done better than half the countries surveyed.

No country has managed a clean sweep of medals in all categories in all four years, and only three countries—Finland, Sweden and Switzerland—have matched Canada's record of 23 medal placements. Denmark scored 22 on this gauge. This select group of countries shares two virtues: their performance is both consistent and balanced. Year after year, they turn in a solid display

Table 8
Number of Top-12 Placements by Category, 2002–05
(maximum is 4, minimum is 0)

		Economy	Innovation	Environment	Education & Skills	Health	Society	4-Year Total
1	**Canada**	**4**	**4**	**3**	**4**	**4**	**4**	**23**
1	Finland	3	4	4	4	4	4	23
1	Sweden	3	4	4	4	4	4	23
1	Switzerland	3	4	4	4	4	4	23
5	Denmark	4	3	4	4	3	4	22
6	Netherlands	2	4	2	1	4	4	17
6	Norway	4	0	4	4	4	1	17
8	**Germany**	**0**	**2**	**3**	**4**	**3**	**4**	**16**
9	Australia	2	3	0	4	4	2	15
10	Iceland	3	3	2	0	4	0	12
10	New Zealand	4	1	2	4	0	1	12
10	**United States**	**4**	**4**	**0**	**4**	**0**	**0**	**12**
13	Austria	2	0	4	0	0	4	10
13	**France**	**0**	**0**	**4**	**0**	**2**	**4**	**10**
13	Ireland	4	1	0	3	0	2	10
13	**Japan**	**1**	**2**	**2**	**0**	**4**	**1**	**10**
17	**United Kingdom**	**1**	**2**	**2**	**4**	**0**	**0**	**9**
18	Belgium	0	4	0	0	0	4	8
18	Korea	4	3	1	0	0	0	8
20	**Italy**	**0**	**0**	**1**	**0**	**3**	**1**	**5**
21	Spain	0	0	1	0	1	0	2
22	Portugal	0	0	1	0	0	0	1
23	Greece	0	0	0	0	0	0	0
23	Mexico	0	0	0	0	0	0	0

Note: G7 countries are bolded.
Source: The Conference Board of Canada.

of strength in all the things that contribute to the well-being of their citizens: a sound economy, innovative behaviour, a clean environment, good health, high-quality schooling and training, and a just society.

The Canada that emerges from the benchmarking occupies a space somewhere between the United States and Europe.

The other G7 countries, with which we so often compare ourselves, fared significantly worse than Canada. Out of 24 opportunities to win medals, Germany managed to find a place in the top 12 only 16 times in the past four years, the United States 12, France and Japan 10, the United Kingdom nine and Italy five. The United States is persistently strong in the measures of the Economy, Innovation, and Education and Skills, but did not make the top-12 list in our Environment, Health and Society categories in any of the four years.

In the Economy category, only seven countries have managed to achieve a top-12 placement in all four years: Canada, Denmark, Ireland, Korea, New Zealand, Norway and the United States. But if we look to them for lessons, we should remember the examples of the United States and Korea, where economic success did not help those countries gain a top-12 spot in any year in the Education and Skills, Health, or Society categories. The G7, usually described as a collection of the world's leading economies, includes three countries that have yet to earn a spot in the top 12 of the Economy category, (France, Germany and Italy) and two countries that have placed in the top 12 only once (Japan and the United Kingdom). All have strengths in other areas.

Overall, Canada occupies a space somewhere between the United States and Europe. Like the United States, we do well in the Economy, Innovation, and Education and Skills categories. Like the Europeans, we do well in the Health and Society categories and spottily in Environment.

One point cannot be stressed enough: the rest of the world is not standing still. Even if Canada makes advances on individual indicators, the true measure of our progress must always be seen in the context of what others are doing.

A couple of examples make this point forcefully. Canada was an early adapter in terms of high-speed Internet. In 2001, we ranked second of 24 countries (behind Korea) with 8.8 broadband subscribers per 100 inhabitants. By 2004, despite an increase in subscribers to 17.8, we had fallen to fifth place. Korea still held the top spot, but the Netherlands, Denmark and Iceland had moved ahead of us. Sweden and the United States, which placed third and fourth respectively in 2001, had slipped by 2004 to 11th and 12th.

Even when we do not lose ground in comparison with others, there are reasons for concern. This shows up in a second measure of innovation for which we have a longer record: the number of patents registered per million of population. In the decade from 1991 to 2001 (the latest year for which there are data), the number of Canadian patents increased by 66 per cent, a respectable enough figure, you might think, especially when compared with a 30 per cent increase for the United States. Yet Canada ranked 16th of 24 countries in both 1991 and 2001. Relative to other countries, we stood still. A few small countries, such as Sweden, Finland and Denmark, moved up in the standings at the expense of bigger countries such as Germany, Japan and the United Kingdom, all of which dropped. Ireland was behind Canada in 18th spot in 1991, but a 133 per cent increase in patents lifted it to 15th place in 2001, just ahead of Canada.

EVERYTHING OLD IS NEW AGAIN

There is another way of comparing today's Canada with mid-1990s Canada: by setting the issues we think are important today against those we thought important at the time of our first report.

The major themes of the 1996 report included productivity, trade and investment, education, health and innovation—issues that still preoccupy us. At the time, we called that list "a starting point," and said we would leave for future reports "such important areas as taxation and regulatory regimes, the state of our physical infrastructure, the natural environment, the safety and security of our citizens and the issues around income distribution and poverty."[33] All have since found their way into our annual reports, many more than once.

The major themes of our 1996 report included productivity, trade and investment, education, health and innovation—issues that still preoccupy us.

Some may find it depressing that today's roster is much the same as it was a decade ago. Can we never "solve" any of these problems once and for all? The short answer is no. In each area, either the nature of the challenge has changed or our understanding of the challenge has deepened, leading us to search for new solutions. And in each area, as our benchmarking tells us, other countries, facing the same broad set of issues, are moving ahead with solutions tailored to their particular needs. The labels may remain the same, but the problems themselves evolve, tossing up new questions. We are always chasing a moving target.

Canada Has Had Some Real Successes . . .

Canadians can take heart from our progress on one issue to which we devoted a chapter in 1996: government deficits and debt. At the time, Canada's governments collectively had deficits that amounted to almost 10 per cent of GDP and debts that equalled GDP. The perilous state of government finances was a top public policy issue of the day. Interestingly, the Conference Board was one of the few voices to suggest that the problem was already fading and that it was time to pay more attention to the other issues included in our first report. Based on the budgets introduced in 1995, we confidently predicted that deficits and debt would fall; in retrospect, they fell faster than even we had anticipated.

There is a hopeful lesson here. When Canadians understood the issue facing them, public opinion—which for years had been quite sanguine about deficits—shifted rapidly, and politicians took action to solve the deficit-debt problem. Canadians are fully capable of confronting thorny challenges, discarding long-held views, and getting down to the job of finding solutions.

We warned then that the actions already taken to reduce deficits were profound "and will lead to altered health, education, welfare and general government systems in Canada." We spoke of the critical need to strike a balance "that preserves and enhances the factors that lead to a high quality of life for Canadians and also underpin our international competitiveness. Chief among these will be education and health care, both of which are absolutely fundamental to our success in the 21st century."[34]

Perhaps more than we realized a decade ago, all the challenges Canadians face are interconnected.

The years have borne out that forecast.

The subjects of our 1996 chapters are as germane today as they were then: productivity, trade and investment, innovation, human resource development, and health care.

. . . But Some Challenges Remain

Productivity is still a key issue (in 2004, as in 1996, we devoted a full chapter to it), but we have a richer understanding of its elements now than we did in the mid-1990s. Trade and investment also remains on the agenda, as it always will for a trading nation such as Canada. It too is the subject of a full chapter in this year's report, though, again, our perceptions and insights have developed substantially over the years.

Some issues have become even more vexing and difficult than they were in the past. When we flagged our interest in the safety and security of our citizens in 1996, we were not thinking about terrorist attacks and the kind of geopolitical risk that is now a part of our everyday lives. Security covers a lot of ground, and we explore some of it this year in Chapter 5.

Perhaps more than we realized a decade ago, all the challenges Canadians face are interconnected. Look into the resources chapter and you will find mention of world commodity prices, trade, innovation, the environment, Canada–U.S. relations, and human resource development. In the chapter on aging, you will find mention of pensions, immigration, jobs and training. In the trade and investment chapter, you will read about the challenge of emerging economics, foreign direct investment, global supply chains, and global capital markets. In our discussion of security issues, you will come across the issues of resources, failing states, terrorism, potential health threats, and poverty rates.

The details are new, and specific concerns change, but the themes are constant. So is the broader goal of continuing to build a country that maintains the balance we all treasure: economic growth, continual innovation, a better environment, good health, skilled people, and a society that treats people well.

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1 As data become available, we will add relevant comparator countries, such as Brazil, Russia, India and China—the BRIC nations.

2 Jeffrey I. Bernstein, Richard G. Harris and Andrew Sharpe, "The Widening Canada–U.S. Manufacturing Productivity Gap," *International Productivity Monitor*, no. 5 (Fall 2002), p. 9. Available on the CSLS website: <www.csls.ca>.

3 Trefor Munn-Venn, *Innovation in Corporate Canada: 2005* (Ottawa: The Conference Board of Canada, 2005).

4 The Conference Board of Canada, *Exploring Canada's Innovation Character: Benchmarking Against Global Best* (Ottawa: The Conference Board of Canada, 2004), p. vi.

5 Patents in triadic families are patents that are registered at all of the three largest patent offices, namely the European Patent Office, the Japanese Patent Office, and the U.S. Patent and Trademark Office.

6 Innovation-related activities include R&D, marketing, commercialization, customer feedback, strategic business development, competitive intelligence and collaboration.

7 Data for Iceland are not available.

8 We eliminated threatened fish from our indicators of biodiversity, as well as hazardous waste production per unit of GDP. We have also substituted "intensity of use of freshwater resources" for the "percentage of country under severe water stress" and "internal renewable water per capita." Finally, "intensity of use of forest resources" was added as a pressure indicator for biodiversity, and "absolute greenhouse gas emissions" was reclassified as a pressure indicator.

9 State indicators are a snapshot of the condition of the environment at a given point in time.

10 Rapid changes can be due to erratic updates of particular country data within the OECD database that result in new top-12 performers.

11 Serge Coulombe, Jean-François Tremblay and Sylvie Marchand, *Literacy Scores, Human Capital and Growth across 14 OECD Countries*, Cat. No. 89-552-XPE (Ottawa: Statistics Canada, 2004). Available on Statistics Canada website: <www.statcan.ca/english/research/89-552-MIE/89-552-MIE2004011.pdf>.

12 Canada has participated in two rounds of international standardized student testing administered by The Programme for International Student Assessment of the OECD; first in 2000 and again in 2003. The 2000 results were used in last year's benchmarking report, and the 2003 results, just recently made available, are used in this year's report. The third assessment is scheduled for 2006.

13 The 2003 survey replaced the quantitative literacy domain used in the 1994 survey with a broader measure, and the results cannot be compared across the two time periods. The data from the 2003 study was not used in the benchmarking, because only five countries, including Canada, participated in the survey. The OECD is collecting data from a second group of countries this year, with results to be released in 2006 or 2007.

14 Statistics Canada and OECD, *Learning a Living: First Results from the Adult Literacy and Life Skills Survey*, (Ottawa and Paris: Statistics Canada and OECD, 2005), p. 45.

15 Health Canada, *A 10-Year Plan to Strengthen Health Care* [on-line]. September 16, 2004. [cited July 21, 2005]. Available from Health Canada. <www.hc-sc.gc.ca/english>.

16 Health Council of Canada, *Health Care Renewal in Canada: Accelerating Change* [online]. January 2005. [cited July 23, 2005]. Available from the Health Council of Canada. <www.hcc-ccs.com>.

17 Canadian Institute for Health Information, *Canada's Health Care Providers: Chart Book* [online]. 2005, p.20. [cited July 23, 2005]. Available from Canadian Institute for Health Information. <www.cihi.ca>.

18 Ibid. p. 23.

19 Health Canada, *The 2003 Accord on Health Care Renewal: A Progress Report*. [online]. September 2004. [cited July 24, 2005]. Available from Health Canada. <www.hc-sc.gc.ca/english/hca2003/>.

20 Alberta Health and Wellness, *Getting On With Better Health Care: The Third Way Package*. [online]. July 2005. [cited July 25, 2005]. Available from Alberta Health and Wellness. <www.health.gov.ab.ca/about/reform/getting.html#Getting>.

21 Canadian Institute for Health Information, *Health Care in Canada 2005*. [online]. 2005. [cited July 23, 2005]. Available from Canadian Institute for Health Information. <www.cihi.ca>.

22 Health Canada, *Healthy Canadians: A Federal Report on Comparable Health Indicators 2004*. [online]. November 2004, p. 31. [cited July 26, 2005]. Available from Health Canada. <www.hc-.gc.ca/iacb-dgiac/arad-draa/english/datadevelop/health_indicators_e.html>.

23 Canadian Population Health Initiative, *Overweight and Obesity in Canada: A Population Health Perspective*. [online]. August 2004. [cited July 24, 2005]. Available from Canadian Institute for Health Information.<www.cihi.ca>.

24 Health Canada. *Healthy Canadians: A Federal Report on Comparable Health Indicators 2004*. [online]. November 2004, p. 33. [cited July 25, 2005]. Available from Health Canada. <www.hc-sc.gc.ca/iacb-dgiac/arad-draa/english/datadevelop/health_indicators_e.html>.

25 Organisation for Economic Co-operation and Development, *Society at a Glance* (Paris: OECD, 2001), p. 16.

26 OECD, *Society at a Glance 2005* (Paris: OECD, 2005), p. 17.

27 Mexico was not included in the OECD average, as the data were not available for all years.

28 Karin Stein, *Public Perception of Crime and Justice in Canada: A Review of Opinion Polls*, Report # RR2001 (Ottawa: Department of Justice, 2001), p. vii.

29 Organisation for Economic Co-operation and Development, *Society at a Glance: OECD Social Indicators 2005 Edition* (Paris: OECD, 2005), p. 82.

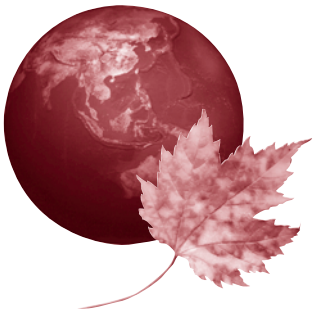
30 Angus Campbell, "Aspiration, Satisfaction and Fulfillment," in A. Campbell and P. Converse, *The Human Meaning of Social Change* (New York: Russell Sage Foundation, 1972), pp. 441–446; quoted in "State of the Art," public report of Work Package No. 1, How to Analyse Life Quality Consortium (March 2003).

31 See Heinz-Herbert Noll, "Social Indicators and Social Reporting: The International Experience." <www.unine.ch/socio/enseignement/IS_2003_2004/indicateurs/noll.doc>.

32 *Performance and Potential 1996* (Ottawa: Conference Board of Canada, 1996), pp. 12–13.

33 Ibid., p. iii.

34 Ibid., p. 26.



2

HIGHLIGHTS

- *The global economy is undergoing huge shifts. The large emerging markets in Brazil, Russia, India and especially China (the BRIC nations) will drive growth and shape future investment, trade and commerce. The economic clout of Western Europe and Japan will fade, weakened by aging populations and structural economic problems. Canada's status is also slipping.*
- *Canada is not among the seven leading economies of the world. At current exchange rates, Canada ranks ninth, behind the other G7 plus China and Spain. Using purchasing power parity as a standard—countries' currencies for the same basket of goods and services—our global ranking slides to 11th place, behind the other G7 plus China, India, Russia and Brazil.*
- *Notwithstanding growth of the BRIC markets, Canada's most important trade and investment partner will continue to be the United States. The recent Security and Prosperity Partnership for North America is one more step toward deeper and more efficient economic linkages.*
- *Global commerce has entered a new phase of "integrative trade." This term captures all elements firms use to achieve the lowest possible cost and maximize the return for their products: exports, imports used to create exports, inward and outward foreign direct investment (FDI), offshore outsourcing and insourcing, and sales (mostly services) from foreign affiliates created through FDI.*
- *Canada's trade investments and economic policies should aim to enhance all the elements of integrative trade. Canada should table key issues, such as global imbalances within the G7. However, our longer-term interests lie in becoming a central part of a wider circle of influence such as a revitalized G20.*

CHAPTER 2

Making Connections

The New World of Integrative Trade and Canada

DOMINANT GLOBAL DRIVERS

From high oil prices to financial imbalances among major countries, competing and sometimes conflicting forces are buffeting the global economy. This chapter concentrates on economic transformation under globalization and on the new opportunities and challenges for Canadian business and government policy makers.

AGING NORTH, EMERGING SOUTH

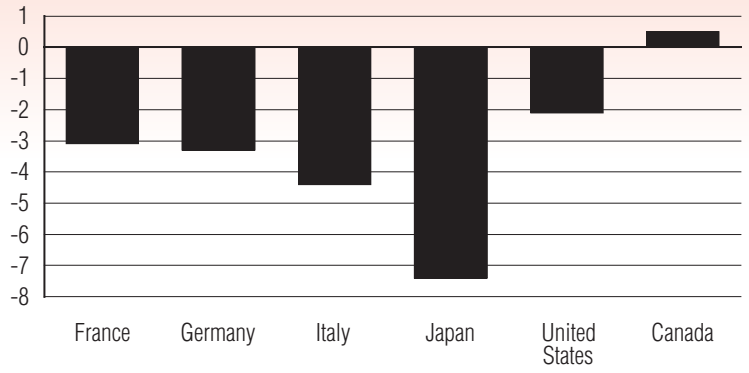
The Aging Industrial Economies

In much of Western Europe and Japan, economic growth potential—sustainable economic growth that does not feed inflation—has dipped to 2 per cent or lower annually.

This is a trend of global importance, driven by demographic change. Specifically, an aging population lowers the growth rate of a country's labour force as more workers retire and fewer new workers replace them. The result is a decline in long-term growth potential, barring a solution that somehow combines longer labour force attachment for existing workers, higher rates of national savings and investment, and faster productivity growth.

Chapter 4 explores at length the issue of global demographics and aging. Here, we will simply note that in major West European countries, a static population size is already slowing labour force growth and lowering potential output. The situation is similar in Japan: recent UN analysis suggests that its population could shrink by more than 20 million by 2050, to 105 million people. With a growing proportion of workers retiring and leaving the labour force, these countries will face a strong and sustained negative impact on growth potential.

Chart 1
Public Sector Deficits, 2005
(percentage of GDP)



Sources: The Conference Board of Canada; Consensus Economics.

Added to this are underlying economic problems in many industrialized countries. Western Europe, Japan and now the United States all have significant fiscal deficits (see Chart 1) and rising public debt. The causes include labour market rigidities, as well as protection and subsidizing of favoured sectors, such as agriculture. Other challenges are the rising pension and health-care costs of an older population, and uncertainty over the appropriate national strategy to pay for pensions. All of these problems compound the impact of an aging population on economic performance.

Real incomes and individual purchasing power are likely to remain high in Western Europe and Japan for decades to come. Still, their aging populations and structural economic problems have undeniably become a drag on economic growth. This reality has lessened the attraction of many industrialized countries as future export and investment markets.

The Emerging Markets

Contrast this with the developing world, where sustained economic growth is leading to a fundamental shift in global economic power and political influence.

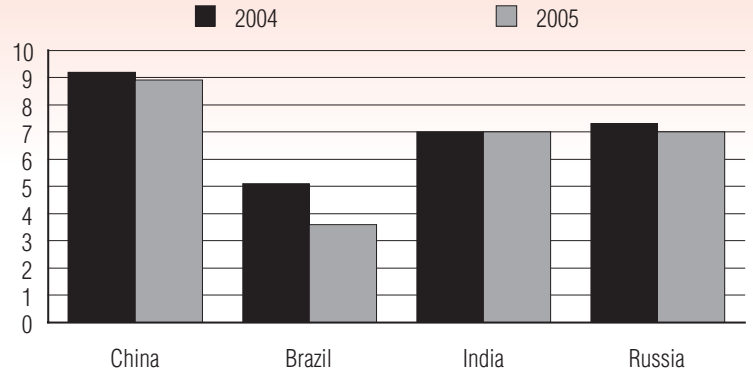
Rapid economic growth has long offered a potential advantage to developing countries such as China and Brazil. For many years, they could not seize the advantage because of generally weak and unstable macroeconomic and microeconomic policies. These created periodic financial and political crises.

Brazil, Russia, India and China—dubbed the "BRIC" nations—have high growth potential and increasing economic clout.

In recent years, however, many developing countries have sought to improve their economic policy frameworks. The actions of these countries have boosted their underlying growth potential and made them much more attractive places in which to do business. Trade as a share of gross domestic product (GDP) has risen, increasing competition in the domestic market. Inward foreign direct investment (FDI) has driven growth and trade. Among attractive emerging economies are countries as varied as Slovenia, Bahrain, Chile and Thailand.

Last year's *Performance and Potential* identified China and India as rising global forces. Observers group these countries with Brazil and Russia, and refer to the four as the "BRIC" nations (Brazil, Russia, India and China)[1]—emerging markets with high growth potential and increasing economic clout. (See Chart 2.) Each is at a very different stage of economic and political development, yet all four are on course for sustained growth. With their current and projected performance and their market size, they offer great trade and investment opportunities. Canada's political leaders have given priority to expanding trade relationships with the four. We will examine their emergence more closely.

Chart 2
Economic Growth in BRIC Countries
(percentage change in real GDP)



Source: Consensus Economics.

One magnet drawing exports and investors to these countries is a burgeoning middle class of consumers with disposable income. A recent study sets the bar for the middle class in emerging markets at a per capita income equivalent to US$6,000 or higher, since at this point consumers have enough discretionary income to begin purchasing durable goods and higher-value food products in quantity.[2] We have used that benchmark and related analysis here to identify the middle-class market segment in the four emerging markets.

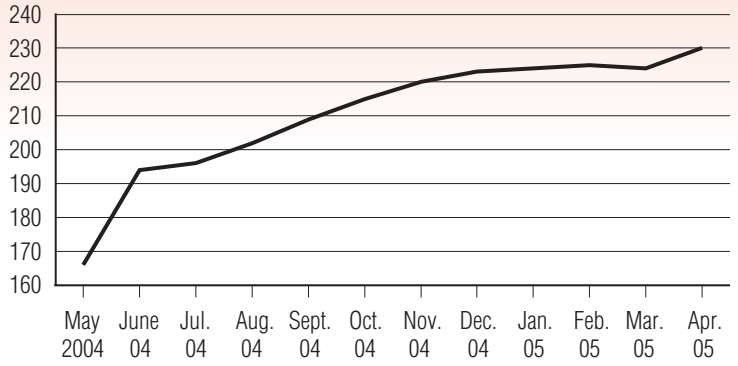
China: A Spectacular Transformation

In 1982, Deng Xiaoping famously declared, "To get rich is glorious." China took to heart the words of its pragmatic leader, and embarked on a spectacular economic transformation. After a quarter century of step-by-step market-oriented reform, China is the world's fastest-growing major economy and an emerging superpower. Since the mid-1990s, it has sustained annual real growth rates of 7 to 8 per cent or higher, with acceptable inflation rates. It has kept up this success despite the 1997 Asian crisis and the recent challenges of managing a fixed rate of exchange against the U.S. dollar. China's share of world trade doubled from 2000 to 2005, and it now exceeds 6 per cent of the total. By the measure noted above, the country's urban middle class already exceeds 200 million. By 2010 it could reach 400 million— 30 per cent of the population.

China offers tremendous opportunities as a consumer end-market. It is a source of lower-cost labour within firms' global production chains. Increasingly, it is a source of more advanced technology and production. Its growth potential will slow gradually over the coming decades as the population matures and the economy approaches the limits of its production possibility frontier. Still, estimates suggest that China will be able to sustain economic growth of around 4.5 per cent to 2025.[3]

China's most immediate challenge has been to find an exchange rate policy that meets domestic economic needs and responds to external political pressures. Earlier this year, the Chinese government had set the stage for this shift when it permitted seven international banks to join with two domestic banks as market-makers for foreign exchange trading. After months of urging by the U.S. government, China finally changed course in late July. The yuan now floats against a basket of currencies with an immediate appreciation of 2.1 per cent, bringing its initial value to 8.1 per U.S. dollar from 8.3. Each day, China's central bank will set an exchange rate for the yuan, and daily trading will be allowed within a 0.3 per cent range—from 7.97 to 8.22. The move should help China deal with inflationary threats fed by the massive accumulation of foreign exchange reserves resulting from the fixed exchange rate (see Chart 3), although the lack of transparency in how the policy will be implemented could be troubling.

Chart 3
Chinese Purchases of U.S. Treasury Securities
($US billions holdings at end of period)



Sources: Trade Information Centre (TIC), U.S. Department of Commerce.

China's urban "middle class" already exceeds 200 million and could reach 400 million by 2010.

India: Incomplete Journey to Reform

India has moved more gradually toward emerging market status. The middle class represents less than 10 per cent of the country's population, but that translates into 90 million consumers with growing discretionary income. Annual real growth has risen from 3.5 per cent in the 1980s to 6 per cent or higher today. Two factors have fuelled the rise: internal economic liberalization and deregulation undertaken in the early 1990s, which unleashed market forces in parts of the domestic economy, and an expanding position in the global supply chain for information services. India has quickly produced some cutting-edge companies that are eager to trade and invest much more with the rest of the world.[4]

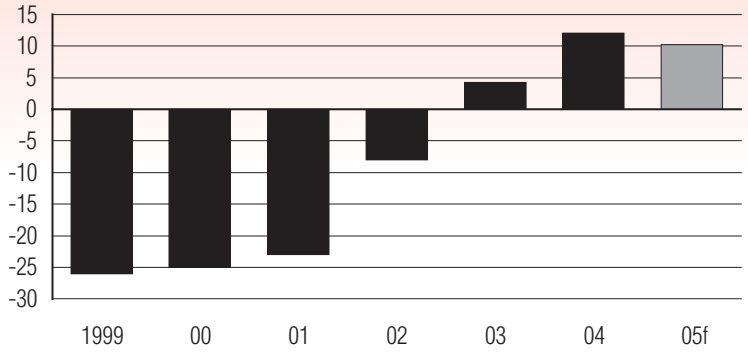
Yet the old India persists: an impoverished, overpopulated, traditional agrarian economy. Annual monsoon rains are still a very important swing factor in terms of agricultural performance and national economic growth. A good monsoon—not too heavy, not too light—can easily add 2 per cent to annual GDP growth. Economic reform has proceeded unevenly. There have been some successes: a value-added tax was introduced recently to widen the tax base and improve fiscal results, and caps on foreign investment have been eased modestly in selected sectors. But progress has been lacking on privatization, financial sector reform, labour market reform and reductions in subsidies to interest groups. Another obstacle is poor physical infrastructure.

If India ever fully opens its economy to enjoy the benefits of free trade and foreign investment, it could achieve a sustainable annual growth rate rivalling or even surpassing that of China. So long as reform remains incomplete, however, India will continue to trail its neighbour. Still, with its younger and faster-growing population, India could sustain an annual growth rate in the range of 6 per cent through 2025. Eventually, India could surpass China in terms of both population and economic growth potential.

Brazil: Still the Country of Tomorrow?

Over the past 50 years, Brazil has seen many twists and turns along its economic path. Microeconomic and trade policy fluctuated, with periods of strong protectionism and cautious market opening. Macroeconomic policy varied from uneven at best to destructive at worst, triggering hyperinflation, external debt crises and sharp devaluation. Since the 1998 devaluation shock, however, Brazil has quietly striven to adopt more disciplined fiscal policies and reduce its habitual overreliance on foreign borrowing (see Chart 4), while opening up to more foreign investment.

Chart 4
Brazil's Current Account Balance
(US$ billions)



f = forecast
Source: Consensus Economics.

Crisis again loomed in the run-up to the 2003 presidential election: the currency rapidly fell in value and the risk premium soared on the country's foreign debt. But the fears have proved unfounded: since taking office late in 2003, President Lula has acted to promote economic stability.

Fiscal operating surpluses have grown beyond 4 per cent of GDP, real interest rates have been maintained at high levels, and confidence has been rebuilt with foreign creditors and local businesses. Brazil is quickly opening its economy through an array of bilateral and regional free trade agreements and discussion, starting in Latin America and spreading to other emerging markets. It has also introduced crucial pension and tax reforms, although the social consensus on structural reform remains fragile. Improved investor confidence has come at the expense of short-term economic growth, eroding Lula's popularity with working-class voters. Brazil's income distribution remains highly skewed. Its middle class numbers 50 million, but that is only a third of the country's population.

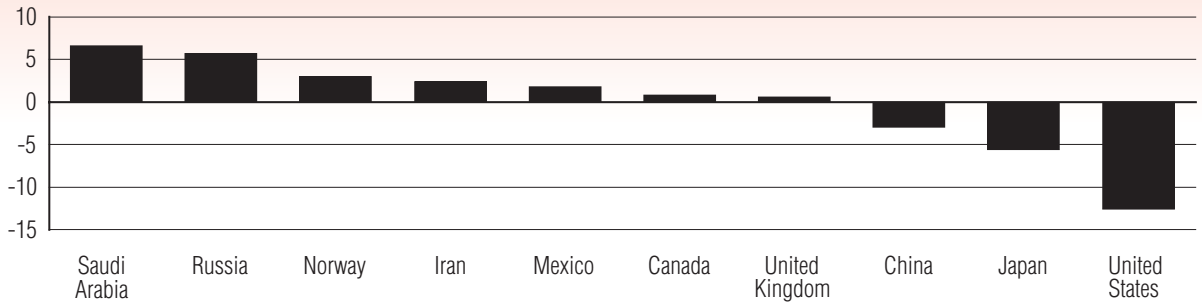
For half a century, Brazil's challenge has been to spur economic growth and, at the same time, to share the benefits of growth more widely and fairly. With continued progress on meeting that challenge, Brazil could sustain annual growth of 4 per cent through to 2025 and could finally stop being "the country of tomorrow."

Russia: Riding High on Oil and Gas

Russia has ridden a roller coaster since the collapse of communism in 1991. The ensuing years saw attempted coups, economic policy drift, hyperinflation, currency crises and a fire sale of state assets. The country reached rock bottom in 1998 when it defaulted on its external debt.

Vladimir Putin's ascent to the presidency represented a turning point, both economically and politically. National governance has become more consistent and predictable, but it fails to conform to Western concepts of democracy. Russia continues to struggle with the basics of modern political culture. The rule of law has not firmly taken hold. Imperial ambitions live on, as shown by the clumsy intervention in the Ukrainian presidential election. In its struggle with Muslim fundamentalism in Chechnya, Russia has again resorted to tough tactics; however, there is still fear that these will not deter further terrorist attacks.

Chart 5
World's Major Oil Producers and Users, 2003
(millions of barrels per day; net production)



Source: International Energy Agency (IEA).

In contrast, the economy has performed remarkably well in recent years, although it is heavily dependent on the oil and gas sector. (See Chart 5.) Russian oil and gas production has recovered to the levels of the late 1980s. Domestic energy consumption is now much lower and more efficient than in the Soviet period; as a result, the country can export two-thirds of its energy production, rivalling Saudi Arabia as the world's leading oil exporter. This strong performance has allowed the Russian economy to achieve a new annual growth baseline of around 6 per cent, and to grow even faster when global energy prices are high. But other sectors have been handicapped by the so-called Dutch Disease (see text box, "Will Canada Catch Dutch Disease?" in Chapter 5)—that is, loss of competitiveness resulting from currency appreciation driven by the energy sector. Bold words have been spoken about the need for wider reform, but action is lacking.

Wider reform has been called for in Russia, but action is lacking. Still, Russia's prospects look much brighter today than they did in 1991 or 1998.

Still, with steady growth and a middle class of roughly 65 million (45 per cent of the population), Russia's prospects look much brighter today than they did in 1991 or 1998. Despite an aging population, sustainable growth of 3.5 to 4.5 per cent should still be possible through 2025.

HOW INTERNATIONAL TRADE IS CHANGING

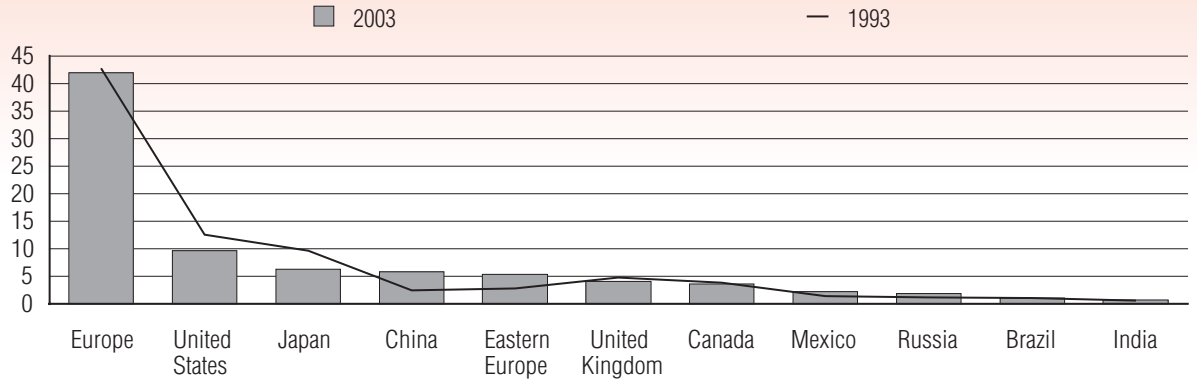
Shifting Rankings in Global Trade

Based on data from the World Trade Organization (WTO), Chart 6 shows that the BRIC nations and other emerging markets are increasingly important in global trade. Emerging economies have lower labour costs and are adopting more open policies toward trade and investment. Their export growth has outstripped that of more mature economies. China accounted for 2.4 per cent of total world exports in 1993, compared with close to 6 per cent in 2003. Over the same period, Mexico's share of total world exports grew from 1.4 to 2.2 per cent, Russia's share rose from 1.2 to 1.8 per cent, and the share of Eastern Europe (including Russia) increased from 2.8 to 5.3 per cent. Brazil's and India's shares were effectively constant.

China, Russia and Eastern Europe increased their export share as a result of making a transition from planned, relatively closed economic systems to more open, market-based systems. Time is still needed to complete the transition, but these countries can be expected to increase their export shares further. Mexico achieved a higher share as a result of joining the North American Free Trade Agreement (NAFTA), implemented in 1994.

Chart 6 also shows a reduced role in global trade for some of the world's dominant economies. The U.S. share of world exports dropped from 12.6 to 9.6 per cent. Japan's share fell by a third, to 6.3 per cent, and other industrialized nations saw their shares drop as well.

Chart 6
Share of World Exports—Selected Countries
(per cent)



Sources: The Conference Board of Canada; Statistics Canada.

Canada's share of global exports declined marginally even though the country achieved much faster export growth during the 1990s under NAFTA (1994), and under the Canada–U.S. Free Trade Agreement (FTA), implemented in 1989.

Traditional and Integrative Trade in Theory and Practice

The economic theory behind traditional international trade is frequently described in terms of absolute and comparative advantage. Under absolute advantage, trade takes place because a good is available only in certain countries, or because a good can always be produced less expensively in one country than another. Comparative advantage is more complex; it involves countries specializing in what they do best. Even if one country can produce everything less expensively than can other countries, greater overall wealth is created if that country specializes in whatever it does the very best, which yields the best return, and then trades with other countries. Imagine a person who is not only the best lawyer, but also the best typist in town. It pays for the lawyer to focus on legal work and hire a good typist to do typing work. Specialization and trading will increase total output and welfare.

Traditional trade is generally viewed as the sale and shipment of physical goods between countries. Trade in goods is easy to define and measure, and therefore simple to understand. Trade in services has also existed since the earliest days of international trade, but its importance has often been overlooked. Even today, statistics on services trade appear significantly later than data on trade in goods. Exports and imports of goods can be easily counted at the border because they involve the physical movement of physical objects. In contrast, services trade involves the cross-border buying and selling of human behaviour and ideas. It is measured via surveys and arm's-length data collection, frequently occurring well after a transaction takes place.

In the traditional trade paradigm, foreign markets are primarily end-users of export products. Goods are sold internationally to be consumed or invested to produce other goods for domestic consumption. In the case of traditional exports, the foreign (or imported) content is usually low—less than 20 per cent. Limited attention is directed to the role of imports in production and consumption. Not surprisingly, the general public commonly sees trade issues in terms of harm caused to exports by the protectionist behaviour of another country. Occasionally, public attention turns to low-cost imports that crowd out local producers. The media will rarely focus on a producer that is hurt by restrictions on imports of intermediate or capital goods.

The pro-export bias of the traditional paradigm leads people to think that exports are good for a country and imports are bad, taking jobs away from local workers. Economists refer to this way of thinking as mercantilism. It contains a basic flaw: every export requires an import somewhere else, since international trade must ultimately balance. The mercantilist mindset creates the risk of trade protectionism, especially when economic growth declines or when a particular industry is deemed to be threatened by competition from cheaper imports. As history has shown (for example, in the circumstances surrounding the Great Depression of the 1930s), protectionism is a recipe for global economic stagnation and conflict between nations.

The term we have given to the new paradigm is "integrative trade."[1] This term better reflects current practice, capturing all elements used by firms to achieve the lowest possible cost and maximize the return for their products—exports, imports that are used to produce exports, foreign direct investment (both inward and outward), offshore outsourcing and insourcing, and sales from foreign affiliates created through foreign direct investment, notably sales of services. The growing importance of integrative trade does not imply that traditional trade is being entirely replaced; instead, it is being enhanced. Traditional trade remains important for many products in many sectors of the economy, and it creates a strong foundation for the next generation of trade opportunities by promoting greater international economic integration.

1 See Glen Hodgson, *Trade in Evolution: The Emergence of Integrative Trade* (February 2004), published at <www.edc.ca>.

The Emergence of Integrative Trade

The past half century has brought expanded multilateral and regional trade liberalization, along with advances in transportation and communications technology. At the same time, a number of developing countries have been integrated into the world economy. These changes have transformed global patterns of production, investment and trade. (See box, "Traditional and Integrative Trade in Theory and Practice.") Traditionally, trade involved physical goods with high domestic content, sold and shipped between buyers and sellers in different countries. Today this model has been reshaped by greater international competition for capital, technology and markets. Products are increasingly broken down into components, each of which is produced in the most advantageous location. The result has been the development of global products, distributed through global supply chains across many countries.

To a growing extent, firms rely on foreign direct investment (FDI) to build and manage the global supply chains that have emerged. Growth in FDI flows has accordingly surpassed the growth in both trade and GDP over the past two decades, with companies using FDI to construct international supply chains, develop closer contacts with their foreign customers and partners, and provide better service. The accumulated stock of global FDI nearly tripled during the 1980s and tripled again in the 1990s, attaining a level of US$8.2 trillion by 2003. (See Chart 7.) Accordingly, international trade and investment should now be seen as parts of an integrated system. Businesses generate revenues and profits not only by exporting and importing goods, but also by investing in other countries or accepting inflows of FDI to make themselves more competitive. The profits and dividends realized from FDI are subsequently transferred between countries and reinvested in even more trade, leading to greater economic growth.

Outward FDI: Trade Substitution or Trade Creation?

Trade and foreign direct investment have both grown explosively over the past two decades. As a result, economists have changed their view of the relationship between these two activities.

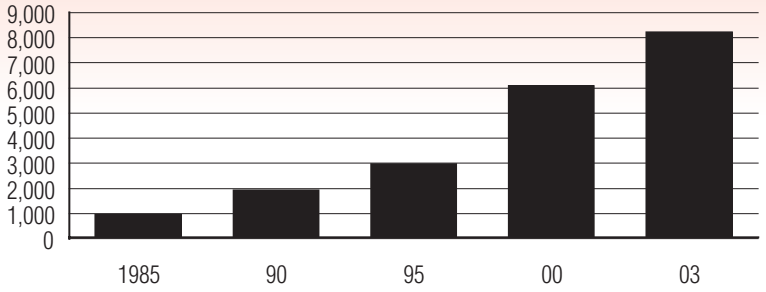
Traditionally, FDI was seen as a substitute for trade: if a firm invests in setting up affiliates in other countries, its sales from the affiliates could replace exports from its home country to the foreign markets. The substitution hurts the home country's domestic economy through a negative impact on national production and employment. More specifically, before the multilateral liberalization of trade that gained momentum in the 1960s and 1970s,[5] multinational corporations invested in other countries as a way of avoiding tariff barriers that made it difficult for them to increase export sales. By establishing branch plants abroad, they could avoid prohibitive tariffs—but export sales from their home country were likely to grow more slowly or even decline.

This branch plant phenomenon was common in Canada through most of the past century. High tariff barriers encouraged FDI, generally from American companies. The investment in Canada became a substitute for exporting manufactured products from the United States. Foreign companies also used FDI to secure access to Canada's bountiful natural resources.

Exports and imports can no longer be treated separately. They are integral parts of the same global supply chain.

Globalization has altered economists' view of the relationship between FDI and trade. Certainly, FDI can be a substitute for trade in certain markets, sectors and products, but it can also complement export activity. In other words, economists now see outward FDI as creating new exporting (and importing) opportunities.[6] FDI enhances a recipient country's ability to expand production in the sector where the investment is directed. More economic activity means more jobs and income gains in the recipient country. The higher incomes lift the country's ability to spend on imports. Given the trade linkages resulting from the initial investment, some of the imports will come directly from the investing country, and it will benefit indirectly from generally higher import levels in the recipient country. Often, imports from the investing country may be capital equipment or engineering services to support a particular project; this is the case especially when a developed country invests in a less developed country.

Chart 7
World Stock of Inward Foreign Investment
(US$ billions)



Source: United Nations Conference on Trade and Development (UNCTAD).

Integrated Global Supply Chains

With trade liberalization, technological change and the rise of integrative trade, the foreign or imported content of exports has increased. Firms now seek better quality and pricing for all the parts of their supply chain, whatever the source. The smooth flow of imports around the world has become crucial to the health of the global economy. Exports and imports can no longer be treated separately. They are integral parts of the same global supply chain, especially in manufacturing. In sectors such as telecommunications, aerospace, ground transportation and the automotive industry, work-in-process travels repeatedly back and forth across borders before the final output is delivered to the customer.

Global supply chains explain why close to one-third of world trade today is intra-firm trade. Multinational companies have production plants and distribution networks in various countries to take advantage of differential costs of production, resource markets and tax rates. The fragmentation of the production process requires their affiliates to engage in trade before assembling the components of a product for final sale to customers. Some intra-firm trade involves shipping final goods from assembly facilities to foreign affiliates, which then distribute the goods in the countries where they are to be consumed.

Deciding how to distribute production around the world is an extremely complex task. Corporations must determine the costs and benefits of different locations, as well as the degree of control needed over the production process. As they divide production among different countries, they must accurately assess advantages, risks

and vulnerabilities. Their decisions affect the overall volume and pattern of intra-firm trade, and the extent to which external suppliers participate through outsourcing.

The rise of emerging markets has contributed to the move toward globalization and integrative trade. Even without that impetus, the shift would have occurred: international trade was already expanding and evolving in response to the proliferation of multilateral, regional and bilateral trade agreements in the 1980s and 1990s. But firms now have many more options to weigh when determining where to locate different parts of their global supply chain. China, for example, offers potential foreign investors not only low labour costs, but a growing technical workforce and improving infrastructure. Other countries, such as Vietnam, are now eager to open up their economies in order to compete with China for valuable investment dollars.

With the move towards globalization and integrative trade, firms now have many more options to weigh when determining where to locate different parts of their global supply chain.

CANADA'S STANDING IN THE WORLD TODAY—AND TOMORROW

How has Canada been affected by demographic change and the growing prominence of integrative trade and global supply chains? In this section, we use economic and financial indicators to analyze Canada's ranking in the world economy, and we investigate the changing patterns of Canada's international trade over the past 15 years. We also examine trends in Canada's inbound and outbound FDI, as well as recent developments in sales involving Canadian companies and foreign affiliates.

HOW CANADA RANKS IN THE WORLD ECONOMY

Slipping Share and Status

Since the second half of the past century, Canada has had an important place in the global economy. As a founding member of the International Monetary Fund (IMF), the World Bank and the General Agreement on Tariffs and Trade (GATT), we have always enjoyed high standing in these entities. From the outset, Canada has been represented and involved at senior levels in policy questions, as well as in financial and lending issues.

Over the decades, Canada and other individual countries have seen their share of the global economy slowly decline.

Canada's standing in the IMF and the World Bank serves as an indicator of our international economic status over the past five or six decades. A country's IMF quota and World Bank share broadly reflect its share of global GDP and its involvement in international trade. Canada's capital share and voting power in these organizations is significant. Our IMF quota is 2.99 per cent—the same as China's, placing us seventh in the world. Over the decades, however, Canada has seen its shares and voting power slowly decrease as new members joined the two organizations, and as our actual shares of the global economy and international trade were recalculated.

In capital share and voting power, developing countries are generally under-represented at the IMF and the World Bank. Shares are only partially realigned with each increase in capital or financial resources, and developing-country users of IMF and World Bank credit cannot act as a financial backstop for themselves. Canada and other industrialized countries thus have shares that reflect their past standing in the global economy, not where the world is now or where it is headed.

By the measure of nominal GDP at current (April 2005) exchange rates, Canada places ninth in the world, at 2.39 per cent. (See Chart 8.) We have the smallest economy among the Group of Seven (G7),[7] and we also rank behind China and Spain. Of the BRIC economies, only China outranks Canada in share of global GDP at current market exchange rates. But market-based exchange rates fluctuate and can distort comparisons between countries. For example, the euro has appreciated against the Canadian dollar over the past three years, thereby boosting Spain's share of nominal global GDP beyond the share of Canada.

For international comparisons and country rankings, purchasing power parity (PPP) is a more stable measure. PPP provides the conversion rates at which a comparable basket of goods and services would be the same price in all countries—in other words, the conversion rates at which purchasing power is equalized. PPP represents the long-term equilibrium for a country's exchange rate within the world economy. In many respects, it provides a preview of the country's future international economic status. There are various estimates of PPP—*The Economist*, for instance, has its Big Mac Index, based on the price of a McDonald's hamburger—but they generally produce comparable results.

The trend is unmistakable: the North's share of global GDP is declining and the South's share is rising.

Using PPP conversion rates, Canada's share of global GDP slips to less than 2 per cent, and its global ranking slides from ninth to 11th place. But all the other G7 countries also see their GDP shares fall by a third or more by the measure of PPP. For example, the U.S. share of global GDP declines from 29 to 21 per cent, and that of Japan from 11.5 to 7 per cent.

The share of global GDP jumps for all the BRIC economies, as does their global ranking, when PPP conversion rates are applied. In the case of China and India, each country's share of global GDP triples. China's leaps from around 4 per cent to over 13 per cent, and its ranking leaps from eighth to second. India's share increases from 1.7 per cent to 6 per cent, advancing it from 11th to fourth place in the global rankings. Brazil and Russia each see their share of global GDP increase by a full percentage point. Russia moves up to ninth and Brazil to 10th place in the global rankings, leaving Canada behind in 11th place.

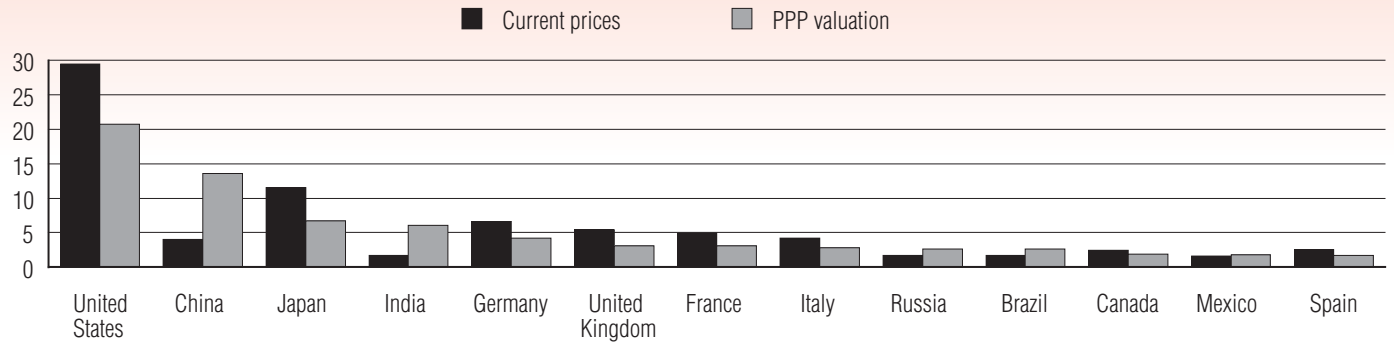
There is no guarantee that PPP estimates and actual market-determined exchange rates will eventually converge. However, the trend is unmistakable: the North's share of global GDP is declining and the South's share is rising. With an aging population and slowing rates of annual economic growth potential, Canada will find it hard to avoid falling further in the global rankings.

Two observations can be drawn from this situation. First, Canada will have an increasingly difficult time justifying its claim to G7 membership in the years ahead. But second, we are not the only member of the G7 to see a change in global status. Under PPP rates, China's share of global GDP exceeds that of Japan and every other G7 member except the United States. Powerful forces are clearly at play in the global economy, and they will change the distribution of economic power in coming decades.

Status in International Finance

Another measure of status is the use of a country's currency as a means of exchange or as a store of value. By far, the bulk of world trade is denominated in U.S. dollars, although the euro is taking on increasing

Chart 8
Country Shares of Global GDP: Current Exchange Rates vs. PPP
(per cent)



Source: International Monetary Fund.

importance. As Table 1 shows, these two currencies are the dominant reserve currencies, with the U.S. dollar representing about 64 per cent of identified global reserves and the euro nearly 20 per cent. The yen is also a major reserve currency, since Japan is a leading trade partner for many countries. Finally, since London remains the world's financial hub, the British pound continues to be an important reserve currency.

In contrast, foreign demand for Canadian dollars is negligible. The amount of Canadian currency held by most countries is not sufficient to be reported separately. Our own analysis of Canadian liabilities indicates that the United States is the largest holder of Canadian currency, followed by the United Kingdom.[8] In both cases, the Canadian content of these countries' reserves is marginal compared to that of first-tier reserve currencies. In short, the Canadian dollar is at best a second-tier currency in international trade and finance.

Table 1
Composition of World Foreign Exchange Holdings
(percentage as of year end, 2003)

Currency	All countries	Industrial countries	Developing countries
U.S. dollar	63.8	70.8	59.3
Euro	19.7	20.9	18.9
Japanese yen	4.8	4.0	5.2
U.K. pound sterling	4.4	1.7	6.2
Swiss franc	0.4	0.2	0.6
Unspecified currencies	6.8	2.3	9.8

Sources: International Monetary Fund, AR of Executive Board for fiscal year ended April 30, 2004.

In terms of equity market capitalization, Canada actually performs better than on some of the other measures we have discussed: it currently ranks sixth in the world, ahead of Italy among the G7 countries. How long it can maintain that ranking, however, is open to question, given the rapid expansion of equity markets in the BRIC countries. China, India and Russia have each shown spectacular growth in equity market capitalization over the past decade, and they will soon overtake Canada within the global rankings.

A peculiarity of Canada's equity markets is the small scale of Canadian firms. Only the United States and India have more listed companies than Canada—an indication that the Canadian economy is heavily dependent on firms that are small and medium-sized in the global arena. (See Table 2.)

The performance of the mining sector is a notable exception to Canada's slowly declining status in international equity finance. Here the country is a world leader. There is much that we can learn from the sector's performance. (See box, "The Mining Sector Equity Market—A Model to Replicate?")

Table 2
Global Equity Market Capitalization

	Value (US$ billion)		Companies (number)	
Country	1990	2004	1990	2004
Brazil	16,400	330,347	581	357
Canada	242,000	893,950	1,144	3,578
China	2,030	639,765	14	1,384
France	314,000	1,355,643	578	723
Germany	355,000	1,079,026	413	684
India	38,600	387,851	2,435	4,730
Italy	149,000	614,842	220	271
Japan	2,920,000	3,040,665	2,071	3,116
Russia	244	267,957	13	215
United Kingdom	849,000	2,412,434	1,701	2,311
United States	3,060,000	14,266,266	6,599	5,295

Source: World Bank Group, *World Development Indicators 2005* (March 2005).

A Choice Ahead for Canada

Canada's status within the global economy is slowly slipping. Canada's share of global GDP is not seventh in the world, either at current exchange rates or on the basis of more stable and long-term PPP exchange rates. Foreign demand for Canadian currency as a means of exchange and store of value is negligible. Our equity market presence is still substantial, but it is at risk of decline in relative terms. Only the mining sector equity market offers some hope for success, with a strategic approach to capital market growth, based on niche specialization.

In striking contrast is the performance of China, India and the other BRIC nations. Their rise is increasing pressure for a reordering of international economic relations. Canada must continue to press to take on an expanded role for the G20 or a comparable group.

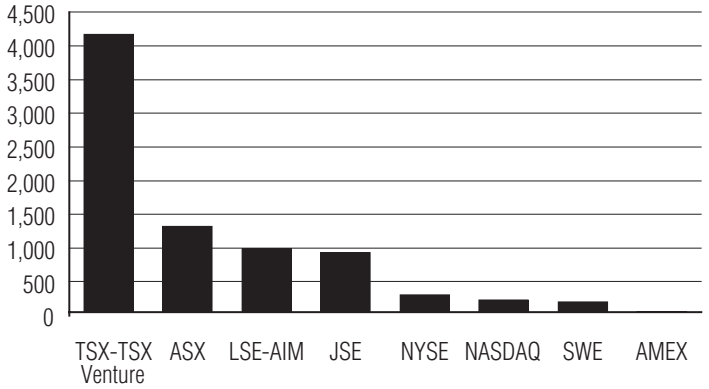
The Mining Sector Equity Market—A Model to Replicate?

Canada's mining and mineral sector (MMS) is a global leader in equity. The Toronto Stock Exchange and the TSX Venture Exchange lead in listing mining companies—over 1,100 firms valued at about US$120 billion. TSX mining companies raised US$4.2 billion in 2004, the largest amount raised on any exchange in the world. (See Chart, "Global Comparison of Mining Equity Financings, 2004.")

Canada's abundant mineral wealth is but one factor in this strong performance. Several others are involved:

- **Superior access to capital**. The TSX Venture Exchange has unique, innovative listing mechanisms and a track record of successful junior mining incubation.[1] Mining and mineral companies listed in Canada are eligible for inclusion in the globally recognized Standard & Poor's and TSX indexes, as well as specialized mining indexes. In addition, historical trading volumes show a liquid secondary market for mining securities.

Global Comparison of Mining Equity Financings, 2004
(US $ millions)



Source: Gamah International (December, 2004, Preliminary data compiled by TSX Group.

- **Global reach**. Of Canada's goods-producing industries, the mining and mineral sector has the largest stock of outward foreign direct investment. Canadian equity markets help to finance international mining and mineral projects with significant country risk as well as product or sectoral risk, notably working with many developing countries. As of January 2005, a third of the 7,900 mineral projects held by public Canadian companies were outside North America; 780 were in South America alone.

- **Supportive regulation and infrastructure**. Canadian securities laws and exchange standards—particularly mining disclosure requirements unique to Canada[2]—were designed to inspire investor confidence in the MMS capital market. Over 50 per cent of the world's public mining companies are listed in Canada, and the country has one of the finest and strongest scientific and technical infrastructures related to the minerals and metals industries.

- **Innovative policy measures**. In October 2000, the Government of Canada introduced a temporary 15–per cent federal Investment Tax Credit for Exploration for flow-through share investors. This stimulated investment in mineral exploration in Canada, as is shown by the change in levels of Canadian exploration expenditures, from $600 million in 2001 to more than $900 million in 2004.

Can other industries learn from this success story? To follow a similar path, other sectors must have or develop a comparable core competency, combined with global aspirations. Needed as well is joint action by industry, government and financial institutions—specifically, to replicate the TSX Venture Exchange incubation process in some form. The challenge remains to be met.

1 For example, the Capital Pool Company program is very popular with junior oil and mining firms in Canada. The program allows entrepreneurs to raise capital quickly, with relatively inexpensive listing fees.

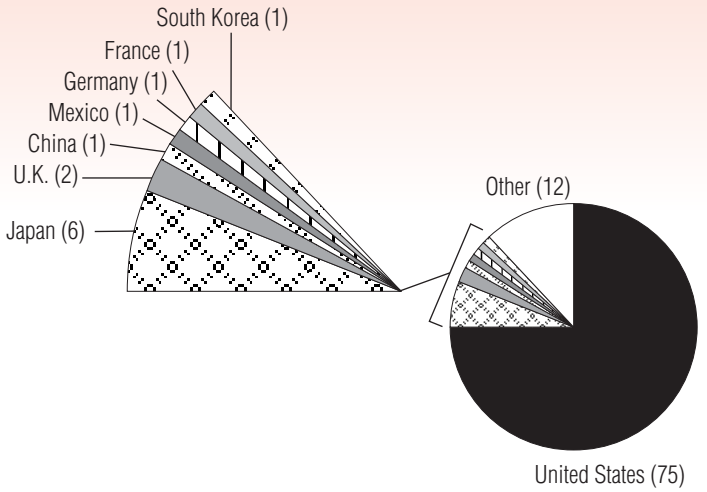
2 The TSX enforces news release disclosure guidelines for exploration and mining companies. In 2001, the Canadian Securities Administrators published National Instrument 43-101, a rule governing standards of disclosure for those companies.

TRENDS IN CANADIAN TRADE

Analysis by Country and Content

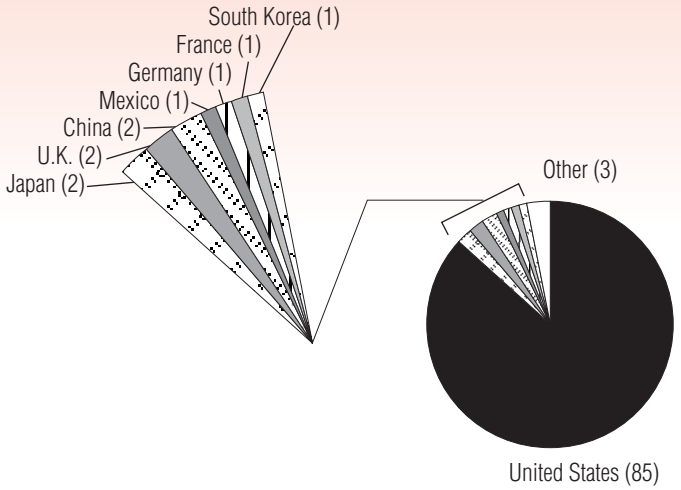
The United States continues to be the primary destination for Canada's exports, as well as the primary source of our imports. Since the FTA came into effect in 1989, Canada has become steadily more dependent on exporting goods and services south of the border, and trade as a share of our GDP has grown significantly (total trade now makes up 73 per cent of our GDP, up from 51 per cent in 1990). In 2004, total Canadian exports to the United States were worth $348.2 billion (current dollars). Our next most important market was Japan, which received a mere $8.5 billion worth of Canadian exports. Some 85 per cent of Canada's exports went to the U.S. market in 2004, up from 75 per cent in 1990. (See charts 9 and 10.)

Chart 9
Canada's Exports by Country, 1990
(per cent; share of total exports)



Sources: The Conference Board of Canada; Statistics Canada.

Chart 10
Canada's Exports by Country, 2004
(per cent; share of total exports)



Sources: The Conference Board of Canada; Statistics Canada.

Ranking behind the United States and Japan as destinations for Canadian exports in 2004 were the United Kingdom and China: each received about 2 per cent of total Canadian exports.

Close to 25 per cent of Canada's exports to the United States are motor vehicles, followed by mineral fuels, machinery and mechanical appliances. (See Chart 11.) Mineral fuels accounted for 19 per cent of total exports in 2004, compared with 11 per cent in 1990—although this increase mainly reflects higher oil prices in recent years.

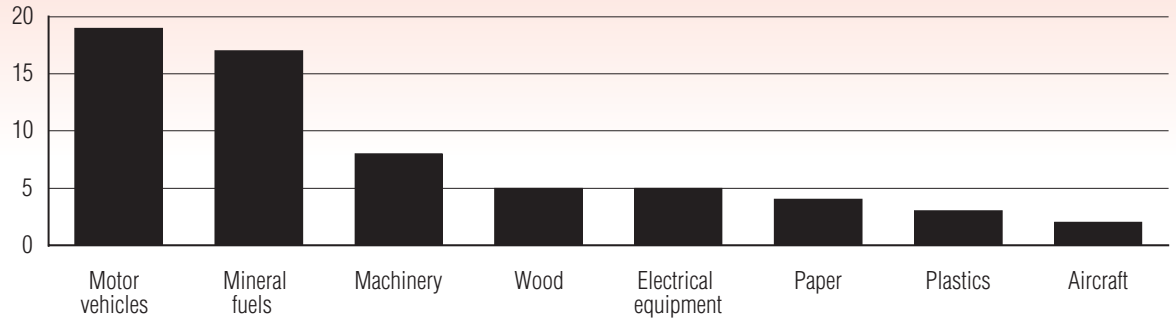
The United States continues to be the primary destination for Canada's exports, as well as the primary source of our imports.

The United States is also Canada's major source of imports, although this lead is diminishing. Close to two-thirds of Canada's imports originated from the United States in 1990; by 2004, this share had fallen to 59 per cent. (See charts 12 and 13.) In 1990, Canada's second-largest source of imports was Japan, followed by the United Kingdom. By 2004, Japan had dropped to fourth place and the United Kingdom to fifth, behind China and Mexico.

Motor vehicles, as well as machinery and mechanical and electrical equipment, make up nearly half of Canada's total imports. This share has been stable since 1990.

Canada's trading relationship with the United States far outweighs all our other trade relationships. Still, we have seen steady growth in our trade with emerging markets such as China, Mexico and India. Canada's total exports to China rose from $1.7 billion in 1990 to $6.6 billion in 2004, a 287 per cent increase. The share of our exports going to the Chinese market doubled

Chart 11
Canada's Exports by Products, 2004
(per cent; share of top 25 export products)



Source: IEA.

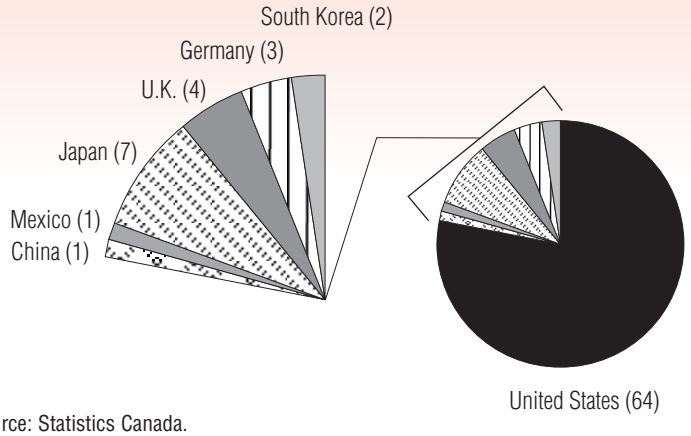
over that period, to 2 per cent of our total exports. Reflecting the impact of NAFTA, Canadian exports to Mexico grew by 353 per cent, to $3 billion in 2004. Canada's exports to India grew by 173 per cent from 1990 to 2004, although they remained low in current dollar terms, at $875 million.

While exports to key emerging markets have taken off, Canada's trade with some of its more traditional markets has either stagnated or declined. Japan's share of total Canadian exports dropped from 6 per cent in 1990 to 2 per cent by 2004, while the U.K. share remained stable at 2 per cent. The decline in exports to Japan appears to reflect reduced demand for Canadian goods as a result of repeated recessions in Japan during the 1990s, plus the change in exchange rates over the last 15 years.

Most industrialized countries' shares of imports to Canada have dropped markedly from 1990 levels. The U.S. share has gradually declined, while Japan's share of total imports to Canada fell from 7 to 4 per cent. The share of imports from the United Kingdom dropped from 4 to 3 per cent; France's share declined from 2 to 1 per cent.

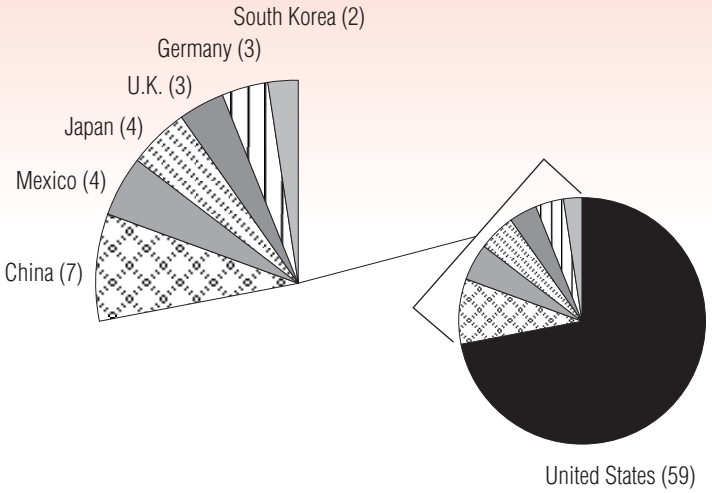
Canadian imports from emerging markets have taken off since 1990, with Canadian consumers and producers taking advantage of these countries' lower labour costs. China is now Canada's second-largest source of imports, with the total value rising from $1.4 billion in 1990 to $24.1 billion by 2004—an increase of more than 1,500 per cent! In the same period, imports increased by 666 per cent from Mexico, 594 per cent from India, 220 per cent from

Chart 12
Canada's Imports by Country, 1990
(per cent; share of top 10 importing countries)



Source: Statistics Canada.

Chart 13
Canada's Imports by Country, 2004
(per cent; share of top 10 importing countries)



Source: Statistics Canada.

Russia, and 197 per cent from Brazil. (Despite this growth, neither Russia nor Brazil ranks among Canada's top 10 import sources.)

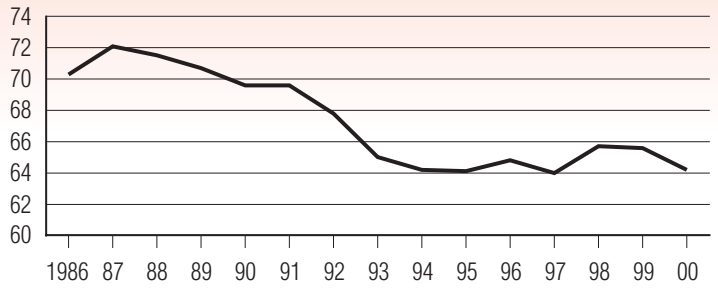
The United States still dominates Canada's import market overall, although Canadian imports from the United States no doubt incorporate more and more offshore content, from countries such as India and China. We expect Canadian trade with emerging markets to continue to increase significantly over the next two decades, with a material impact on the Canadian economy.

Canada and Global Supply Chains

Canada's trade over the past two decades also reflects the growing importance of global supply chains. With exports and imports becoming increasingly interconnected, the domestic content of Canadian exports has fallen. (See Chart 14.) From sector to sector, there is considerable variation in Canadian content of exports and overall production. In general, domestic content is highest (above 80 per cent) for the primary, agricultural and services sectors, where it is more difficult to disaggregate production across international boundaries. Canadian content is lower for exports of manufactured goods (60 per cent or less) because manufacturing activity can more easily be standardized and adapted to global supply chains.

The average Canadian content of exports has declined from around 70 per cent in 1990—a year after implementation of the FTA—to 64 per cent in 1999, a level at which it appears to have stabilized. Most of the drop during the 1990s is attributable to the declining domestic content of exported manufactured goods. Examples include standardized manufactured exports such as washing machines, dryers and dishwashers, as well as complex goods such as integrated circuits; their Canadian content has declined as manufacturers have restructured operations and located more of their supply chains in foreign markets to reduce costs and remain competitive. In the automotive sector, Canadian content is generally below 40 per cent, and it can even dip toward 30 per cent for some finished vehicles. Trends are similar in other highly complex manufacturing sectors, such as aerospace and ground transportation. Canadian content remains substantial, but these goods and related services are truly multinational.

Chart 14
Domestic Content of Canadian Exports
(per cent)



Source: Export Development Canada.

Foreign Direct Investment: The Canadian Experience

With completion of the Kennedy, Tokyo and Uruguay trade rounds and the resulting increase in trade liberalization (see endnote 6), foreign direct investment surged starting in the 1980s. Multinational corporations have extended their supply chains globally, working with partners in foreign countries to optimize their competitiveness.

For their part, Canadian companies have become increasingly reliant on FDI, both inward and outward. To build global supply chains linking together their production processes, Canadian companies have invested record amounts abroad; at the same time, foreign investment has sharply increased in Canada. In 1990, Canada's inbound FDI stock represented 19 per cent of nominal GDP; by 2004, the share had increased to 28 per cent. Over the same period, outbound FDI stock grew from 14 to 34 per cent of GDP. But despite the growth, Canada's global share of inward and outward FDI has fallen since 1990 as other countries have engaged in foreign investment at an even faster rate.

Taking advantage of opportunities opened up by the FTA and the end of the branch plant economy, Canadian firms set to work building their own global networks. Over the past 15 years, Canada has shifted from being a net inward investor to a net outward investor. In 1990, the stock of inward FDI was $131 billion, while outward FDI was $98 billion. In 1997, the stock of outward FDI surpassed inward FDI. By 2004, inward FDI stood at $366 billion, while outward FDI had soared to $445 billion. (See Chart 15.)

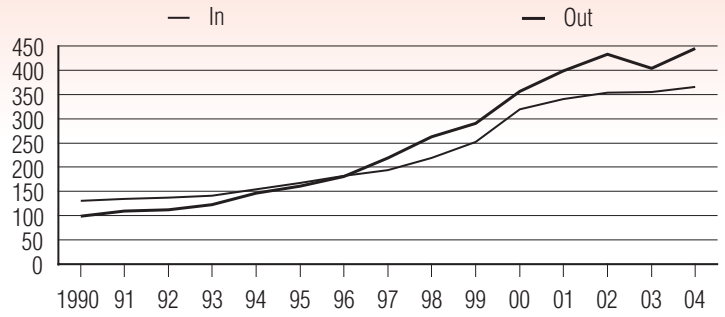
Consistent with increased North American economic integration, the United States dominates both inward and outward flows of Canadian FDI. In 2004, 65 per cent of inward FDI flows originated from the United States, and 44 per cent of outward FDI flows were destined for the U.S. market.

As with trade in goods, however, Canada has seen growth in FDI in both directions with emerging markets. For example, in 1990 there was virtually no Canadian FDI, either inward or outward, with China. The stock of Canada's FDI in Mexico reached $2.8 billion in 2004, compared with only $245 million in 1990. (See Chart 16.) Similarly, the stock of Canada's FDI in Brazil increased from $1.7 billion in 1990 to $6.4 billion by 2004. The stock of Canada's FDI in China grew to $647 million by 2004, while China's FDI stock in Canada increased to $220 million (admittedly, the figures remain low). Inward FDI from emerging markets such as Brazil, Mexico and India remains minimal, but the pace of FDI from some of these countries has quickened in recent years as their businesses have become increasingly integrated into the world economy.

By sector, manufacturing is Canada's largest recipient of inward investment dollars, with a stock of $157.1 billion in 2004. (See Chart 17.) Ranking next as recipients of inward FDI are mining, and oil and gas, followed by the finance and chemical sectors. Canada's outward FDI goes mainly to the finance and insurance sector in foreign countries. In 2004, outward FDI stock in this sector stood at slightly more than $153.7 billion—ahead of manufacturing, with a stock of about $107 billion. The outward stock of FDI in finance and insurance has grown by close to 70 per cent since 1999; Canada became a net outward investor in the mid-1990s, primarily because of FDI in financial services.

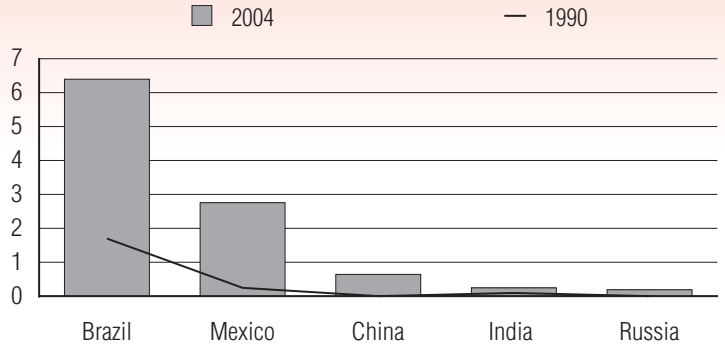
The Canadian economy has benefited from the growth in both inward and outward FDI. Inbound FDI creates jobs, and it boosts trade and domestic capacity. FDI into Canada can increase profits for the investing foreign company, with the expectation that the profits will eventually be repatriated. While the benefits of outward FDI may be less well understood by the Canadian public, the Canadian economy is reaping the rewards of investing in foreign markets. FDI from Canada to

Chart 15
Canada's Stock of FDI—Inbound and Outbound
(billions of current $)



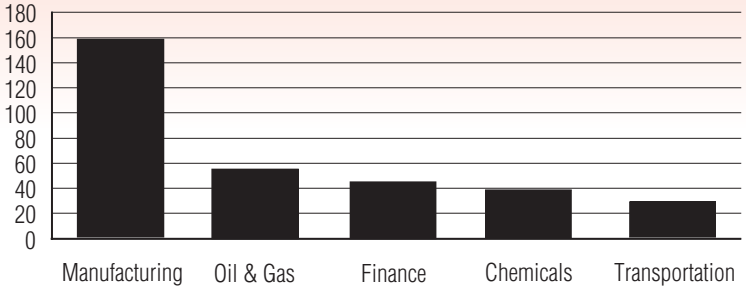
Source: Statistics Canada.

Chart 16
Canada's Outbound FDI by Selected Countries
($ billions; stock)



Sources: The Conference Board of Canada; Statistics Canada.

Chart 17
Canada's Inbound FDI by Industry, 2004
($ billions; stock)



Source: Statistics Canada.

another country generates investment and jobs in the recipient country. This increases profits for the Canadian company, and, more importantly, it raises export volumes from Canada. The impact of trade creation is especially significant when the recipient is a developing country.

Outward FDI and Trade Creation: The Evidence

We earlier noted that economists have changed their views on the relationship between FDI and trade: they now see FDI as complementing export growth. In an analysis of this relationship, the Organisation for Economic Co-operation and Development (OECD) concluded that, on average, each dollar of outward FDI generated double that amount in additional exports from the originating country to the recipient. FDI strengthens commercial links between the originating country and the recipient, thereby expanding exports. Moreover, FDI can stimulate intra-firm trade in both directions. The OECD study found that the trade multiplier was stronger when the recipient was a developing country rather than a mature economy: FDI to a developing country could boost trade for the investing country by three to six times the amount of the original investment.[9]

Economists have changed their views on the relationship between FDI and trade: they now see FDI as complementing export growth.

Export Development Canada (EDC) has conducted research on the FDI-export multiplier for Canada. Its research concluded that flows of FDI from Canada to the United States and other mature economies led to follow-on export sales of about 60 per cent of the initial investment, or a multiplier of 0.6. On the basis of the OECD analysis, EDC established a multiplier of 2.0 for FDI flows from Canada to developing countries, with the benefits spread over a number of years; that is, follow-on export sales from the investing country amounted to twice the initial investment. The export multiplier for developing countries is higher because of less efficient resource allocation in these markets; accordingly, increased foreign investment has the potential to stimulate faster trade growth.[10]

These findings suggest various ways to examine the link between outward Canadian FDI and exports. A correlation analysis we undertook tested the relationship between outward Canadian FDI and exports to a few select countries for the years 1990 to 2004. The results (see Table 3) showed a strong positive correlation (0.95) between total exports and outward FDI; this is consistent with the consensus view in the economic literature that outward Canadian FDI would contribute to stronger demand for Canadian goods and services in recipient countries.

On a country basis, the correlation between outbound FDI and exports was strongest for the United States, at 0.97. Given the close integration between the two economies, this is not surprising. Also strong was the correlation for Mexico (0.83), Canada's other NAFTA partner, and for China (0.73). Correlation results for India, Russia and Brazil were positive but progressively weaker.

In counterpoint, the correlation coefficient for Japan was negative (–0.21), indicating that outward Canadian FDI to Japan might act as a substitute for higher Canadian exports to the Japanese market. FDI to Japan from Canada started to surge in 1999, when exports to Japan began to decline. Trade barriers have made it difficult for Canadian businesses to increase exports to Japan, perhaps necessitating FDI to penetrate the Japanese market. Of course, other factors not captured by the correlation analysis could explain the weaker Japanese demand for Canadian exports—for instance, the country's weak growth through much of the 1990s, plus its focus on intra-Asian trade.

Table 3
Correlation Between Outward Canadian FDI and Exports

Total Canadian Trade	0.95
Exports to the United States	0.97
Exports to Mexico	0.83
Exports to China	0.73
Exports to Japan	–0.21

Sources: The Conference Board of Canada; Statistics Canada.

As the Japanese example shows, numerous factors affect foreign demand for Canadian products and services, including real GDP growth, exchange rate movements, and absolute and comparative advantage. The FDI-export correlation analysis considers none of these factors. Nevertheless, the analysis reveals a close statistical relationship between outward FDI and exports in the U.S., Mexican and Chinese markets. These findings are consistent with the view that outward FDI and exports are, in fact, complementary in some of Canada's key export markets.

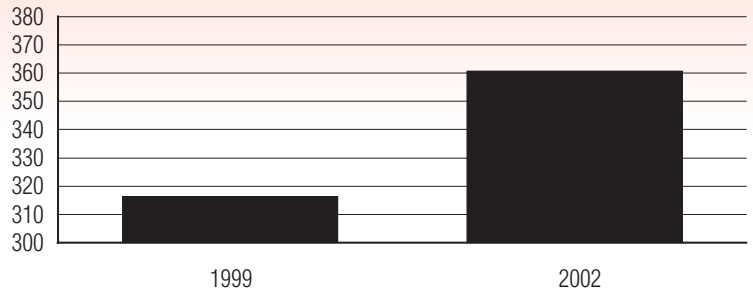
Sales from Canadian Foreign Affiliates

Another result of the surge in outward Canadian FDI has been increased sales from Canadian foreign affiliates. The sales have been measured only recently by Statistics Canada, using detailed data for the years 1999 to 2002 exclusively. In addition, the data capture gross, not net, sales; in other words, exports from Canada to affiliates are not subtracted, with the result that not all of these affiliate sales are incremental. Nonetheless, the numbers show that goods and services sales from Canadian foreign affiliates reached $360 billion in 2002—a figure comparable to total Canadian goods exports in that year—and they increased by 14 per cent over the four-year period. (See Chart 18.) In essence, these massive sales create a new dimension of the Canadian economy beyond our borders.

One result of the surge in outward Canadian FDI has been increased sales from Canadian foreign affiliates.

Sales from manufacturing companies accounted for close to 50 per cent of the total. However, services make up almost 40 per cent of total sales from foreign affiliates, and such sales of services are nearly triple the level of Canadian services exports. Services sales from Canadian-owned foreign affiliates increased strongly from 1999 to 2002, rising by 17 per cent. Services sales are also more likely to be incremental, since it is hard to export and then sell services. To a growing extent, Canadian businesses in the services industry are using sales from their foreign affiliates, not exports, to meet the needs of their foreign clients.

Chart 18
Canada's Foreign Affiliate Sales
(current $ millions)



Source: Statistics Canada.

The General Agreement on Trade in Services (GATS) identifies **four modes of trade in services** (below, "supplier" refers to the country offering the service, and "consumer" refers to the country that purchases the service):

Mode 1—Cross-border supply: A service is supplied from a supplier's country of residence to a consumer's country of residence.

Mode 2—Consumption abroad: A service is supplied through the movement of a consumer to a supplier's country of residence.

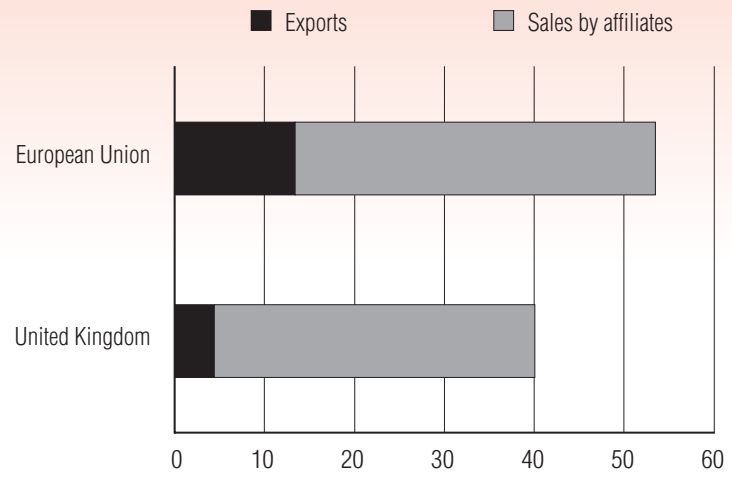
Mode 3—Commercial presence: A service is supplied through the movement of a commercial organization to a consumer's country of residence.

Mode 4—Presence of a natural person: A service is supplied through the movement of a natural person—that is, an individual who does not reside in the country and who is a national of another country—to a consumer's country of residence.

What explains the remarkably high sales from Canadian foreign affiliates generally, and particularly their sales of services? Partly at play are traditional trade factors. Facing barriers to entry into a foreign market or the need to comply with regulatory standards, Canadian businesses turn to foreign investment as a way of gaining access to that market and serving it. But the sales are also consistent with the integrative trade concept. To ensure that they meet customer expectations, service providers require close contact with their clients—and foreign affiliates provide that proximity. In addition, sales from affiliates are a crucial component of a company's global supply and distribution system. A developer of specialized telecommunications software, for instance, may need foreign affiliates not only to sell its product but also to provide installation advice and follow-up service.

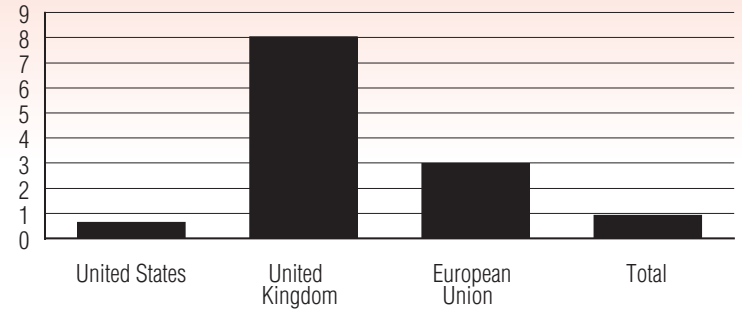
In any foreign market, sales from foreign affiliates should be treated as a key part of total Canadian business sales. Within the limitations of the data, total Canadian business sales—the sum of exports and foreign affiliate sales—can be determined for certain key markets: the United States, the United Kingdom and the European Union. Foreign affiliate sales generate the bulk of Canadian business revenue in the U.K. and EU markets. (See Chart 19.) In fact, sales from affiliates in the United Kingdom are eight times higher than Canadian exports to that country, which declined from 1999 to 2002. In contrast, foreign affiliate sales in the U.S. market are substantial, amounting to $222 billion in 2002, but that figure is much smaller than the value of Canadian exports to the United States. (See Chart 20.)

Chart 19
Canadian Business Revenues with the U.K. and EU, 2002
(current $ billions)



Source: Statistics Canada.

Chart 20
Canada's Foreign Affiliate Sales vs. Exports, 2002
(ratio; foreign sales versus exports)



Source: Statistics Canada.

Various factors account for the dominant role of exports in generating Canadian business revenue in the U.S. market. Simple geography matters: given the shorter physical distance to the U.S. market, plus the similar time zones, it is easier to serve the United States via exports. Many decades of trade growth within North America have built a strong base: two-way trade accelerated in the first decade after implementation of the FTA, leading to more integrated production systems in manufacturing. Canada does not have a similar free trade agreement with Europe, and Canadian firms seeking to sell to European clients face relative trade barriers. Many have responded by deciding to operate as European companies, with sales from affiliates. In doing so, they are leaping the relative trade barrier around Europe, just as American companies jumped over Canadian trade barriers to establish branch plants in Canada prior to the FTA.

Still another factor is customer service. Last are socio-political considerations, such as historical ties and common language; these may account for the exceptionally high level of foreign affiliate sales in the U.K. market.

By a traditional measure such as the national accounts, sales from foreign affiliates have minimal direct impact on the Canadian economy. The direct benefits are captured only as dividends and profits that eventually return to Canada. But the indirect benefits are likely to be enormous: they make Canadian businesses more competitive internationally, spur their growth and add to profitability. This indirect impact multiplies the contribution of sales from foreign affiliates to Canada's economy.

STRUCTURAL CHANGES IN CANADA'S TRADE

In the previous section, we noted that Canada's trade over the past two decades reflects the increased importance of global supply chains. The domestic content of Canadian exports has declined as exports and imports have become ever more interconnected. In this section, we take the analysis a step further by examining how Canada fits into global supply chains. To do this, we compare the components of Canada's exports and imports over the years 1990 to 2004. We then develop a scenario for how trade between Canada and China could unfold in the next 20 years.

HOW CANADA FITS INTO GLOBAL SUPPLY CHAINS

Canada's trade with emerging markets is increasing, the Canadian content of exports is declining, and both inward and outward FDI are growing explosively. These developments show that the Canadian economy has become closely tied to the rise of global supply chains and integrative trade. Here, we examine how Canada fits into global supply chains and how other countries fit into Canada's supply chains.

We took Canadian exports to and imports from 10 different countries and regions and broke them down into three categories: raw products, intermediate goods and finished goods. (We excluded services because of data limitations.) We chose the time frame 1990 to 2004, starting shortly after implementation of the Free Trade Agreement and continuing to the most recent year for which data were available. We assigned each product to a category on the basis of where a particular good would fit into another country's supply chain—that is, from the importer's perspective, not (as is traditionally done) from the exporter's perspective. A product such as a steel plate, for example, was treated as a raw material since it comes into use at the beginning of the manufacturing process.[11]

The Canadian economy has become closely tied to the rise of global supply chains and integrative trade.

The changing composition of Canadian exports indicates how Canada fits into other countries' supply chains. If Canada has continued to export primarily raw materials to a particular country over the period examined, this implies that Canada has a comparative advantage in exporting unprocessed products with little value added. A shift toward exports of intermediate products implies that Canada has developed a comparative advantage in delivering goods with more value added to other countries, and that trade integration is increasing. An increased export share for finished goods might also represent a move to higher value-added production. However, the value-added of finished goods varies considerably, with the result that expanded exports of finished goods cannot be treated as automatically signifying a move toward greater value-added integration.[12]

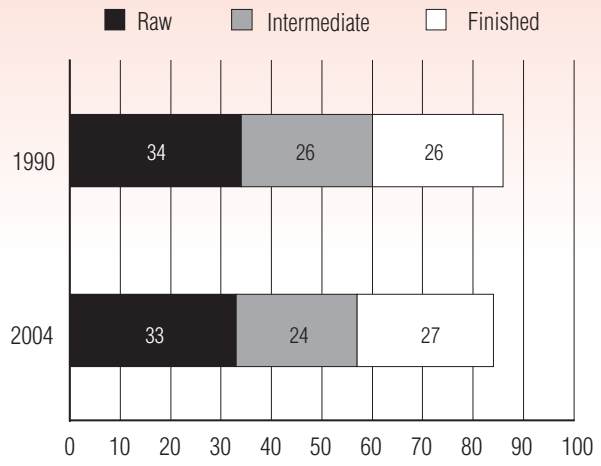
In the world of integrative trade, goods may be repeatedly shipped back and forth across borders before completion of the final product. A rising proportion of intermediate goods and, in some instances, finished goods indicates that Canada is more firmly tied into global supply chains for countries and regions around the world.

When our trade is evaluated from the importer's perspective, the Canadian economy has become more integrated into the global system.

Results for Aggregate Canadian Trade

Historically, Canada has been a heavy exporter of raw materials such as oil, minerals and lumber, and that image is strong internationally. The reality today is somewhat different: under our classification method based on point of entry into other supply chains, only about one-third of Canada's exports in 2004 were raw goods. (See Chart 21.) The share of raw materials in exports has declined slightly, from 34 per cent in 1990 to 33 per cent today; the share of intermediate goods has also declined slightly from 26 to 24 per cent, and the share of finished goods has increased from 26 to 27 per cent.

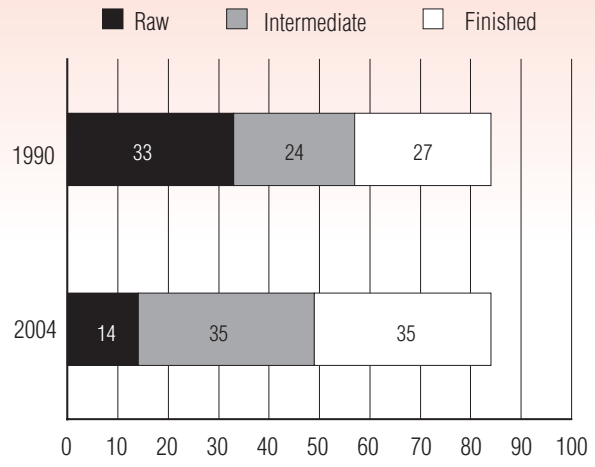
Chart 21
Composition of Canadian Exports, Importer's Perspective
(per cent)



Note: Bars do not add to 100 per cent as only the top 25 export categories for each year have been used.
Source: Statistics Canada.

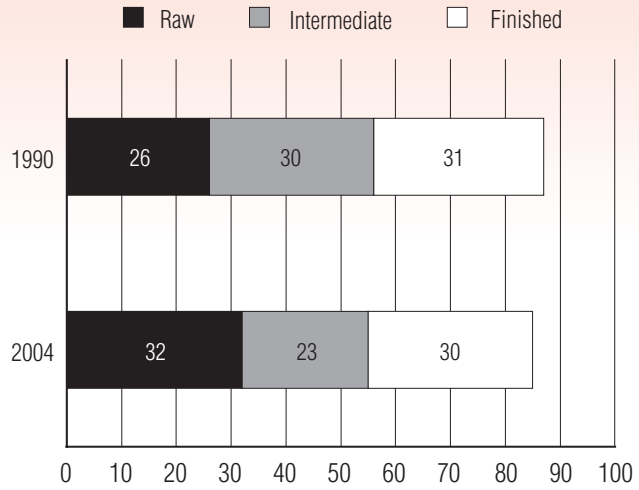
In terms of the changing shares of Canadian imports, or how other countries fit into Canada's supply chain, it is not surprising that only 14 per cent of imports were classified as raw products in 2004. (See Chart 22.) With an abundant supply of a wide variety of natural resources, Canada is not heavily dependent on obtaining raw materials from foreign markets. Instead, 70 per cent of the country's imports are either finished or intermediate goods (35 per cent each).[13] More than one-third of imports were intermediate goods in 2004, showing that Canadian manufacturers are making extensive use of imported machinery, electrical equipment and auto parts to assemble final products in Canadian plants.

Chart 22
Composition of Canadian Imports, Importer's Perspective
(per cent)



Note: Bars do not add to 100 per cent as only the top 25 export categories for each year have been used.
Source: Statistics Canada.

Chart 23
Composition of Canadian Exports to the United States, Importer's Perspective
(per cent)



Note: Bars do not add to 100 per cent as only the top 25 export categories for each year have been used.
Source: Statistics Canada.

Significant Country Trends

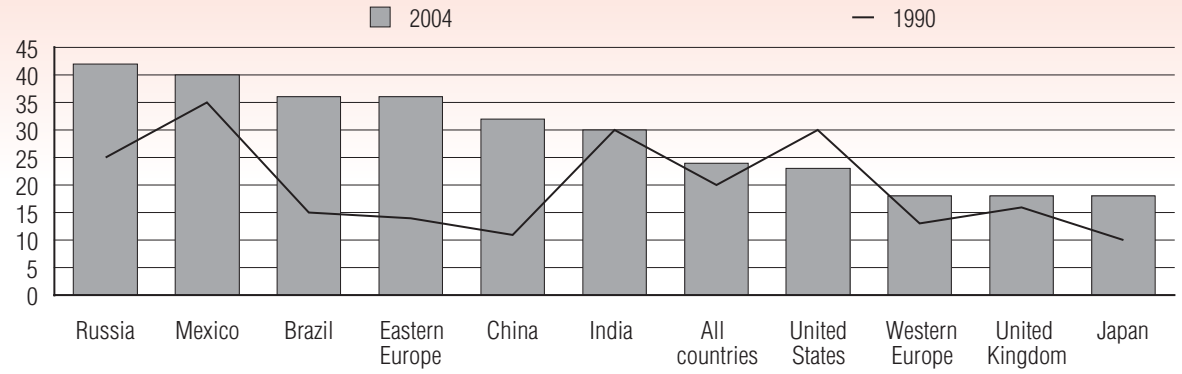
The heavy U.S. dominance of Canadian trade can hide some interesting developments at the country level. For the United States, our analysis shows that greater North American economic integration is occurring principally through significant increases in trade volumes. The share of Canadian exports of raw products to the U.S. market has actually increased since 1990 (rising from 26 to 32 per cent; see Chart 23) as a result of higher energy prices and growing U.S. reliance on Canadian energy exports; in contrast, the share of intermediate goods has declined from 30 to 23 per cent.

Canadian trade with Mexico shows no meaningful trend in the share composition for exports or imports, and therefore we have limited evidence of increased integration. It appears that both Mexico and Canada have achieved stronger integration with the U.S. economy under NAFTA, but not necessarily with each other.

Within the BRIC economies, Canadian exports are generally moving steadily up the value chain. (See Chart 24.) Nominal levels of trade are still relatively low, but in nearly all cases, Canadian export shares for intermediate goods rose substantially from 1990 to 2004. The share of raw material exports to China dropped from 60 to 49 per cent, while the share of intermediate goods increased from 11 to 32 per cent. For Brazil, the raw materials share dropped sharply, from 50 to below 20 per cent, while the share of Canadian intermediate goods exports increased from 15 to 36 per cent. The share of Canadian raw material exports to Russia fell from 44 to only 8 per cent in 2004, while intermediate and finished goods now represent 88 per cent of major export categories, compared with 54 per cent in 1990. The shares for India changed little.

The story for Canadian imports is slightly different. The BRICs are each moving in a different direction as exporters to Canada, in accordance with such factors as relative labour costs and stages of domestic economic development. The bulk of Canadian imports from China

Chart 24
Intermediate Goods as Share of Canadian Exports, Importer's Perspective
(per cent; by importing country)



Source: The Conference Board of Canada; Statistics Canada.

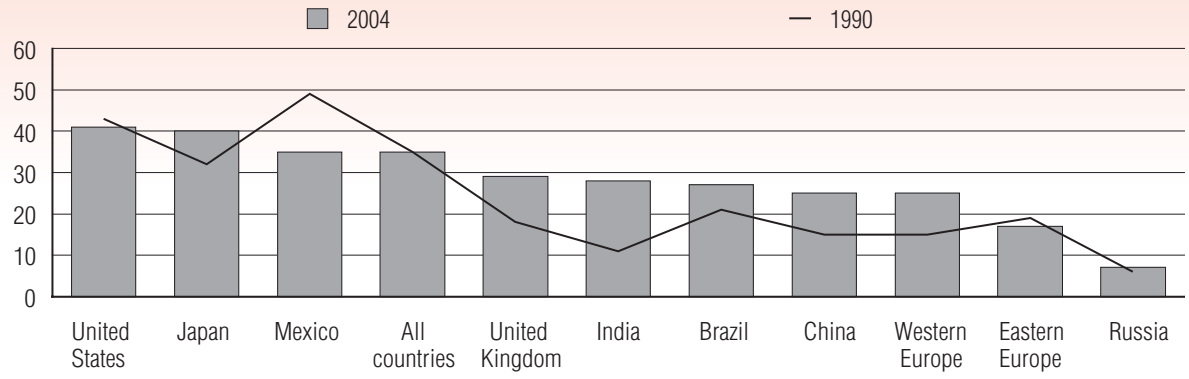
remained finished goods (68 per cent in 1990, 63 per cent in 2004), but the intermediate goods share grew from 15 to 25 per cent by 2004 (see Chart 25), indicating a closer fit for China into Canadian supply chains. For India, two-thirds of Canadian imports in 1990 were finished goods such as textiles and apparel, but by 2004 the finished goods share had fallen to 43 per cent; the share of intermediate goods had almost tripled, however, from 11 to 28 per cent.

In contrast, Brazil increased its share of raw-material exports to Canada from 23 to 40 per cent, while its finished-goods share declined from close to 50 per cent in 1990 to 23 per cent in 2004. This may indicate that Brazilian labour has slowly been priced out of the consumer goods market. The bulk of Canadian imports from Russia remained raw materials, at around 80 per cent in both 1990 and 2004.

THE IMPACT OF CHINA ON CANADA'S TRADE IN 2025

Finally, let us peer into the future and develop a plausible scenario for the composition of Canada's trade in 2025 if Chinese exports and imports continue to grow at a healthy pace. The pace will undoubtedly slow as the Chinese economy matures and becomes more efficient, and as real labour costs rise. Even so, China is likely to be an increasingly important part of Canada's total trade.

Chart 25
Intermediate Goods as Share of Canadian Imports, Importer's Perspective
(by exporting country)



Source: The Conference Board of Canada; Statistics Canada.

Canadian Exports to China

After a lull in the late 1990s and early 2000s, Canada's real exports to China have shot up over the past few years, climbing by 17 per cent in 2003 and a remarkable 36 per cent in 2004. The rise reflected strong growth in the Chinese economy, stimulating demand for all that Canada produces: raw materials, intermediate goods and finished goods. As we have seen, the share of Canadian raw materials feeding into China's supply chain has actually fallen over the past to se15 years, to about 50 per cent of total Canadian exports to China, while the intermediate goods share has risen from 11 to 32 per cent. (See Chart 24.)

Real import growth from China is currently in the range of 20 to 30 per cent annually, but over the long term it can be expected to slow, reaching 4 per cent by 2025.

Over the long term, Canadian exports to China cannot keep up the dramatic increase of the past two years, nor can imports from China keep growing at the same torrid pace. China's economy has been expanding at a real annual growth rate of around 8 per cent in recent years. As it matures, as its population ages, and as real labour costs increase, China will see its underlying growth potential decline slowly over the long term. Other countries with even lower labour costs, such as Vietnam, will slowly steal market share from China, which will gradually focus on higher–value added production. Our scenario therefore assumes that China's real annual GDP growth will steadily decelerate, from 8 per cent in 2006 to 6 per cent by 2013 and 4.5 per cent by 2025. This assumption is consistent with the conclusions of other analysts.

Slower Chinese growth will moderate growth in demand for Canadian goods. Nevertheless, some factors should ensure that Canada's exports continue to grow strongly throughout the forecast period. We earlier calculated a highly positive correlation coefficient between Canadian FDI to China and export growth; this should translate into strong Chinese demand for Canadian exports, provided Canada sustains its growth in outward FDI to China. As we noted earlier, analysis by EDC indicated that every dollar of outward investment from Canada to a developing market, such as China, would generate additional exports worth double that amount.[14] EDC is now using its analysis to estimate benefits to Canada from outward Canadian FDI to emerging markets.

Further, now that the yuan will be permitted to appreciate over the forecast period, Canadian goods and services should become more price-competitive, and demand for Canadian exports should increase in the Chinese market. For these reasons, we have assumed that real Canadian export growth to China will slow only gradually from the 12 to 13 per cent range, down to around 7 per cent by 2025.

On the basis of these assumptions, Canada's real exports to China would be $46.7 billion by 2025, up from $6.2 billion in 2004—an increase of more than 600 per cent. The Conference Board's latest long-term economic forecast projects total real exports of about $900 billion for Canada in 2025, assuming that Canada's real exports to China grow at the same rate as total exports to all countries. If we adjust the baseline forecast to include the higher level of real exports to China ($46.7 billion by 2025), real exports to all countries in 2025 would increase by about $35 billion. The extra $35 billion would obviously expand employment and output in Canada. Moreover, Canada has increased its share of intermediate exports to China since 1990, and this trend is likely to continue.

To ensure a long-term trade relationship with China, Canadian businesses and governments will need to be fully engaged in the Chinese market.

Still, an extra $35 billion in exports to China would represent less than 4 per cent of Canada's total real exports by 2025. In contrast, real exports from Canada to the United States will be $720 billion by 2025—an increase of more than $350 billion—if Canadian exports to the United States grow by an average of 4 per cent annually over the next 20 years. This is a clear indication of how dominant the U.S. market has been and will continue to be in Canada's export trade.

Canadian Imports from China

In 1990, imports from China were around 1 per cent of total imports to Canada. By 2004, the share had increased to close to 6 per cent, and China had

become Canada's second-largest source of imports, ranking behind the United States. Real imports from China soared by 30 per cent in 2004 alone; this reflected Canadians' increasing purchases of inexpensive apparel, toys and electrical equipment from China, as well as a growing share of intermediate goods. As already noted, China has increased its penetration of Canada's import market at the expense of more traditional sources, such as the United States and Japan. Chinese goods are also increasingly integrated into Canadian supply chains: the share of intermediate goods imports has grown from 15 per cent in 1990 to 25 per cent today. (See Chart 25.)

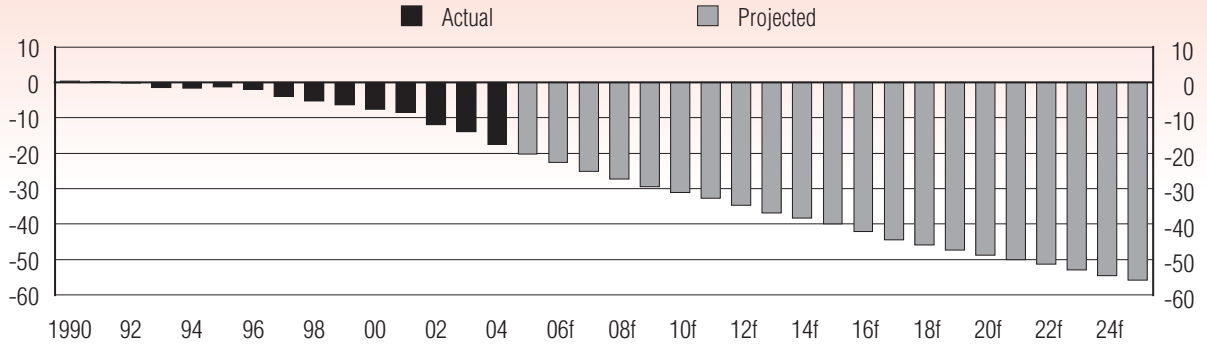
The BRICs are exciting prospects for faster trade and investment growth, but it appears that trade and investment ties with the U.S. will ultimately matter most for Canada.

Real import growth from China is currently in the range of 20 to 30 per cent annually, but over the long term it can be expected to slow, reaching 8 per cent per year by 2008 and 4 per cent by the end of the forecast period. As China shifts to producing higher–value added goods, Canada will turn more to other emerging markets with lower real labour costs for standardized consumer products such as apparel and toys. Market saturation for goods from China will lead to weaker growth in standardized consumer imports to Canada; people require only so many T-shirts. In addition, the appreciation of the yuan against the Canadian dollar over the forecast period will make Chinese imports more expensive in Canada, thereby reducing relative demand. As a result of all these factors, Chinese import growth will remain strong compared with growth from traditional industrial markets, but the double-digit rates will not be maintained over the next two decades.

An increase in China's Canadian import market share to nearly 10 per cent by 2025 would have important implications for Canada's economy. Imports from Canada's traditional markets, such as the United States and the United Kingdom, would continue to lose market share as a result of substitution from China. East–West trade would become an ever-more prominent feature of Canada's international trade patterns. More pressure would be placed on Canada's trade infrastructure, especially West Coast ports and Western railways, as well as highway transportation. Infrastructure improvements would be required for all modes of transportation to handle the ever-rising volumes of import traffic from the Asia–Pacific region.

Another, more political constraint would be the size of the bilateral trade balance between China and Canada. In 2004, Canada's trade deficit with China stood at $17.4 billion (current dollars). Relative to the size of our economy, Canada's trade deficit with China is as large as that of the United States with China (US$162 billion in 2004, current dollars), but it has attracted little media attention as a potential problem for Canadian business. And unlike in the United States, our trade deficit with China so far has not had political repercussions or sparked demands for trade sanctions. The explanation may be that Canada has always been more open and trade-dependent than the United States.

Chart 26
Canada's Projected Trade Balance with China
($ billions)



f=forecast
Sources: The Conference Board of Canada; Statistics Canada.

Canadians in general may understand better than Americans the negative repercussions of trade wars. Canada has also benefited from a significant trade surplus with the United States for some years now, so we are hardly in a position to complain about bilateral trade imbalances with China.

On the basis of our assumptions for exports and imports, Canada's trade deficit with China would rise to close to $56 billion by 2025. (See Chart 26.) However, as the trade deficit continues to increase, businesses, union leaders and politicians may start to demand action to reduce the pace of growth in Chinese imports in order to protect jobs in Canada. This may create a de facto political ceiling for the size of the bilateral trade deficit with China, even if comparative advantage and investment patterns indicate that the relationship is not out of alignment with Canadian economic interests. To help ensure a sustainable long-term trade relationship with China, Canadian businesses and governments will need to be engaged fully in the Chinese market. All the necessary facets of trade and economic policy, as well as all the available trade development instruments, will need to be in place and used to maximum effect so that every possible opportunity is exploited.

Canadian trade and investment policies, actions and instruments should be designed to facilitate all the elements of integrative trade.

IMPLICATIONS FOR CANADA

CANADA'S ROLE IN THE INTERNATIONAL ECONOMIC AND FINANCIAL SYSTEM

Much as the G7 wants to believe that it will be the dominant guiding force in international economic and financial policy over the coming decades, the game is quickly changing. Together, demographics and underlying economic policies are bringing about a fundamental shift in global economic status and power. If PPP conversion rates are used as a proxy for longer-term currency-market equilibrium, China immediately leaps to second place after the United States among world economies. India rises to fourth, after Japan. All the preceding analysis supports the view that this is the shape of things to come.

Similarly, much as we in Canada want to see our country as a central player in the G7, the hard data suggest that our global status is in decline. By the same yardstick of PPP, Canada now ranks 11th in the world economy, behind all the BRICs as well as the other G7 members.

Consequently, Canada's longer-term interests may in fact lie in becoming a central part of a wider circle of influence—such as a G20 that includes the major emerging markets. When he was federal finance minister, Paul Martin encouraged an expanded role for the G20. We believe that this should be a long-term priority for Canada, even if current geopolitical circumstances do not necessarily support the formal and permanent establishment of such a group. In the meantime, Canada should make use of its G7 status to put on the table key issues, such as global imbalances. Doing so would serve our own interests and those of the wider global economy.

Further, we should understand that the Canadian dollar is seldom used to denominate international business transactions, nor is it being held by many countries or private organizations as a store of value. National pride should not be threatened by our currency's absence from the top tier of global currencies; this is simply a reflection of our global status.

At the same time, Canada has the potential for carving out additional high-value niches in the international financial system, and specifically in equity markets. Our country's success in equities in the mining sector shows that it is possible to exercise specialized financial market leadership, given the right circumstances. Can we create the conditions to make that happen?

CANADIAN TRADE AND INVESTMENT POLICY

The BRIC emerging markets are important for Canada's future trade growth and diversification. They are fundamentally altering the structure of the global economy, including the competitive space within North America. Canadian firms cannot afford to ignore them. But despite the attractive growth potential of these markets, it would be a mistake to view the BRICs primarily as an alternative to Canada's existing heavy concentration on the U.S. market. Even with the potential gains from enhanced trade with the BRICs, our trade and investment relationship with the United States will remain Canada's top international economic priority

over the next two decades, simply because of the reality of North American integration. Canadian policy-makers and business leaders must act accordingly.

Moreover, Canadian trade today is more complex than ever before. It has entered a new phase, called integrative trade, which captures all the elements used by firms to achieve the lowest possible cost and maximize the return for their products: exports, imports used to create exports, foreign direct investment (both inward and outward), outsourcing into and out of Canada, and sales from foreign affiliates created through FDI. Canada's international trade and investment policy needs to reflect and capture all of these elements, while continuing to support the traditional trade model that has underpinned Canadian economic development for nearly three centuries.

A number of implications for Canada flow from the preceding analysis. They can best be grouped under two headings: the geographic focus of Canadian trade, and the appropriate agenda for trade and investment policy in the new integrative trade paradigm.

Geographic Focus

On an ongoing basis, Canada will need to strike the right balance in the geographic orientation of its trade and investment policy. It must continue pursuing the growth opportunities offered by the BRICs and other high-potential emerging markets, but at the same time it must foster its core trade relationship with the United States. For decades, many Canadians have searched for a trade alternative to the United States in the hopes of diversifying ties to the world economy and making the country less dependent on one dominant partner. But the gravitational tug of deepening North American economic integration is pulling Canada ever closer toward its southern neighbour. The BRICs are exciting prospects for faster trade and investment growth, but it appears to us that trade and investment ties with the United States will ultimately matter the most for Canada. Relationships with emerging markets must be seen from the perspective that Canada is an integral part of the North American economy.

Canada must continue to explore ways of broadening and deepening the economic relationship with the United States, even as we seek to seize the burgeoning

The Latest Chapter in the Ongoing Softwood Lumber Dispute Chills Relations with the United States

Canada–U.S. trade relations took on a hostile tone in August 2005 when the United States announced it would ignore the North American Free Trade Agreement (NAFTA) ruling on softwood lumber in Canada's favour. The ruling confirmed the outcome of an earlier NAFTA panel, which found that Canadian exports of softwood lumber did not hurt U.S. producers, so there was no justification for applying countervailing duties to Canadian exports.

The U.S. decision to ignore these findings and continue to collect duties outraged Canadian policy-makers and pundits. Prominent national commentators proclaimed NAFTA dead. Angry citizens wrote letters calling for retaliation. Some pundits even called on Canada to abandon NAFTA and rely on defending our interests at the World Trade Organization (WTO).

But the subsequent WTO interim ruling found that the United States complied with international law when it imposed billions of dollars in duties on Canadian softwood exports. Without the WTO's blessing, Canadian trade sanctions against the United States could be illegal.

Clearly, Canada's long-standing desire to be spared from the impact of U.S. trade remedy laws remains as elusive a goal as ever. The matter needs to be put in perspective, however. Trade friction over lumber dates back to before Confederation. While the United States has been alleging unfair Canadian subsidies and imposing countervailing duties and other punitive measures for more than two decades, the unfair subsidy claim is only one dimension of a complex issue.

Trade policy is a combination and balance of economics, technical points of law, and domestic interests, and hence is intensely political. The U.S. Congress is responsible for trade policy, and while it periodically delegates its authority to the president, it always reserves the right to approve or reject the result. Congress has jealously guarded its sovereignty over trade matters and with it, its ability to serve domestic constituencies. In Canada, tweaking Uncle Sam's nose is sometimes a national necessity, and it always makes good political theatre. Special interests and protectionism are part and parcel of trade relations, on both sides of the border.

Abandoning NAFTA is not in Canada's best interests. Rather than tearing up the rule book, we need to redouble our efforts at moral suasion to convince the United States to play fair and square. The so-called "new diplomacy" approach—direct advocacy with members of Congress and with the U.S. public to make the case that free trade is in their best interest—has proven itself over the past two decades.

Canada must continue to resist American invitations to come back to the negotiating table immediately. Brokering a managed trade deal now—in the midst of a stalemate—would be perceived as a sign of weakness, and we would forego future opportunities for trade-offs.

At the same time, we need to be realistic. While a trade war would hurt both partners, the smaller contender is always the bigger loser. While Canadians may be angry and indignant, let's not make that an excuse for being naive or misguided. The best that any U.S. trade partner can hope for is a limit to Congress's protectionist tendencies in response to special-interest groups. Ultimately, we will have to reach a settlement, and we may well find that our best option is to impose an export tax on lumber, which would be better than the United States imposing its levy. That way, the money stays in Canada. Moreover, tariffs are always more efficient than quantitative restrictions.

Beyond this particular dispute, we must continue to strengthen the design and application of the trade rules by working both sides of the street—multilaterally through the WTO and regionally with our NAFTA partners—to negotiate and secure our access to the U.S. market. The U.S. Ambassador to Canada has recently pointed out some of our more restrictive trade policies (regarding dairy products and culture). While these are tough and sensitive issues for Canadians, we need to recognize that liberalizing trade brings mutual benefit. A trade war would move us in the opposite direction. We might not only lose our heads but our shirts as well.

What Next for Canadian Trade Policy?

NAFTA is by now a fully implemented trade agreement, and after a decade it is beginning to show its age. Canada has seen limited growth in its exports to the United States over the past five years. Specific factors—from slower economic growth to currency realignment—invariably influence trade flows between partners, but the minimal recent growth is striking when compared with the spectacular growth in Canada–U.S. trade during the mid- to late 1990s.

Moreover, as shown elsewhere in this chapter, NAFTA has produced surprisingly little bilateral trade integration between Canada and each of its NAFTA partners, as measured by changes in the share of intermediate goods trade. We are on a plateau in our most important trading relationship.

What could be done to kick-start the trade growth engine for Canada? Three tracks could be pursued, in combination or separately. Multilateral trade liberalization remains the optimal way to improve Canadian access to all markets, including the United States. However, the WTO Doha Round keeps hitting resistance, and the planned WTO ministerial meeting may not break the logjam.

A second track would be expanded regional free trade. Though the talks on free trade in the Americas are also stalled, a number of bilateral negotiations continue among various Latin American countries and with the United States. NAFTA itself could be deepened and strengthened, but none of the partners have shown any inclination to reopen the agreement. Canada may be reluctant to do so because we know the United States will put sensitive items on the table that were not in the original agreement (for example, cultural industries). The alternative approach has been to "go around" NAFTA by having the three partners work on items mainly related to trade facilitation, but without formally reopening the agreement itself.

A third track would be to actively pursue free trade with other major bilateral or regional partners, either via umbrella agreements or in specific areas such as foreign investment protection and trade facilitation. The European Union and China are the most important prospects, but all parties must be ready and willing to bargain. Canada has its own sacred cows (including shipbuilding, dairy products and culture) that could stand in the way. Finally, the current political climate in Canada—a minority government, adversarial behaviour among the parties and a looming election—does not create the conditions for a bold stroke on trade.

The most likely near-term outcome of all these factors is that Canada will drift along passively, hoping that some external force will appear and create momentum for expanded free trade and improved foreign market access.

opportunities afforded by the BRICs and other high-growth emerging markets. The recent political commitment to strengthen North American linkages through the Security and Prosperity Partnership is simply one more step in a long journey toward deeper and more efficient economic linkages between Canada and the United States. It would be foolish and short-sighted not to sustain the momentum of that journey. (See text boxes, "The Latest Chapter in the Ongoing Softwood Lumber Dispute Chills Relations with the United States" and "What Next for Canadian Trade Policy?")

Multilateral trade liberalization still holds the greatest promise for widespread economic gains through enhanced global market access and discipline. Canada must once again show its long-standing commitment to multilateral trade liberalization as it participates in the Doha Development Round of trade negotiations. Through the World Trade Organization (WTO) and its predecessors, for almost 50 years Canada has used multilateral negotiation as the principal instrument for expanding access to the U.S. market. The past two decades have seen the adoption of a more diversified approach, with Canada engaging in bilateral and regional as well as multilateral negotiations. Despite this, the WTO will remain central to Canada's strategy for liberalizing trade. Complex issues such as trade in agriculture can be addressed only with the broad-based participation of all key players. Even with their participation, real progress is by no means certain in the Doha Round: the issues may be too complex, the negotiating positions too deeply entrenched—hence the need for diversification and flexibility on the part of Canada.

Canada needs to pay immediate and particular attention to trade facilitation—that is, practical steps to make customs clearances faster, cheaper and more secure.

Even as multilateral negotiations remain the cornerstone of Canadian trade policy, the country should actively seek regional and bilateral opportunities to liberalize trade with the key emerging markets. The opportunities should be chosen according to their potential for rapid and sizable trade and investment growth. China inevitably appears at the top of the list, even though a bilateral free trade agreement would be unrealistic until a much more extensive foundation has been laid for policy engagement.

With multilateral, regional and bilateral dimensions, the trade policy agenda is highly complex. But this is the reality Canada must face to fully serve and advance its economic interests.

A Comprehensive, Appropriate Trade and Investment Policy Agenda

As for the scope of Canada's trade and investment policy agenda, promoting exports remains important but is only one aspect. Canadian trade and investment

policies, actions and instruments should be designed to facilitate all the elements of integrative trade. These policies, actions or instruments include the following:

Facilitate imports used to create exports. Imports are far more important today in Canada's supply chains, including growing imports from emerging markets such as China and India, because they can reduce production input prices without sacrificing quality, and therefore make Canadian businesses more internationally competitive. Restrictions on imports were originally designed to protect domestic industry from supposedly unfair competition. That regime now needs rethinking to ensure that it does not impede critical imports. Indeed, there may be a case for positive steps to facilitate certain key imports—for instance, through improved access to credit—to ensure that Canadian firms can compete on a level playing field with businesses from abroad.

Attract foreign direct investment. Foreign investment is a key aspect of trade today. Last year's *Performance and Potential* set out a comprehensive agenda for improving Canada's competitiveness in promoting our country as a destination for foreign direct investment. The agenda included a wide array of actions: increasing post-secondary completion, improving workforce skills, investing in physical infrastructure, reducing various taxes on business, streamlining and easing the burden of regulations, improving the commercialization of innovative technologies, and enhancing international market access. The agenda remains equally valid today, and even more urgent to implement.

Expedite passage of goods, principally at the U.S. border but also at all frontiers. This means making continuous efforts to achieve smarter borders in order to facilitate Canadian trade and ensure a smooth linkage with U.S. supply chains and consumers—without compromising our national security or that of the United States. In this connection, Canada needs to pay immediate and particular attention to trade facilitation—that is, practical steps to make customs clearances faster, cheaper and more secure. This is obviously most critical at the Canada–U.S. border. Given the integrated nature of the North American economy, Canada's attractiveness as a site for investment depends on the ability to expeditiously move goods across the border in both directions.

Trade facilitation is on the agenda of the Doha Development Round, particularly the rules and obligations governing trans-shipments. Canada should work for progress in these negotiations, but it should also seek practical trade-facilitating steps in other forums, notably the Security and Prosperity Partnership of North America. At the same time, increased investment is needed in physical infrastructure and information technology to prevent delays at the Canada–U.S. border, which impede investment in Canada.

The Canadian public should be helped to understand that outbound FDI as well as inward FDI are vital for future trade and wealth creation in Canada.

Facilitate outward Canadian investment. The economic literature and statistical evidence support the view that outbound FDI is largely trade-creating. For emerging markets in particular, two dollars or more of additional trade may be generated for every dollar of Canadian outward FDI in those markets. There is therefore a strong case for giving higher priority to outbound investment within Canadian trade policy.

Canada should give top priority to investment protection agreements that improve Canadian investors' access to foreign markets, and the Canadian public should be helped to understand that outbound FDI as well as inward FDI are vital for future trade and wealth creation in Canada. Multilateral negotiations on investment protection have stalled since the failure of the proposed OECD Multilateral Agreement on Investment and the refusal of key developing countries to proceed with negotiations through the WTO. For the present, Canada has no alternative but to pursue investment protection bilaterally or regionally, but we should continue to press for multilateral discussions.

If Canadian businesses (particularly small and medium-sized enterprises [SMEs]) are to secure FDI for Canada and take advantage of outward investment opportunities, the country must strengthen the institutions that can help to facilitate FDI in both directions, particularly Investment Canada and Export Development Canada, as well as the policy instruments available to them. Only then will the Canadian economy reap the maximum economic benefits from FDI.

SMEs could benefit from more enlightened trade policy that acknowledges the business and economic value of foreign affiliate sales.

Expand trade in services. Services now comprise 70 per cent of Canadian GDP and 60 per cent of global FDI flows, so there would be strong synergy between the FDI agenda we have outlined and an enhanced focus on trade in services. International trade in services will continue to be undervalued until a greater effort is made to capture timely data that help to explain current developments, including services exports, imports and (increasingly) sales from foreign affiliates. Canada should adopt and implement a national strategy in specific services trade sectors, such as business processes and financial services. With such a strategy, our country can begin to capture its fair share of the rapidly growing global market.

Recognize sales from Canadian foreign affiliates. Such sales are another way to reach foreign customers, and they can be critical to individual business success. In some markets—for instance, the United Kingdom—sales from Canadian foreign affiliates dwarf Canadian exports and are clearly the preferred way to do business, surmounting trade barriers or tapping into global supply chains. Small and medium-sized enterprises play a prominent role in the Canadian economy, but they may lack the balance-sheet size and in-house expertise needed to establish successful foreign affiliates. SMEs could particularly benefit from more enlightened trade policy that acknowledges the business and economic value of foreign affiliate sales, and that actively supports such sales. Again, better data would improve our understanding of the phenomenon.

The Final Say

Governments may put in place the best policy framework imaginable to expand and enhance trade and investment opportunities. Ultimately, however, it is up to the thousands of individual Canadian businesses to decide where and how to trade and invest, according to where they think they can earn profits for their shareholders. Canadian businesses will decide whether our trade should be more diversified geographically, whether exporting is preferable to establishing a foreign affiliate for customers abroad, and whether imports from an emerging market should replace traditional local suppliers. They have the final say. This is a reality that the government must not forget.

1 See Dominic Wilson and Roopa Purushothaman, *Dreaming with BRICS: The Path to 2050*, Goldman Sachs Global Economics Paper No. 99, October 2003.

2 Benjamin Senauer and Linda Goetz, *The Growing Middle Class in Developing Countries and the Market for High-Value Food Products*, Prepared for Economic Research Service, U.S. Department of Agriculture, February 2003.

3 See Wilson and Purushothaman.

4 For an excellent discussion of India's rise to prominence in the global economy, see Thomas Friedman's latest book, *The World Is Flat* (New York: Farrar, Straus and Giroux, 2005).

5 The 1947 General Agreement on Tariffs and Trade (GATT) led to a series of global negotiations seeking to reduce trade barriers. The most important negotiations were the Kennedy, Tokyo and Uruguay rounds. The Kennedy Round (1964–67) cut tariffs and reached an anti-dumping agreement. The Tokyo Round (1973–79) further reduced customs duties and established optional codes limiting non-tariff barriers. The Uruguay Round (1986–94) reached agreements on, among other things, better market access for tropical products and a dispute settlement system. This round also laid the groundwork for creation of the WTO, which came into being in 1995.

6 See the research summary provided in Lionel Fontagné, *Foreign Direct Investment and International Trade: Complements or Substitutes*, STI Working Paper 1999/3, October 1999: OECD Directorate for Science, Technology and Industry.

7 The G7 nations—Canada, France, Germany, Italy, Japan, the United Kingdom and the United States—meet regularly at senior levels to discuss global macroeconomic performance and coordinate policy. Russia's regular but at times awkward inclusion expands the group to the G8.

8 Based on an analysis of Canadian liabilities, as reported by Statistics Canada, CANSIM II database, 2004.

9 See Fontagné.

10 See two EDC reports: Stephen Poloz, *The Benefits of International Trade and Investment Facilitation*, June 2002; and Glen Hodgson and Todd Evans, *The Quiet Creator of Canadian Wealth: Foreign Direct Investment*, September 2003.

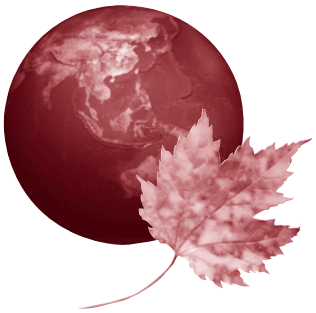
11 The example of a steel plate highlights the difference between what is normally thought of as a raw material and an intermediate or finished good. If a steel plate is manufactured in Canada and used in the production process in this country, it would be classified as an intermediate good because some work is required to convert raw steel into a steel plate. However, in this

analysis we are looking at the steel plate from the perspective of the user. Since Chinese producers take the steel plate and use it at the earliest stage of production to help build a car, the plate is a raw material from the Chinese perspective. Similarly, motor vehicles and parts would normally be thought of as finished goods. However, if a Chinese manufacturer takes a car bumper manufactured in Canada and uses it to assemble an auto, the bumper is an intermediate good from the Chinese perspective. In this analysis, we took great care to classify Canadian exports and imports according to how the end user utilized the trade product. The classification system developed by the Conference Board to divide exports and imports into raw, intermediate and finished goods is available on request.

12 Assembly may not add much value added, particularly in activities that are not labour intensive. To accurately assess the value added of a finished good requires a detailed analysis of input-output tables, which indicate the number of inputs required to produce that good. Such an analysis is beyond our scope here, but it would be a fruitful area for future research.

13 The country percentages in the accompanying charts do not add up to 100 per cent because only the top 25 export and import categories were considered in this analysis for the different countries. This was done to eliminate the large number of product categories that are not significant in terms of Canada's overall trade.

14 See Poloz.



3

HIGHLIGHTS

- *Canada will be riding a boom in oil and gas over the next 10 to 15 years, driven by exploding demand from emerging economies, notably China and India. As it capitalizes on this demand, Canada must make wise investment and policy decisions to ensure sustainable prosperity.*
- *Canada's oil and gas sector will grow substantially if we make the requisite massive investments to meet growing demand, while taking into account anticipated international agreements on climate change. Federal and provincial regulatory approval processes must be improved so that timely investments can respond to existing supply constraints.*
- *Soaring energy prices may escalate regional tensions as producing provinces prosper while others are harmed by rising energy costs.*
- *In spite of rising demand for pulp and paper products, both in North America and globally, Canada's industry is losing ground to rival nations. Industry renewal depends on the elimination of provincial government bailouts, interprovincial barriers, capital taxes and regulatory inefficiencies.*
- *Our forests offer two new opportunities for economic growth and environmental stewardship: absorbing carbon dioxide emissions through "sequestration," and producing renewable energy from forest industry waste.*
- *Canada's fresh water is less available than we think. While we have 20 per cent of the world's fresh water, much of it flows north—away from populated areas—or is locked in glaciers or underground and is susceptible to climate change. Canadian governments will need to improve the governance and management of this resource, and resist pressure for major water exports or bulk water diversions.*

CHAPTER 3

Pursuing Sustainability

Global Commodity Trends and Canada

INTRODUCTION

Managing Canada's rich resources presents both lucrative economic opportunities and difficult environmental challenges. Looking ahead 15 years, to 2020, we can foresee continuing international demand for our resources, especially from such rapidly developing nations as China and India. However, failure to properly manage the extraction of our natural resources will increase the risk of environmental stresses, weaken our relations with the United States and possibly intensify regional tensions.

Decisions taken in the next 10 to 15 years, both domestically and internationally, will have a profound impact on Canada's prosperity over the next 50 years.

On the one hand, the increase in commodity demand will create opportunities for our exporting companies and resource communities. On the other hand, international efforts to reduce greenhouse gas emissions will constrain growth in demand for oil and gas and may increase costs. Canada is rich in many resources. Three of these illustrate the variety of opportunities and dangers ahead:

- "Black gold" (oil and gas), is in high demand, but its use is a leading culprit in climate change;
- "Green gold" (forest products), parts of which are in some economic trouble, could mitigate some of the greenhouse gas problems that the oil and gas industries face; and
- "Blue gold" (water)—Canada appears to have an abundance of it, but conveniently located sources are heavily stressed, and water is a political flashpoint as a trade issue.[1]

While the demand for commodities will grow, so will society's environmental performance expectations. Commodity markets rise and fall based on supply and demand, environmental concerns surge and plateau, and they vary from region to region. This results in constantly changing legal and business frameworks. Canada has plenty of short-term economic opportunities, but seizing them risks serious environmental degradation: short-term gain could become long-term economic loss.

Natural Resources and Canada's GDP

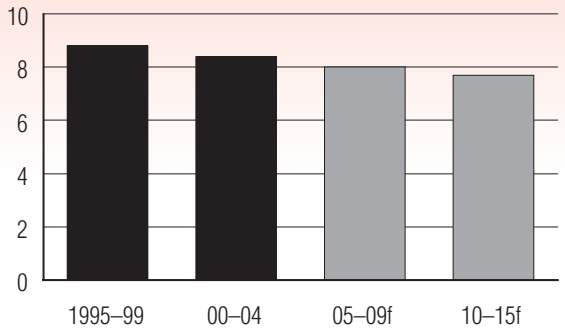
Canada is a world-scale supplier of agricultural products, minerals and metals, energy and forest products to global and North American markets. Today, natural resources contribute 12.6 per cent to Canada's gross domestic product, provide direct employment to approximately 1 million people, and bring in CDN$146 billion in foreign exchange through exports (accounting for 41 per cent of Canada's total exports in 2003).[1]

1 Natural Resources Canada. <www.nrcan.gc.ca/statistics/factsheet.htm>.

COMMODITY DEMAND IS RISING

The economic power of the United States will soon be challenged by two massive economies. China's real growth rate has been 8–9 per cent for the past decade. (See Chart 1.) And in India, more reform-minded governments are adopting some of the policies that produced a full litter of economic tigers in East Asia. Together, the combined populations of China and India represent 37 per cent of humanity. As these economies grow, they will have a voracious appetite for basic materials and resource-based products that Canada can provide, such as energy, building materials, and pulp and paper.

Chart 1
Real Per Cent GDP Growth in China
(U.S. Real GDP, average annual compound growth)



f=forecast
Source: Economy.com.

Canadian exports to China have already increased by 15 per cent in 2003 and 39 per cent in 2004. Our non-energy natural resource exports (mineral, forestry and agricultural products) to China in that period made up 80 per cent of our total shipments and over half of the increase. Moreover, China's explosive growth has helped spike global demand for oil and gas, leading to announced investments in Canadian oil sands production and in pipelines to supply energy resources to the North American and global marketplaces. However, developing nations can also become rivals in key export markets. Brazil and China, for example, are gaining a substantial portion of the global forest products export market. (See Chart 2.)

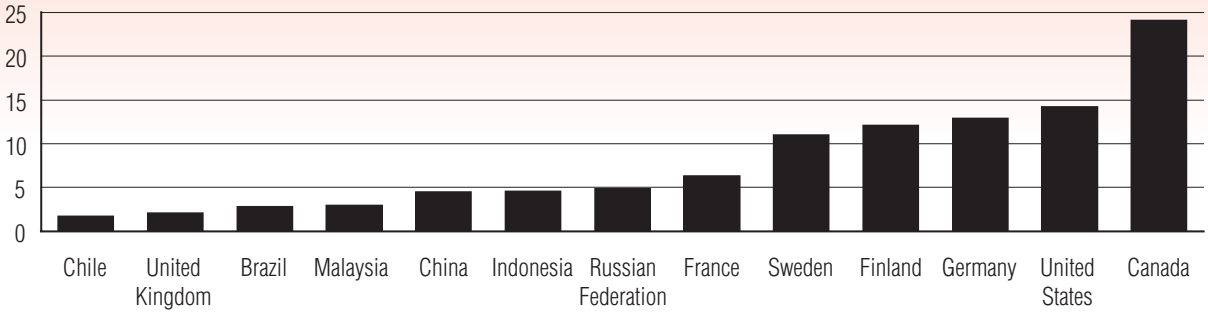
DEALING WITH THE CLIMATE CHANGE EFFECTS OF ECONOMIC OPPORTUNITY

But demand for natural resources, and in particular for oil and gas, is not without ecological consequences. Greenhouse gas (GHG) emissions are increasing the concentration of carbon dioxide in the atmosphere. There is considerable scientific debate as to the degree to which human activity is changing the climate, but greenhouse gas emissions may already be melting polar ice, causing alpine glaciers to retreat, drying out rivers and increasing the frequency of extreme weather.

In Rio de Janeiro in 1992, and again in Kyoto in 1997, the global community committed to reducing the human sources of greenhouse gas emissions. On April 29, 2005, the Kyoto Protocol entered into force. This international law requires ratifying countries to reduce emissions to 1990 levels during the period 2008 to 2012. Thirty-nine countries, including Canada, have promised to reduce emissions, but doing so will require major changes in the way our economies function.

In considering the scale of commitments made by various competitor countries (see Table 1), several facts are useful to keep in mind. The European Union signed and ratified the Kyoto Protocol under the so-called "EU Bubble." This means that the entire community committed to an 8 per cent reduction but retained the ability to trade the burden among member states, thereby minimizing negative impacts. Australia and New Zealand,

Chart 2
Value of Forest Products Exports
(U.S.$ billions)



Source: FAOstat database, [cited April 2005]. <faostat.fao.org>.

Table 1
Selected Emission Reduction Commitments
(percentage reduction from base year of 1990)

Australia	8
Canada	–6
European Community	–8
Japan	–6
New Zealand	0
Norway	1
Russian Federation	0
United States	–7

Source: <unfccc.int/essential_background/kyoto_protocol/items/3145.php>.

countries with similar economies and export products to Canada's, are not required to make any reductions below 1990 emissions levels under the agreement. Indeed, although Australia would have been permitted an increase of 8 per cent over 1990 emissions, the country refused to ratify the Protocol because it was unable to meet the commitment! Finally, the United States chose not to ratify the agreement. This makes it difficult for Canada to meet its own commitments, since our economy is so integrated with that of the United States.

This leaves Canada striving to meet its international commitments to reduce greenhouse gas emissions. At the same time, Canada is trying to meet global demand for materials and resource-based products. How do we reduce our emissions while maintaining a vibrant export economy?

BLACK GOLD: OIL AND GAS

In 2003, the oil and gas sector generated more than $77.5 billion in revenue, paid $16 billion to governments and invested $28.8 billion in capital. This sector employed more than 82,000 Canadians; an additional 97,000 people were employed in service stations and wholesale trade in petroleum products. Canada exported 61 per cent of its natural gas to the United States and had a 14 per cent share of the U.S. market. Canadian exports of oil and gas totalled $57.8 billion in 2003.[2]

The oil and gas sector is positioned for substantial growth at least over the next 15 years, but it will require significant investments to take advantage of the opportunities. But high oil and gas production carries dangers, not least of which will be environmental degradation and, possibly, an increase in regional discontent as some regions in Canada prosper and others suffer.

Furthermore, the economics of Canadian oil and gas developments for the next 10 to 15 years could be affected by international efforts to contain climate change. Companies and governments will have to keep a keen eye on international negotiations because once these resource development decisions are taken, they will be difficult or impossible to reverse without significant economic and political consequences.

STRONG DEMAND, TIGHT SUPPLY EQUALS HIGH PRICES

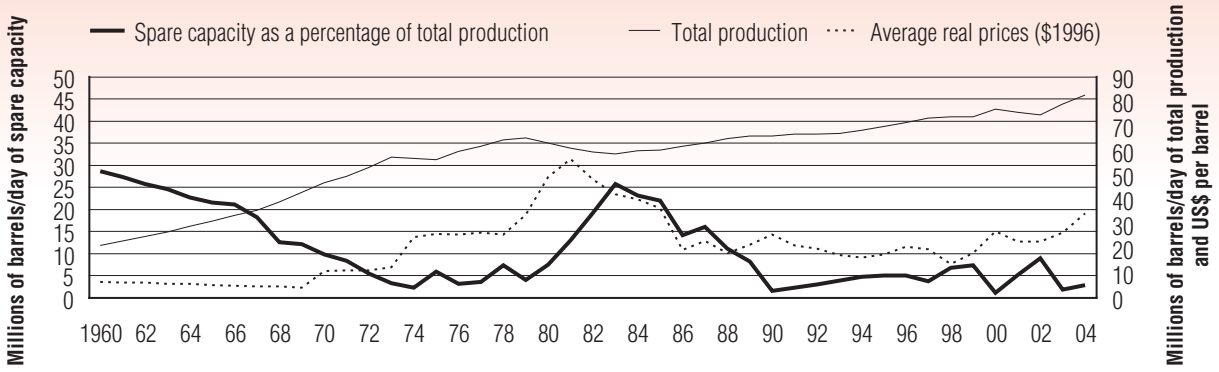
Strong demand and tight supply mean we will likely be paying high prices for oil over the next five to seven years. Crude oil future prices in July 2005 for 2010 are more than double what they were in the 1990s, when prices remained stable despite large fluctuations in spot prices.[3]

High oil prices are due partly to demand in booming Asian economies, especially China. China was self-sufficient in oil until 1993, but it now faces a domestic supply gap, one that will keep widening over the foreseeable future. Barring economic slowdowns in the United States, China and India, demand for crude is likely to remain strong over the next 15 to 20 years.

After 2010, oil prices could remain high, unless Third World demand flags or the Saudis rebuild their buffer capacity. The Saudis have traditionally acted as the "central banker of oil," moderating fluctuations in demand and supply, and using their spare capacity to keep prices within a predetermined range. However, in the 1990s, with the world apparently "awash in oil," Saudi infrastructure and exploration did not keep pace with economic growth. Today, there is little current spare capacity. (See Chart 3.) Nevertheless, it is still generally agreed that Saudi Arabia, the country with most of the spare global pumping capacity, has sufficient oil reserves to pump for much of this century, and it has no interest in seeing crude prices so high that non-OPEC oil (Organization of the Petroleum Exporting Countries), or alternative fuels, bite heavily into its market share.[4]

With investment in exploration and infrastructure, global production of conventional oil will not peak before 2030.[5] However, these resources are not located where they are needed. In the coming years, the issue will not be finding enough oil and gas, but securing and transporting it.[6]

Chart 3
Relationship Between Oil Production, Prices and Production Capacity



Source: "Oil in Troubled Waters," *The Economist,* April 30–May 6, 2005, p. 6.

INVESTING FOR THE FUTURE

High crude oil prices will mean significant revenue for the oil industry, including Canada's oil industry, even though, unlike the Saudis, we are "price takers" instead of "price makers." The oil and gas sector is highly leveraged; that is, a large portion of total costs is fixed due to high capital costs. In the short term, profits are more sensitive to revenue than to costs, so high oil prices translate into large revenue streams, which in turn mean large profits for producers and substantial royalties and corporate income taxes for producing provinces. Although Canadian oil companies cannot control price, they can manage costs and they can use technology to manage long-term capital costs.

Oil sands production will increase significantly and will offset the decline in conventional crude oil production.

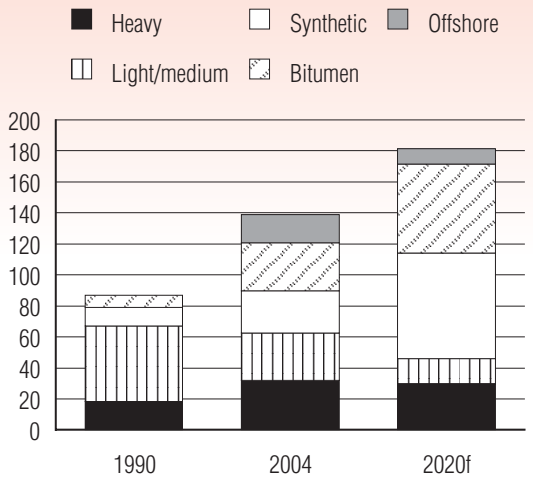
The International Energy Agency of the Organisation for Economic Co-operation and Development (OECD) has estimated that the United States and Canada will require more than US$500 billion in oil investments from 2002 to 2030.[7] Exploration and development expenditures account for about 70 per cent of this amount, most of it to enhance recovery in existing wells and to create new supply. Expected high oil prices will contribute to investment, which will also be aided by Canada's open and politically secure investment climate—unlike what investors may find in Saudi Arabia, Mexico, Kuwait, Russia and Iran.

As non-OPEC production will rely increasingly on less accessible resources (such as those offshore, in oil sands or in oil shale), companies will vigorously pursue technological means to find new pools, extend reserves and reduce costs. Therefore, much of the increased private sector revenue over the next decade will have to be invested in the technology and exploration necessary to tap more costly reserves.

Canada is well positioned because domestic companies have successfully developed exploration, production and management expertise suitable for use in difficult areas. Following the 1981–82 recession, the Canadian petroleum sector developed a strong petrochemical sector and actively pursued oil sands opportunities. In addition, by developing, commercializing and exporting new technologies and know-how—particularly those related to oil sands extraction and frontier oil and gas exploration and production—the sector has thrived and become very active globally.

Oil sands production will increase significantly and will offset the decline in conventional crude oil production, thus becoming Canada's major source of oil supply. (See Chart 4.) The oil sands of northern Alberta are estimated to contain a reserve of 174 billion barrels of oil that is economically accessible under current conditions, putting Canada's reserves second in the world after Saudi Arabia's. Oil sands production is expected to reach about 2.8 million barrels per day by 2017 (or approximately 1 billion barrels per year),[8] providing revenue in the order of US$40 billion per year.[9] The value of net crude exports, mainly to the United States, is expected to more than double by 2020.[10]

Chart 4
Canadian Oil Production by Type
(millions of cubic metres)



f = forecast
Source: The Conference Board of Canada, *Canadian Outlook: Long-Term Economic Forecast 2005.*

RISKS TO THE OIL AND GAS BOOM

Although opportunities probably outweigh risks over the next few years for Canadian oil producers, crude prices could remain volatile. This would affect revenues and profits. If, for example, a terrorist attack cripples Saudi infrastructure, there would be a sharp upward spike in oil prices and a short-term gain in profitability. However, a prolonged spike could tip oil-importing OECD economies into recession, reducing demand and lowering prices.

Since natural gas provides the heat used to process "bitumen"[11] from the oil sands, high gas prices hurt Canada's oil sands industry. High demand for, and tight supplies of, natural gas have resulted in high gas prices in North America. This is why the industry is looking for alternative sources of heat and steam, such as the use of petroleum coke and nuclear power, or for "non-thermal" extraction methods. Liquids from natural gas are also used to dilute bitumen during processing, so a parallel search is on for alternative diluents, such as the synthetic crude itself. Bitumen processing also consumes a lot of water, leading to concerns about water quality and supply.

The oil sands also pose a number of other challenges. The cumulative environmental effects of oil sands production[12] could lead to tighter environmental restrictions. Also, it is increasingly hard to attract and retain skilled labour. And the industry requires infrastructure—highways, rail and transmission lines, roads, sewers and schools—to service new investment and workers.

Finally, extracting natural gas that is geologically associated with bitumen also affects the extraction of bitumen itself, producing complicated disputes between gas and bitumen owners. The Alberta Energy Utilities Board is considering submissions from holders of gas extraction rights and bitumen licence holders regarding which has precedence and will therefore be permitted to extract the resource.[13]

ROADBLOCKS FOR NATURAL GAS

Natural gas will be in high demand as a clean-burning fossil fuel for the foreseeable future. What is less certain, however, is how we will access unconventional natural gas supplies to meet this increased demand. Natural gas, moreover, is harder to transport than oil. While liquefied natural gas markets are growing rapidly, enabling transoceanic shipments, prices are still set in regional markets. Canadian producers serve North America and take prices as set by the continental market. North American gas prices are likely to remain at historically high levels until 2010.

Natural gas will be in high demand as a clean-burning fossil fuel for the foreseeable future. How will we access sufficient unconventional gas supplies?

Strong economic growth has been driving all energy demand in North America over the last decade. But U.S. air-quality standards, in particular, have heightened demand for clean-burning natural gas, particularly as a fuel source for new electricity-generating units, since it generates far fewer air pollutants and greenhouse gas emissions than does coal, its main fossil fuel competitor.

North American natural gas investment requirements are even larger than those for oil. The OECD's International Energy Agency estimates that the United States and Canada will account for some US$700 billion in gas investment between 2002 and 2030. About US$450 billion will be spent on exploration and development to replace declining capacity and add new capacity.[14] The remainder will be required for downstream infrastructure: high-pressure pipelines, distribution and storage networks, and liquefied natural gas tankers and terminals.

Yet North America's supply of natural gas from conventional sources is in decline. Strong demand, tight supply and high prices for oil (which is a partial substitute in some uses) have driven continental natural gas prices to historic highs. Canada's less-developed natural gas sources include offshore and Arctic resources; coal-bed methane, tight sands and hydrates; and liquefied natural gas imports. However, given the long lead times necessary to develop these resources and build infrastructure, little gas from these sources will be available to North American consumers before 2010.[15]

If natural gas prices remain high and volatile over the next five to seven years, consumers will pay more for electricity generated from gas. Generators will have incentives to maintain or increase production from traditional sources, namely coal and nuclear power.[16] High gas prices during the last few years caused many North American petrochemical and fertilizer plants, dependent on natural gas as a raw material, to either shut down or move production offshore to utilize less costly feedstock.

Strong demand, tight supply and high prices for oil have driven continental natural gas prices to historic highs.

THE ENVIRONMENTAL UPSIDE OF HIGH PRICES

Domestic oil and gas prices that remain at historically high levels will induce changes over time in consumer behaviour and technologies, which will benefit the environment. Over time, businesses will switch fuels and implement more energy-efficient equipment, and households will change transport and purchasing decisions to reduce energy costs. New energy-saving technologies will also emerge in response to higher prices.

Consumption changes will not be rapid, however. According to the National Energy Board, "There are significant obstacles to changing the fuel mix or achieving large gains in energy efficiency due to the structure of the Canadian economy. Energy use patterns change slowly and Canada will continue to satisfy the majority of its energy needs from fossil fuels until 2025 and likely for a considerable period thereafter."[17]

Domestic oil and gas prices that remain at historically high levels will induce changes over time in consumer behaviour and technologies, which will benefit the environment.

ENVIRONMENTAL CHALLENGES FOR OIL AND GAS

The oil and gas sector has an impact on the environment during production, in addition to the effects of combustion of its products in use. Citizens and ranchers have worried over the past decade about the environmental and health impacts of the flaring and venting of solution gas. Solution gas is a natural gas by-product of oil production. The industry in Alberta has made impressive progress through voluntary commitments, reducing flaring and venting volumes by 70 per cent between 1996 and 2003. But this progress has been partially offset by increased volumes of flaring elsewhere in Canada where public concern has not been raised to the degree it has been in Alberta.

Water is required for a number of oil and gas production activities, including oil sands extraction and processing, water and steam injection for enhanced oil recovery, and drilling. Concern over increasing industry use of fresh water has been concentrated in Alberta. An Alberta multi-stakeholder environment committee recommended reduced volumes of injected fresh water.[18] Industry data in this area need to be further developed to support management and reduction objectives.

The Canadian Association of Petroleum Producers has been tracking the environmental performance or "stewardship" of its member companies since 1999.

Some performance indicators have been improving, and others have not. Performance has been improving for sulphur recovery and sulphur dioxide emissions,[19] spills and releases, and benzene emissions. For example, emissions of benzene (a carcinogen) per unit of gas production had declined some 77 per cent by 2003 from 1995 levels; the target is a 90 per cent reduction by 2005.[20]

Reclamation refers to the re-vegetation and re-contouring of a site to restore the land's original capability. Data on the abandonment and reclamation of well sites are available only from 2001 onward. In the oil sands, 3,000 hectares have been reclaimed since then. In total, 95,000 hectares are under lease, of which 33,000 have "been disturbed," meaning that they have been mined or are under operation.

Oil and gas production was responsible for 13.6 per cent of Canada's 2002 greenhouse gas emissions, an increase from an estimated 10.3 per cent in 1990. The Canadian Association of Petroleum Producers records GHG emissions from the sector in two parts: those from conventional oil and gas production, and those from the oil sands. Emissions per unit of product from conventional sources were essentially flat between 1999 and 2003. Data for the oil sands are available only from 2002 onwards, but it is clear that the volume of greenhouse gases per unit of oil produced is at least double that of conventional production.

The industry is planning environmental impact improvements based on sector-wide reductions in emissions per unit of output. However, local impacts on health and the environment correlate better with total concentrations in air and water than on a per-unit-of-output basis. Oil sands production is expected to increase in volume anywhere from three to five times over the next 15 years. So even if emissions per unit of output gradually decline, local environmental impacts will worsen without proper environmental standards and stewardship.

The industry faces three environmental challenges. First, it will need to continue making progress on its self-chosen path of reducing emissions per unit of output. Second, in regions such as the oil sands where production is expected to grow rapidly, reducing per-unit waste discharges will not be sufficient. Particular attention will be required to address the effects of the total emissions on the receiving environment. Third, since oil sands production is more GHG-intensive than is conventional production and because it is expected to grow rapidly, total GHG emissions from the sector are also likely to grow. This will require measures to reduce the emissions, or to offset them through technological means or by purchasing credits in the international markets.

PREPARING FOR AN UNCERTAIN FUTURE

International agreements and domestic policies on climate change are likely to have minimal impact on Canadian domestic oil production, revenues and profits before 2020. But the global policy framework for climate change is uncertain beyond 2012. The challenge for the oil and gas sector—and indeed for individual countries—is to take action now that makes sense for an uncertain future.

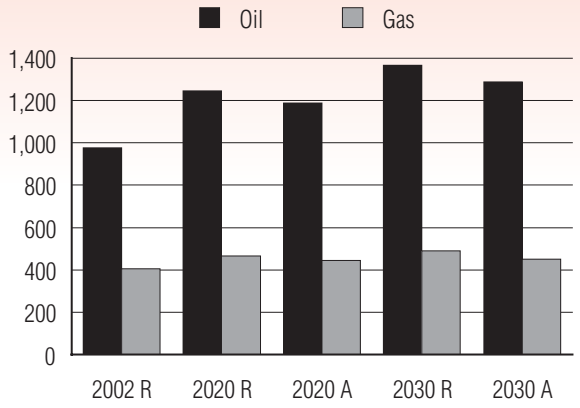
Even if Canada and the world were to adopt more aggressive GHG reduction policies, there would be minimal impact on Canadian domestic oil production, revenues and profits before 2020. Two recent scenario studies illustrate this.

The *World Energy Outlook 2004* of the OECD's International Energy Agency contains a "Reference Scenario," modelling energy demand, production and prices given current policies in major countries. It also lays out an "Alternative Scenario," which pictures how energy markets might look under policies that strengthen environmental and energy security concerns.[21] Chart 5 shows that oil and gas demand in Canada, the United States and Mexico under the Alternative Scenario would each drop by less than 5 per cent by 2020 in comparison to the Reference Scenario.

Even if Canada and the world were to adopt more aggressive GHG reduction policies, there would be minimal impact before 2020.

Canada's National Energy Board conducted a study in 2003[22] in which two scenarios were modelled: "supply-push," in which the main policy stance is a push to develop known conventional sources of energy; and "techno-vert," characterized by more stringent environmental policies and a higher pace of alternative energy technology development. Chart 6, taken from this National Energy Board study, shows total Canadian

Chart 5
IEA Reference (R) and Alternative (A) Scenarios: Natural Gas and Crude Oil Demand
(MTOE equivalent)



Source: *World Energy Outlook 2004,* (Paris: International Energy Agency), pp. 418 and 438.

crude oil production under each scenario to 2020[23] and indicates agreement with the *World Energy Outlook 2004* scenarios. Oil production under a more environmentally aggressive policy regime is reduced in comparison with the more conventional supply-push regime—but not by much.[24]

Environmentally assertive policy regimes, such as the techno-vert scenario, if projected over many decades, would undoubtedly produce greater differences in total production and by oil type. But over the next decade or so, the capital stock used in producing, transporting and using energy in Canada will change too slowly to create substantial differences between the two scenarios.

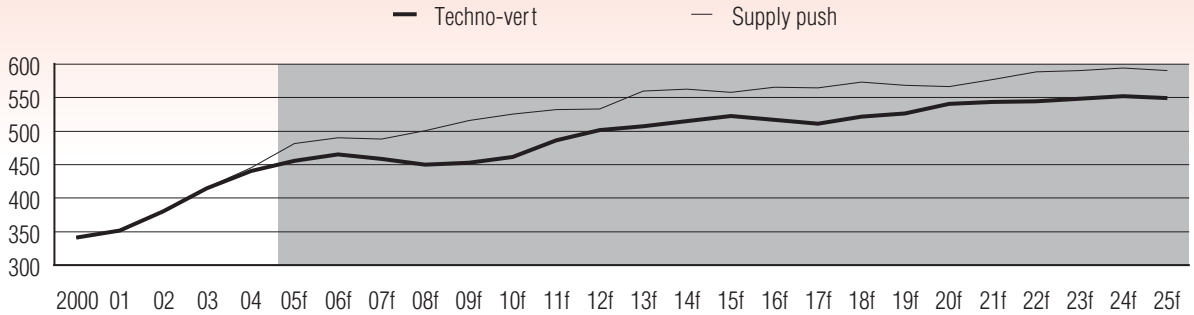
While the oil and gas demand and supply forecasts such as those presented above do not change much in the next 15 to 20 years, even with stricter environmental measures than currently exist, future international climate change negotiations could lead to very different policy outcomes. These global policy decisions could have a dramatic impact on the attractiveness of Canadian energy investments, even within the next decade.

The world may continue on its current Kyoto course, with second and third five-year commitment periods for negotiated reductions in greenhouse gas emissions. Of course, the multilateral Kyoto approach may collapse, leaving nations to pursue individual or regional action. Alternatively, the United States, under a new administration and hearing an offer of participation by developing countries in an emissions "contraction and convergence" regime, could change course and join other Kyoto nations in a new, more aggressive climate change approach.

Contraction and convergence is attractive to both developed countries that are seeking lower unit emission rates while retaining economic growth opportunities and to developing countries that would be permitted to increase their per capita emissions for a time. Table 2 sets out what these scenarios might look like. The challenge for the Canadian oil and gas sector—and for individual countries—is to put actions into effect now that would make sense under a variety of outcomes.

Suppose, for example, Kyoto is replaced by a far more comprehensive international agreement by 2012. A so-called "contraction and convergence" scheme

Chart 6
Canada: Oil Production Scenarios
(thousands of cubic metres per day)



f = forecast
Source: National Energy Board, *Canada's Energy Future: Scenarios for Supply and Demand to 2025*, (Calgary: NEB, 2003).

(scenario 3, above) "contracts" the world's GHG emissions by 2050 to stabilize the climate, while letting developing nations increase their per-capita emissions until they "converge" with those of the industrialized world. Such a scheme would offer attractions to both the United States and the major developing nations. The former would find it appealing because of its very long-term horizon, which provides enough flexibility and time to achieve the desired goal. Developing countries could support that approach because it offers them the opportunity to grow their emissions to match the levels of industrialized countries on a per capita basis.

But "contraction and convergence" would require a steep drop in GHG emissions from the industrialized world by 2050. So it would also feature a "clean energy" revolution characterized by the following:

- A move to lower-carbon fuels, such as biofuels and natural gas liquids;
- More stringent automobile fuel-efficiency standards;
- Increased use of fuel cells and hydrogen power;
- Huge investments in clean coal technologies;
- A revival of interest in nuclear options for electricity;
- Proposals to build more large-scale hydroelectric capacity;
- Measures to promote a range of renewable energy technologies;
- Incentives for an expanded use of co-generation (meaning both heat and power);
- Increased energy efficiency in the residential, commercial and industrial sectors; and
- Large-scale carbon sequestration, either underground, or in forests or oceans.

Table 2
World Oil Requirements Scenarios

Scenario	Highlights 2005–12	Highlights 2013–22*
1. Kyoto, two periods or more	• Kyoto in force without the United States • International emissions trading (Kyoto mechanisms)	• United States and developing nations enter Kyoto • Parallel regimes with dynamic price caps: – coalitions – bilateral agreements – international trading
2. Kyoto, then stagnation	• Kyoto in force without the United States • International emissions trading (Kyoto mechanisms)	• Impasse—no second period • "Hot air" gone • International market is "barely alive"
3. Kyoto, then a new agreement	• Kyoto in force without the United States • International emissions trading (Kyoto mechanisms)	• Add United States and developing nations • Contraction and convergence • Moderate short-term targets • Market-based instruments with price caps • Incentives for participation of developing countries • Major technology push

*The timeframe 2013–22 represents the second and third five-year periods under a "two periods or more" scenario. The "contraction and convergence" scheme, by design, attempts to stabilize atmospheric concentrations of GHGs by mid-century.
Source: The Conference Board of Canada.

CANADA AND THE THIRD OPTION

Under the third scenario highlighted above, it may make economic sense for Canada to "reduce more later." That is, we might let GHG emissions continue to rise, but at a slower pace, peaking around 2025. We would avoid the premature scrapping of existing capital stock, gradually replacing it with a "clean energy" system that would yield rapid GHG reductions from 2025 to 2050.

While an aggressive "contraction and convergence" scenario might have minimal impact on Canadian oil and gas production before 2020, it would certainly affect corporate investment decisions before then. And those decisions, taken before 2020, will have consequences for many decades. For example, proposed new oil sands plants might no longer be financially viable. Companies may have to accelerate research and development on sequestration technologies or plan large-scale production of hydrogen from natural gas.

A "contraction and convergence" scenario—with its accompanying "clean-energy revolution"—is quite plausible. Firms in the oil and gas sector will need to give serious attention to the implications of this scenario for their investments and operations. Are companies in the business of extracting, processing and selling hydrocarbons, or are they providing energy to customers?

Major oil and gas firms based in OECD countries would gain more strategic flexibility if they saw themselves, long term, in the "energy" business. Shell and BP, for example, have incorporated renewable technologies and hydrogen into their strategies, even though their oil and gas operations will remain vast into the foreseeable future.

Strong revenues generated by high prices over the next 10 to 15 years would allow oil and gas firms to consider a range of investment opportunities, rather than simply replacing reserves with higher-cost resources. At the same time, sustained high oil and gas prices—even apart from public policies—would accelerate the clean-energy revolution. Reframing their self-perceptions as energy companies would enable oil and gas firms to better manage risks and capitalize on opportunities over the long term.

Sustained high oil and gas prices would accelerate the clean-energy revolution.

OIL PRICES AND NATIONAL UNITY

Canada, over the next decade or so, may find itself in an oil and gas situation similar to that of the 1970s. But the country's response must be better than its handling of that oil boom. Repeating key mistakes of the past, such as the National Energy Program, would risk rekindling regional tensions.

In the 1970s, burgeoning oil revenues pitted Western resource interests against those of Eastern consumers. In the coming decade or so, all Canadian consumers will again be paying more for oil and gas, but the economies of Ontario and Quebec will enjoy no offsetting royalties. We could see widening disparities in regional income growth between those that are net producers of oil and gas, and those that are net consumers.

The net consumers include the Central Canadian provinces that have traditionally dominated the federal government. The oil-and-gas–rich provinces include the Prairie and Atlantic provinces, which hold longstanding grievances over the distribution of political power. Growing income disparities between Central Canada and net producing provinces of oil and gas will intensify tensions in federal–provincial relations, which will need to be managed in order to avoid exacerbating regional alienation.

THE DIRECTION AHEAD FOR THE OIL AND GAS SECTOR

In addition to navigating potentially difficult relations among the provinces and the federal government, public policy–makers will also face a number of these challenges, many of which we have outlined previously.

Provincial governments in oil and gas producing regions will collect enhanced royalties and higher revenues from corporate and personal income taxes.[25] Although production of conventional light and heavy crude oil from the Western Canadian Sedimentary Basin will gradually decline, British Columbia, Alberta and Saskatchewan will all benefit from higher oil prices. Alberta will stand to gain substantial oil sands revenues from both increased production and prices. Offshore oil and gas will provide some long-awaited revenues for Newfoundland and Nova Scotia, as well.

Oil and gas are declining assets. Governments will need to ensure that their high revenues from this robust sector are used to further diversify the economic base of their jurisdictions. This task will require carefully investing the higher revenues in education, training, infrastructure and capital that will diversify these regional economies and provide enterprises with sustainable competitive advantages. Strategies for reinvesting these revenues will differ by province. While Alberta is likely to enjoy substantial revenues from the oil sands for decades to come,[26] royalties to the Atlantic provinces are likely to be smaller and may last less than two decades if further development is not forthcoming.

Governments will need to ensure that their high revenues from this robust sector are used to further diversify the economic base of their jurisdictions.

Given the expected tight North American supplies of natural gas for the next 5 to 10 years, public policy needs to remove the roadblocks that keep this gas from reaching markets. Governments have a responsibility to protect the environment, as well as the health and rights of people. But governments need to expedite the regulatory approvals, environmental assessments and policy decisions necessary to build the required infrastructure so that new gas supplies reach markets.

Nevertheless, the largest long-term policy challenge affecting the oil and gas sector is climate change. Governments need to think through plausible options for the international frameworks that might emerge over the next decade. They also need to clarify Canada's economic, energy and environmental goals: Should climate policy be dovetailed into a broader energy policy framework? Or should energy policy decisions be driven by climate change concerns? To what extent should public policy be used to "push" a clean-energy revolution? How we proceed will set the context for thousands of subsequent private and public decisions.

Interestingly, Canadian geography offers an opportunity to mitigate GHG emissions from fossil fuel production. Indeed, natural resources growing above ground can somewhat offset the impact of the extraction and use of its resources below ground. Fast-growing forests can absorb carbon dioxide from the atmosphere. This issue is explored more fully in the next section.

GREEN GOLD: THE FOREST SECTOR

Forests cover nearly half of Canada's 921.5 million hectares. Ten per cent of total world forests are within our borders. In 2003, the forest industry's exports were worth CDN$39.6 billion, making Canada the largest exporter of forest products in the world. Our forest industry generates CDN$33.7 billion,[27] or 3 per cent of Canada's GDP; it contributes CDN$29.7 billion toward our country's trade surplus; it creates direct employment for 376,000 people, or 2.4 per cent of Canada's total employment;[28] and it acts as a backdrop for a tourism industry worth several billion dollars.

Although it has long been a major pillar of the prosperity and way of life for rural Canada, the forest industry faces significant economic, technological and environmental challenges. Investors find current profit levels inadequate, and effective competitors are emerging from countries with cheaper labour, newer mills and fast-growing forests. Our old pulp and paper mills need renewal, and concerns about forest management and water pollution continually require attention.

Nevertheless, the industry has made significant strides in the past 10 years. Canada's new and upgraded wood products mills are among the best in the world. Applying high-technology upgrades to old pulp and paper mills has squeezed additional productive life from aging facilities, and enhanced environmental performance has reduced many polluting discharges significantly. Opportunities are also emerging for the industry to provide greenhouse gas capture services (sequestration) and to become a provider of renewable energy.

The forest industry faces significant economic, technological and environmental challenges.

Despite the improvement efforts the forest industry has undertaken, the sector is ailing. Part of the problem is that, strictly speaking, we do not have one mammoth forest industry but several smaller, provincially-based industries, with employment clustered in Quebec, British Columbia and Ontario. Ninety-four per cent of Canada's forest lands are publicly owned. The industry manages forest land on behalf of the provinces, which own the trees and collect harvesting royalties known as stumpage fees.

This ownership and management system is substantially different from that in our competitor countries, and it has caused trade tensions with the United States. The softwood lumber dispute between the two countries is based on differences in how timber rights are priced, and it is aggravated by differences in interpretations of the dispute resolution mechanism described in the Canada–U.S. Free Trade Agreement and the North American Free Trade Agreement (NAFTA).

This dispute has a long history. The United States International Trade Commission determined in April 1982 that Canadian lumber producers were gaining market share in the United States, principally because their timber costs were lower.[29] Despite numerous rulings in Canada's favour since 1982, softwood lumber has continued to be a contentious trade issue. There have been three rounds to this enduring dispute since then. Round one ended with the December 31, 1986, Memorandum on the Export of Softwood Lumber Products from

Canada. With this resolution, the Government of Canada agreed to implement a 15 per cent tax on Canadian softwood exports to the United States.[30] Round two of the dispute, which began in 1991, ended in 1996 with Canada's acceptance of export quotas until 2001. Round three, which has yet to end, has the Americans collecting duties on imports of Canadian softwood lumber.

The U.S. government is not backing down, and Canada will need to find an appropriate way to respond.

These settlements have been progressively worse for Canada's softwood lumber producers. At first, Canada taxed the industry's exports— not ideal, but at least revenues remained in Canada and there were no limits to the exports. In 1996, Canada agreed to quotas that lasted until 2001; this limited our potential market share. Currently, the U.S. government shaves Canadian companies' profit margins with duties averaging 21 per cent, despite U.S. lumber producers losing their "extraordinary challenge" to the NAFTA panel on August 10, 2005. The U.S. government is not backing down, and Canada will need to find an appropriate way to respond.

In addition to aggravating trade disputes, the structure of Canada's forestry industry also creates unique problems for the sector, which is unable to rationalize operations across provincial borders. With nearly 350 rural communities depending on the sector for jobs,[31] provinces are reluctant to allow ancient mills to close.

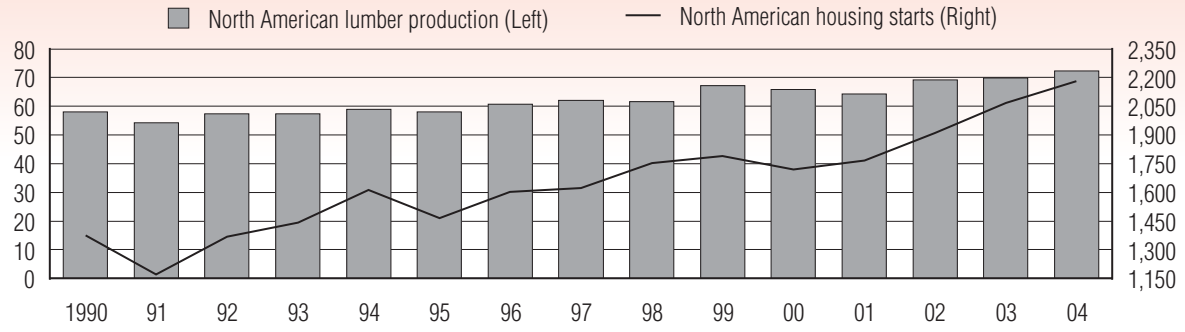
RISING GLOBAL DEMAND AND GLOBAL COMPETITION

The wood products sector depends on the residential construction market. (See Chart 7.) The recent North American housing boom has significantly increased both demand and prices for lumber and construction panels. Canada's wood products sector has taken advantage of the boom, with its relatively well-equipped and well-managed mills, which boast the highest productivity of any in major competing countries. Canadian mills should be able to benefit from any continuance of that North American growth. This housing boom will not last forever, but the Canadian industry has shown in the past that it can weather downturns.

Given increased economic growth and rising literacy rates, global wood and paper consumption should increase by CDN$4 billion to $7 billion annually, or 1 to 2 per cent per year, almost indefinitely.[32] Although in 2002 Canada ranked first in the world in terms of newsprint production and second in the world in production of wood pulp and softwood lumber, we are losing ground to rival nations—some of which were once our customers.

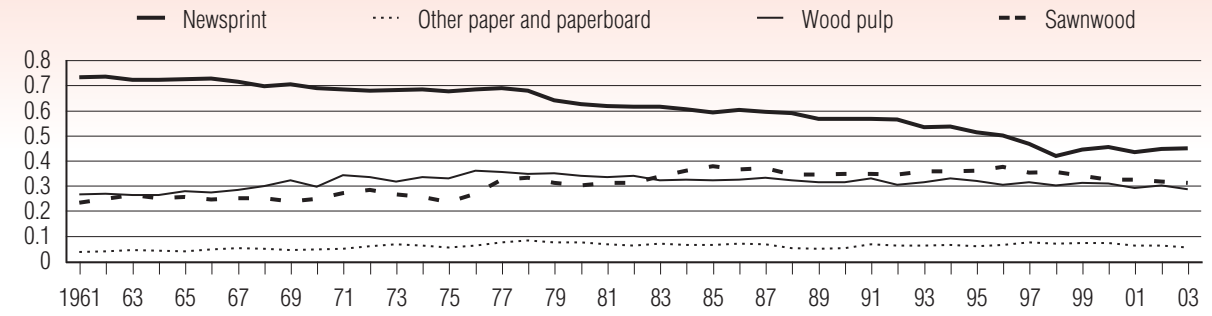
The industry faces competition from other temperate-zone producers (such as Russia and New Zealand), as well as from tropical countries where trees grow faster (such as Brazil and Indonesia). New rivals such as Indonesia, China and Brazil have low wages, state-of-the-art technology, and proximity to large forest resources or fast-growing fibres, and their industries sometimes enjoy significant government subsidies.

Chart 7
North America Softwood Lumber Production versus North America Housing Starts
(billions of board feet—left; number of starts—right)



Sources: Council of Forest Industries of British Columbia; Western Wood Products Association; National Association of Home Builders; Canada Mortgage and Housing Corporation; <www.woodmarkets.com/WMQ.htm>.

Chart 8
Canada's Share of World Forest Products Exports
(exports by volume)



Source: STructural ANalysis (STAN) database <www.oecd.org/document/15/0,2340,en_2649_201185_1895503_1_1_1_1,00.html>.

New technology and the development of new capacity now allow countries that were once customers to become competitors, and even to become world players.

Our pulp and paper sector is particularly threatened by a growing number of international competitors.[33] China, for example, is close to Siberian forests and is building new mills to use that fibre. Canada, on the other hand, owns an aging fleet of mills, and the amount of our signature pulp grade (northern bleached softwood kraft, made primarily from spruce, pine and fir trees) in paper formulations is getting smaller. It will be very hard to stay competitive, especially without structural changes in provincial policy approaches.

In the face of this competition, Canada's share of world pulp and paper exports has dropped for both newsprint and pulp in recent years. (See Chart 8.) Though Canada is still by far the largest exporter to the U.S. market, Finland, Sweden and Brazil are becoming major players there.

Canada's pulp exports to Western Europe, meanwhile, fell by 8.1 per cent in 2004, reflecting greater inroads by Latin American eucalyptus hardwood pulp, new softwood pulp capacity in Germany, and softwood pulp exports from the American South. In coming years, more new capacity is expected, mostly in Latin America, which will add 2 to 3 million tonnes of mainly hardwood pulp (also made in Canada from trees such as birch and maple) to global supplies by 2006. As this will likely lower the cost of hardwood, customers will find ways to use more hardwood pulp at the expense of higher priced softwood pulps, Canada's primary grade.

On the other hand, China is adding an average of about 2 million tonnes of paper-making capacity per year over the next few years, and is likely to maintain and even increase its pulp imports for the foreseeable future. In 2004, Chinese imports of Canadian pulp exceeded 1.7 million tonnes—16 per cent of all Canadian pulp shipments. For the first time, Canadian pulp exports to Asia exceeded those to the United States and Western Europe. For Canada, China has become almost twice as big a pulp market as the traditional Asian leader, Japan.

In 2004, for the first time ever, Canadian pulp exports to Asia exceeded those to the United States and Western Europe.

FIGHTING FRESH COMPETITION WITH OLD MILLS

The opportunities in Asia depend on our mills keeping up. But the competitive position of our mills may be tenuous. Our pulp and newsprint mills are relatively old and relatively small, meaning their operating costs are higher than those of newer mills.[34]

To be globally competitive, individual mills and forest companies must be big enough to operate efficiently. Larger mills offer savings through economies of scale, and larger companies reduce volatility in commodity prices.[35] Consolidation into larger companies would help stabilize prices in this sector.

While Canada's competitors are growing ever larger, our home forest products industry remains relatively fragmented, as mergers and acquisitions face various barriers. For example, the provincial nature of forest management typically requires that wood be processed in the province where it is harvested. This prevents multi-province companies from rationalizing their production and from building larger and more efficient facilities where economics dictate.

While Canada's competitors are growing ever larger, our home forest products industry remains relatively fragmented.

In addition, when companies plan to close older, higher-cost mills, provincial governments often intervene with offers designed to protect forest communities from job losses. These measures decrease the competitiveness of the Canadian industry as a whole because older mills are retained in the system, distorting the market with overcapacity and stymieing sector renewal. These matters were highlighted recently with major newsprint mill closures and capacity reductions announced in Newfoundland and Labrador and in Ontario. The mills in question were judged to be uncompetitive in a glutted newsprint market, and the company moved to shut the unprofitable facilities. Local and provincial politicians threatened legal action and forest harvesting licence withdrawals in an effort to keep these mills operating and protect those communities.

FALLING BEHIND ON RESEARCH AND DEVELOPMENT

Canada's forest industry spends approximately 0.6 per cent of annual revenues on research and development. This amount is extremely low, compared with the spending of our American and Scandinavian competitors. (See Chart 9.)[36] This disparity is blamed on the smaller size of Canadian firms, low rates of return, and the lack of overall strategic focus and coordination among government, research and industry organizations. This under-investment in research and development does not bode well for innovation, including process and product improvements. Without an increased commitment to R&D, the Canadian forest industry's competitiveness will continue to erode.

TURNING FORESTS INTO PROFITS IS TOUGH

While no nation's forest sector as a whole is returning its cost of capital, Canada's performance is near the bottom. Return on capital employed (ROCE) is lower in Canada than in other producing regions. (See Chart 10.)[37] Increased competition and excess capacity have had a significant impact on the financial position of the global forest business. Over the past decade, the average cost of capital for the sector has been around 10 per cent, while average ROCE for the forest sector has been around 4 per cent in Canada (see Chart 11).[38] This unhealthy situation means that Canadian producers will be among the first to close when prices drop.

In fact, Canada's old, small mills have not returned their cost of capital for nine of the last 10 years, making it increasingly difficult for them to attract capital. Further, over the past five years, depreciation has exceeded capital expenditures by $6 billon. In 1995, capital expenditure, as a percentage of depreciation, was 172 per cent. That declined continuously and reached a dramatic level of 57 per cent in 2003.[39] Not only are Canada's mills smaller and older than competing mills in other countries, they are also not being renewed and are, in effect, aging faster.

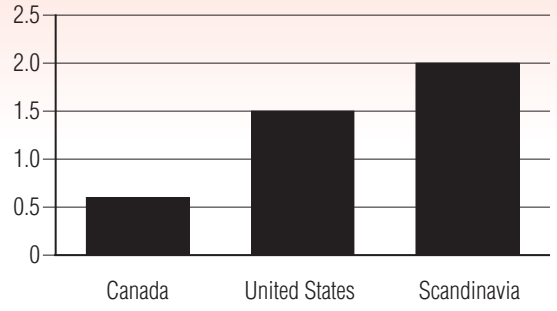
OLD MILLS AND AN AGING WORKFORCE

Although wages and salaries in the forest sector are significantly higher than the overall industry average,[40] the forest industry faces challenges in attracting and retaining skilled people. The problem may well get worse as older workers retire. The average worker in the pulp and paper industry is over 40 years of age, and 35 per cent of all forest sector workers are at least 45 years old. At the same time, it is difficult to attract young people with the right skills because many see the industry as a low-tech, cyclical, environmentally irresponsible employer providing work in unappealing mills.

NEW TECHNOLOGIES REDUCE COSTS

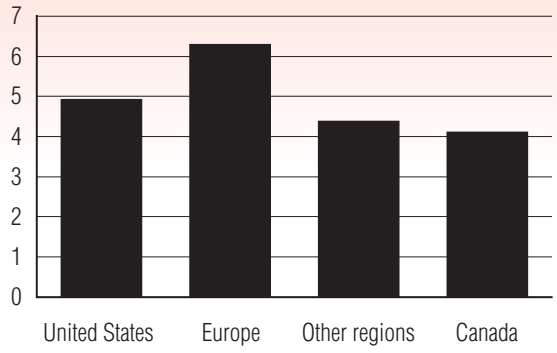
Despite the lack of wholesale plant renewal, and lower research and development expenditures, the forest industry has invested in new machinery over the past decade to extend plant life. This change is occurring both in the pulp and paper business and in the wood products business. The pulp and paper industry has been purchasing high-technology equipment

Chart 9
Canada's R&D Expenditure Compared with That of Our Competitors
(percentage of gross revenues)



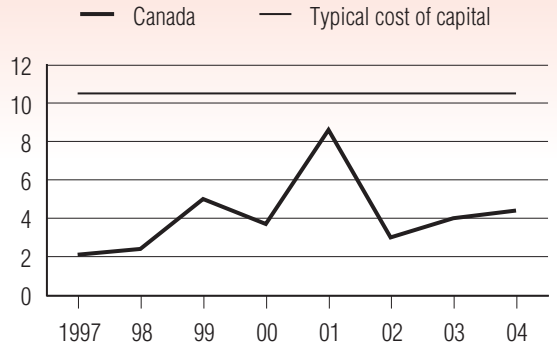
Source: Forest Products Association of Canada, *Forest Sector Innovation Response, 2002.*

Chart 10
Return on Capital Employed by Geographic Region
(per cent; 1997–2003 average)



Source: PriceWaterhouseCoopers, Global Survey 1997–2004.

Chart 11
Returns Compared with the Cost of Capital
(per cent; return on capital employed)



Source: PriceWaterhouseCoopers, Global Survey 1997–2004.

designed to reduce staffing and squeeze the maximum incremental production, and economic life, from existing facilities, rather than building new mills. In addition, new machinery allows more efficient use of inputs, lowering the unit cost of outputs. This is how the industry has been able to survive so far, but investment in new machinery alone will not suffice in the future.

PUBLIC POLICIES ARE NOT HELPING THE INDUSTRY

Forest companies are taxed more highly in Canada than in any OECD country other than Germany.[41] Almost uniquely in the OECD, Canada imposes capital tax on large corporations, which deters the growth and expansion of capital-intensive industries such as the forest industry.

Moreover, Canadian forest industry regulations are considered inefficient and duplicative. In some cases, such as environmental regulations, there is significant overlap at the federal and provincial levels. This results in an uncertain business climate, and it adds administrative, monitoring and compliance costs. Recently, the federal government has been establishing mechanisms to foster "smart regulation," which should sort out overlapping regulations.

ENVIRONMENTAL PERFORMANCE HAS IMPROVED

From an environmental standpoint, the forest industry has improved both the way it manages forests and its control over manufacturing emissions.[42] But these changes have been expensive. It cost $5 billion to address effluent treatment and dioxins in the mid-1990s, which may have been the reason that capital expenditures exceeded depreciation in that period.

Improvements in the forest industry, although environmentally sound, have been expensive.

Canadian mills have slashed their water consumption by 34 per cent since 1989, and they have reduced waterborne and airborne pollution discharges by investing $30 billion over the past two decades. Since 1992, pulp and paper mills have reduced particulate emissions per tonne of output by half, sulphur dioxide emissions by 20 per cent, and total odourous gas emissions by 45 per cent.

Industry has also increased recycling. Canada's paper recovery rate has reached 45 per cent, and there are plans to achieve 55 per cent by 2010. Recycled paper and sawmill residues are being used to make products such as adhesives, insulation and engineered wood products. With steady progress over the last 20 years, sawmill residues and recycled papers now provide 82 per cent of the fibre for making new paper and paperboard. (See Table 3.)

Table 3
Source of Raw Materials for Paper and Paperboard (per cent)

Year	Recycled paper	Roundwood	Sawmill residues
1980	8	51	41
1985	10	47	43
1990	11	38	51
1995	22	27	51
2000	24	21	55
2003	26	18*	56*

*Estimated
Source: Forest Products Association of Canada, *2004 Annual Review,* p. iv.

FORESTS CAN SLOW CLIMATE CHANGE

Forests also play a critical role in another major environmental issue. Growing trees can remove carbon dioxide from the atmosphere through a process called "sequestration." (See box, Sequestration.) The Kyoto Protocol discusses carbon sequestration in forests, but it is not yet clear how this process applies to Canada's managed forests, from which our forest products come. Canada's "Project Green" estimated originally that our forests could sequester 20 megatonnes per year, but recent estimates are being reduced to as little as 4 megatonnes because of insect infestations and fires. It is important that this estimate be firmed up and provided to the industry and the provinces for action, as it may represent a significant opportunity for the forest industry, as well as domestic offsets for the oil and gas sector.

The Kyoto Protocol discusses carbon sequestration in forests, but it is not yet clear how it applies to our managed forests.

Sequestration refers to the long-term storage of carbon in growing forests, on agricultural land, underground or in the oceans so that the buildup of carbon dioxide concentration in the atmosphere will reduce or slow. (Carbon dioxide is the principal greenhouse gas.)

Sequestration can be accomplished by maintaining or enhancing natural and biological processes in forests and on agricultural lands that use carbon dioxide directly from the atmosphere. Alternatively, the gases can be captured at the point of emission. For example, gases from a thermal electricity generation plant can be stored in underground reservoirs (geological sequestration), injected in deep oceans (ocean sequestration), or converted to rock-like solid materials. Approaches to sequestration are being studied all over the world as a major avenue of response to the requirements of the Kyoto Protocol.

In Canada, management of the "working forest," the forest that is harvested for forest products, offers an opportunity to enhance sequestration. In essence, taking credit for sequestration in forests requires that the carbon released when the forest is harvested is less than the carbon absorbed as the new stand of trees grows. Additional carbon fixation in forests can be achieved through a variety of techniques applied by forest managers. The net result is that a greater volume of wood is grown on the land in the regenerated forest than in the original. More wood volume means more carbon is present than there was prior to the harvest, resulting in a net sequestration of carbon.

On a limited scale, the energy industry is already using carbon dioxide emissions to enhance oil recovery, thereby sequestering the carbon dioxide under ground. There is considerable opportunity to expand the practice.

Not only can the forest industry contribute to meeting our Kyoto targets through sequestration, but it is also reducing its own CO_2 emissions. (See Chart 12.) The industry is yielding emissions 28 per cent below the benchmark 1990 levels, in the aggregate, even though tonnage produced by Canadian mills has risen by about 30 per cent. A further reduction of 15 per cent is planned by 2010, equivalent to removing 300,000 cars from Canadian roads.

ENERGY FROM THE FOREST INDUSTRY

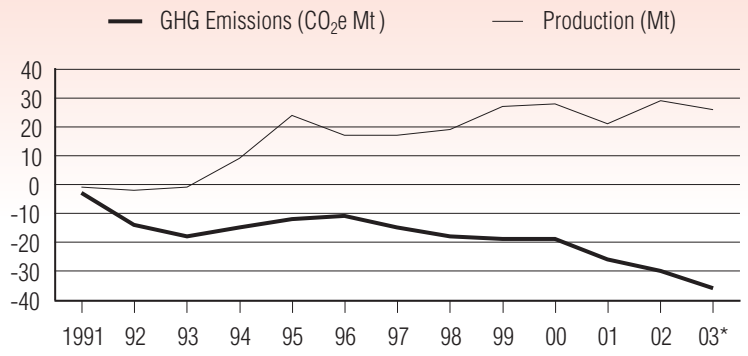
Pulp and paper mills are Canada's largest industrial producer of biomass renewable power. More than 50 mills employ biomass cogeneration—producing electricity and heat from wood and process residues—and more are gearing up in the quest for energy self-sufficiency. As long as a country is regenerating its forests, forest biomass is carbon-dioxide neutral and the energy so generated comes without a climate change penalty.

The forest industry is increasingly relying on biomass for its energy needs, by using bark and process bio-wastes as a fuel source. Today, fossil fuel accounts for less than one-fifth of the forest industry's heat and

power requirements. (See Chart 13.) The industry is ready to help meet Canada's future energy requirements. Currently, energy facilities associated with forest product mills produce 1,700 megawatts of renewable power, 250 from hydro and the remainder from biomass—the equivalent of roughly three nuclear reactors or enough to supply about 800,000 homes. The industry has the potential to increase this amount, particularly given renewable energy requests from some provinces and the favourable taxation policies the federal government is currently considering.

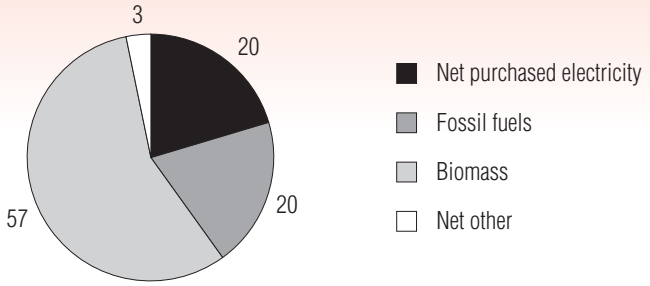
Provincially owned utilities have historically been reluctant to accept commercial power into their grids for distribution to customers. However, with regulatory walls being lowered and the high cost of power utility construction projects, alternative sources such as biomass are gaining favour. In Ontario and Alberta, new commercial sources of power are being encouraged, and the federal government is offering special incentives under its plan to meet the Kyoto Protocol commitments for biomass power. As this trend expands, the forest industry can contribute climate-friendly energy to the grid.

Chart 12
Change in Total Greenhouse Gas Emissions
(percentage change)



e = equivalent
*Preliminary results.
Sources: Forest Products Association of Canada, *Energy Monitoring Report 1990–2002;* Canadian Industrial Energy End-Use Data and Analysis Centre 2003.

Chart 13
Pulp and Paper Energy Sources 2003
(per cent)



Source: Forest Products Association of Canada, *2004 Annual Review,* p. iv.

THE DIRECTION AHEAD FOR THE FOREST SECTOR

Canada needs to create an economic and fiscal environment that will rejuvenate investment and R&D in the forest sector. The pulp and paper sector of the industry is in difficult financial circumstances, with small, old mills that are becoming increasingly non-competitive and unattractive for investment. To rectify the situation, provincial and federal governments must agree on new policies and a long-term strategy to provide the industry with new business opportunities.

1. Policies should seek to help industry renew its mills by allowing firms to close non-competitive facilities. Provinces must resist the temptation to prop up non-competitive mills to save jobs at risk. Instead, they should find other ways to assist those displaced.
2. Policies should ensure that investment in plant upgrades is attractive. This approach might include encouraging producers to ship logs across provincial boundaries to find the most cost-effective production facility.[43]
3. Policies for taking advantage of sequestration must be delineated. First, the provinces and the federal government must get a good estimate of the sequestration opportunity that actually exists in Canada's managed forest, and then clarify ownership rights of this carbon storage resource. With that accomplished, mechanisms must be put in place for the industry to manage and profit from the resource, with some return to the provinces.
4. Policies should emphasize low-cost, renewable energy supported by regulatory reform of provincial electrical power systems so that this power can be incorporated into the grid. Doing so will offer a substantial incentive to the forest industry to turn wood waste into energy and become a net energy producer. Such policies will help the industry be more competitive by reducing its costs and providing much-needed carbon-neutral power to the grid.

Government can improve the business environment, but business must then take advantage of this and renew itself. Some Scandinavian companies have become global players, with operations in many countries, perhaps because they have been able to renew their home country facilities while investing profits externally to fund international growth. We need to study the Scandinavian experience to determine their key success factors and adopt those that might foster the future success and international growth of Canadian forest products companies.

We need to study the Scandinavian experience to determine their key success factors.

Canada has an impressive level of foreign direct investment overseas in the natural resource area (21.3 per cent of total overseas investment in 2002), but wood and paper account for only 2.2 per cent. Further strengthening this investment may be an opportunity for the industry, especially in Asia. After all, overseas investments provide many direct and indirect benefits: access to larger markets, repatriated profits, technology transfer, innovation, resources and opportunities to exploit the competitive advantages of the investing countries to the fullest.

BLUE GOLD: WATER

In many ways, the issues facing our water resources are the mirror image of those facing the forest and the oil and gas sectors. Although there is great demand for water, Canada cannot look forward to a "commodity boom" in water, let alone a surplus that can be traded. Moreover, climate change is likely to directly influence the availability and distribution of freshwater resources. The distribution of annual precipitation in Canada is expected to change significantly, and regions that are based on rivers are likely to experience costly droughts and even more costly floods.

Yet Canada is perceived to have an abundance of fresh water, and by many absolute measures this view is supported by facts. However, having water within one's national boundaries does not always mean that it can be utilized to satisfy demand. For example, even though the Amazon runs through Brazil, the International Water Management Institute lists that nation as a potential sufferer from water scarcity.[44]

WATER SCARCITY AND WATERSHED MISMANAGEMENT

How will nations overcome water scarcity? Once, we diverted water with aqueducts and canals. More recently, as both prosperity and population increased, humanity "harvested" water with massive dams and irrigation systems. But doing this on a broad scale has ecological implications. The watershed or drainage basin is the fundamental unit for protecting the quality and quantity of freshwater resources. From the source to the ocean, watersheds are complex hydrological systems whose intricate relationships have yet to be fully understood. Our science and experience have proved one truth: bulk removal[45] of water from watersheds on a continued basis is ecologically damaging and unsustainable resource development.[46]

Watershed mismanagement is not only a local issue; it can also have global implications. Water is part of the global hydrologic cycle. It is vital to navigation, recreation, fish and wildlife support, and waste assimilation. Water is vital to sustain the lifestyles of large and small communities alike.[47] Mismanagement of water resources, whether they be our lakes and rivers or the oceans that surround us, can have an impact well beyond our borders.

Watershed mismanagement is not only a local issue; it can also have global implications.

One of the more harrowing examples of watershed mismanagement is the Aral Sea, found in Central Asia. To grow cotton where it would never grow naturally, tributary rivers were diverted for irrigation, shrinking the Aral Sea's water volume by 60 per cent. The surface area of the lake has declined by more than 50 per cent, exposing vast tracts of lakebed to the desert air. Between 1974 and 1987, the Aral Sea dropped from fourth to sixth in the ranking of the world's largest freshwater lakes.[48]

Moreover, the salinity of the formerly freshwater lake now resembles that of the North Sea.[49] Fisheries, once a thriving industry on the shores of the Aral Sea, have long since shut down, as the water's changing chemistry drove many fish species to extinction. Windstorms now carry salts and minerals, subjecting residents' lungs to harmful particles. Since the 1970s mortality rates have increased by 15 times, cardiac and vascular disease by 1.6, tuberculosis by 6, gallstones by 5 and throat cancer by 7 to 10 times.

NORTH AMERICA'S WATER SHORTAGE

The continuing ecological pressure caused by human demand for water sets up an important context for determining how we economically "harvest" our water resources, and, in particular, whether it is ecologically feasible to trade them.

The U.S. Census Bureau projects a population boom in the arid U.S. Southwest: the populations of Nevada and Arizona will more than double between 2000 and 2030, and the already populous states of California and Texas will see increases of about 37 per cent and 60 per cent, respectively. Unfortunately, the main water source for the region is already completely allocated. The Colorado River estuary is now a shadow of its former self, as irrigation and municipal water demand almost completely consume the river's discharge.[50] Nevertheless, the water must come from somewhere, and many worry that Canada will be tapped dry to supply cities such as Las Vegas and Phoenix.

The Economics of Transporting Bulk Water

With a growing world population and changing patterns of global precipitation, researchers are examining a number of options in the management and supply of fresh water to areas where the demand for fresh water is outstripping local availability. These options include bulk water exports, as well as the establishment of desalination plants. M. H. I. Dore[1] argues that three key factors will determine the possibility of such trade: (a) the travelling distance of the marine vessels from the freshwater source to the population, (b) the cost of capital and (c) the average expected utilization rate of the local desalination plant. He concludes that the supply of bulk water transported by single hulled marine vessels is economically viable if the distance is less than 548 miles. For greater distances, the cost of drinking water production using desalination technology is cost effective. In any case, the supply of these single hulled marine vessels is limited, and new ones are unlikely to be built for water only. Thus, the economic potential of export trade in water does not appear to be real.

1 M. H. I. Dore, "Exporting Fresh Water: Is There an Economic Rationale?" *Water Policy,* Vol. 7 (2005), pp. 313–327.

British Columbia Watersheds

British Columbia is one of many regions in Canada perceived to have abundant fresh water supplies. However, populated regions across the province already experience declining groundwater levels and restrictions in the use of surface water. Groundwater aquifers throughout the province struggle with water-quality issues, posing a double threat to the health and prosperity of the region. The contribution of groundwater to total water supply in the province is not trivial; groundwater is a major source of water for drinking and crop irrigation in British Columbia.[1]

The same can be said for restrictions in the use of surface water. While the Lower Mainland and Vancouver Island struggle mostly with groundwater issues, it is on the British Columbia's interior rivers and streams that water-use restrictions are being implemented.[2] Power generation, agriculture, tourism and recreation industries thrive in this area of the province, and they all rely to some degree on water. And water-use restrictions are unlikely to change because most new licence applications in the province are for water bodies that are already partially or almost wholly allocated. Something will have to give.

The South Saskatchewan River

The South Saskatchewan River is also stressed. This river basin includes the sub-basins of the Red Deer, Bow and Oldman rivers. Efforts to quantitatively assess the stress on the watershed are outlined in the South Saskatchewan River Basin (SSRB) water management plan. In a background report on water allocations commissioned to aid in the development of the province's water management strategy, the key finding was that irrigation and municipal licences had accounted for almost all of the available water being allocated.

This grim picture of the state of water resource availability in the SSRB is made much worse when we take population growth into account. A separate background study completed to aid the watershed planning efforts focused on forecasts of non-irrigation water use. Considering that the only watershed that is not supply-constrained right now is the Red Deer River, the expected population growth across the SSRB will require decisive action now to avoid severe shortages later.

Relative to the 1996 population, it is expected that the Alberta portion of the SSRB will experience growth of 163 per cent by 2021 (meaning 2.12 million new residents) and growth of 245 per cent by 2046 (3.18 million new residents). Assuming supply is not constrained,[3] water demand is forecast to grow between 29 per cent and 66 per cent by 2021. Growth will soar to between 63 per cent and 132 per cent by 2046. In a watershed already pushing the limits of supply availability, this type of growth is unmanageable under the status quo.

The Great Lakes Basin

It is more difficult to discern whether the Great Lakes Basin as a whole is suffering from water stress. It is now accepted by the International Joint Commission that "all attempts to define the magnitude of the consumptive use 'problem' over the past several decades have overestimated and overstated its urgency."[4] One explanation offered by the Commission for the overestimation is that conservation efforts have had greater penetration than previously thought. It may be that, on the whole, the Great Lakes Basin is not a watershed suffering from over-consumption of its resources.

This relatively rosy picture for the watershed as a whole does hide a number of local water scarcity problems. On the Canadian side of the Basin, during summer low-flow conditions, significant portions of the Golden Horseshoe at the western end of Lake Ontario have high levels of water use in relation to the watershed replenishment rate. Even during average annual flow conditions, the level of development in the Grand River Basin, which includes Kitchener–Waterloo, exerts a high level of stress on its watershed.[5]

1 British Columbia Ministry of Water, Land and Air Protection, *Environmental Trends in British Columbia 2002.* <wlapwww.gov.bc.ca/soerpt/>.

2 The provincial government places water-use restrictions on a stream when the demand for new water licences threatens the human and non-human users of the water supply.

3 The provincial background study makes no distinction between ground and surface water supply sources, and no limitations are assumed or placed on supplies to meet demand—a typical business-as-usual scenario.

4 International Water Uses Review Task Force, *Protection of the Waters of the Great Lakes: Three Year Review,* Prepared for the International Joint Commission, November 2002.

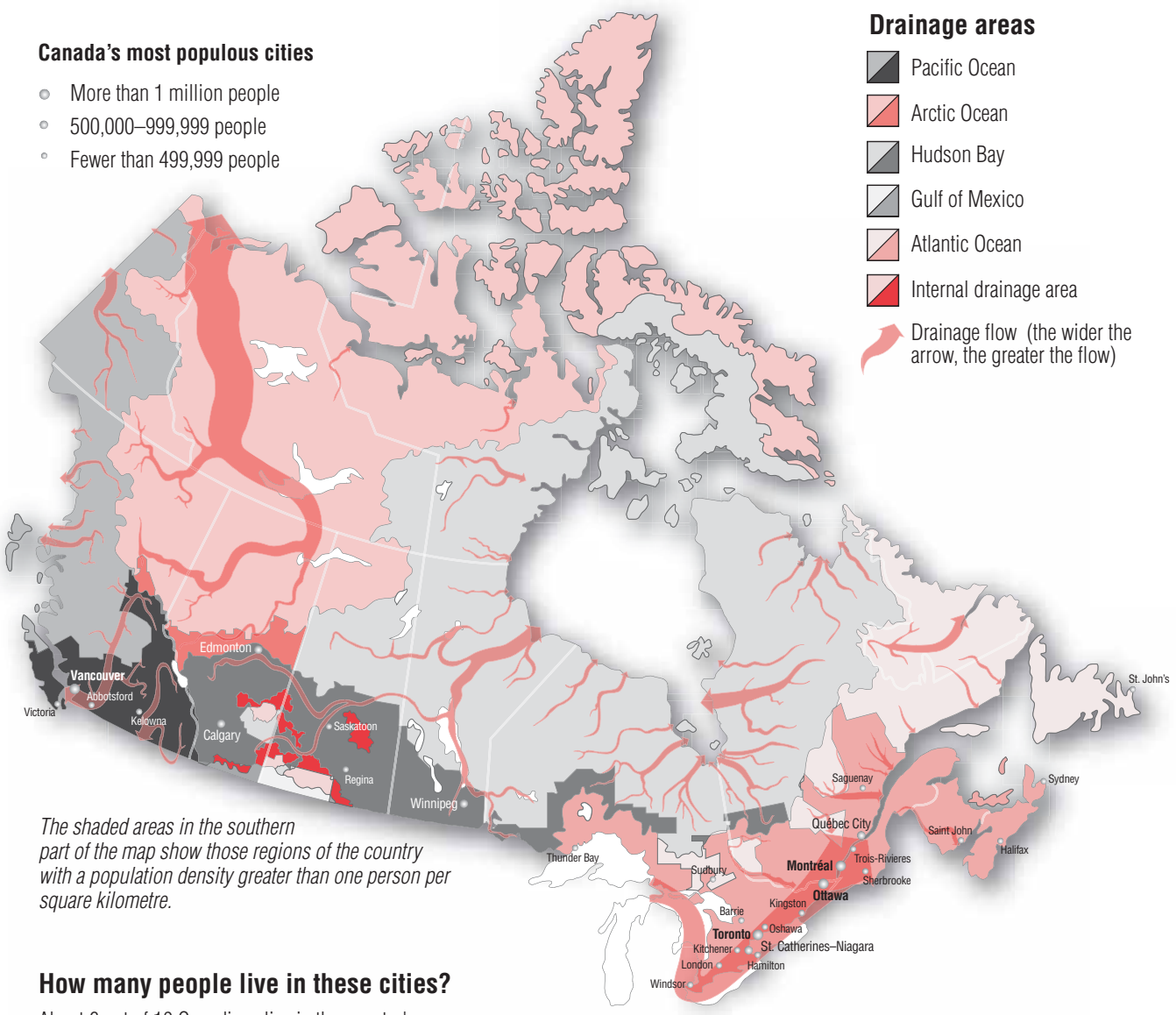
5 Ontario Ministry of Natural Resources, Map of Water Use, Water Resources Information.

HERE IN CANADA

Many hold the perception is that Canada is awash in fresh water. Canada does have about 20 per cent of the Earth's fresh water within our boundaries. However, most of it is not easily renewed, since it has accumulated underground over millennia or is locked in glaciers, snow or ice sheets. Furthermore, most of our water actually flows to the north, far from the populated areas where it will be required. (See Exhibit 1.) Reversing those flows, if it were found to be ecologically acceptable, would be enormously expensive.

Exhibit 1
Flowing in Opposite Directions

Approximately 60 per cent of Canada's fresh water drains to the north, while 85 per cent of the population live along the Canada–U.S. border.



The shaded areas in the southern part of the map show those regions of the country with a population density greater than one person per square kilometre.

How many people live in these cities?

About 6 out of 10 Canadians live in the country's 30 largest cities, shown on the map.

Source: Environment Canada, 2004.

Three Canadian watersheds—British Columbia Interior, the South Saskatchewan and the Great Lakes—are prime candidates for water diversions to the United States. But as discussed in the box "British Columbia Watersheds," they are already reaching full allocation. Increasing the stress on these systems through irresponsible removals of water volume will result in irreparable damage.

CLIMATE CHANGE AND WATER

Canada must be very aware of the potential impact that climate change could have on these watersheds. In an assessment of Canada's vulnerability to climate change, Natural Resources Canada found that the watersheds previously discussed are situated in areas of Canada that could experience the greatest impacts from climate change.[51]

A provincial publication, *Environmental Trends in British Columbia 2002,*[52] states that coastal British Columbia warmed about 0.5 degrees Celsius, while the interior regions warmed about 1.1 degrees Celsius—twice the global average—in the 20th century. This rise is fundamentally changing the hydrology of British Columbia's watersheds. The impacts may include increased precipitation and evaporation, changing snow packs, earlier glacier melts, warmer river temperatures and reduced soil moisture throughout the province, all of which make water resource management more challenging.

Canada must be very aware of the potential impact that climate change could have on watersheds.

Analysis of data that have been collected since the 1920s provides solid evidence for concern about the Fraser River and, indeed, about all rivers in the province. Trend analysis shows that a larger portion of annual flow in the Fraser is occurring earlier and earlier as the decades pass. One-third of the cumulative flow of the river now passes the town of Hope 11 days earlier than it did a century ago.[53] This has serious implications for both humans and wildlife. The largest portion of human demand occurs in the summer. With increased stream flow during the spring, predominantly as a result of earlier glacial melt, less water is available during the summer for agriculture, recreation and tourism.

Salmon spawning is seriously affected, too. Lower flows in the summer and fall mean increased water temperature. Higher water temperature increases metabolic activity in spawning salmon, heightening the stress they must endure to spawn. Fish may die from exhaustion or be more susceptible to infection.[53]

The impacts may include increased precipitation and evaporation, changing snow packs, earlier glacier melts, warmer river temperatures and reduced soil moisture.

The impacts of climate change on the South Saskatchewan River Basin closely resemble those affecting the British Columbia rivers. Many of the primary sources of water for Prairie rivers are glaciers. 1990 to 2000 was the warmest decade on record in the southern Canadian prairies. In the mountains, this warmth led to receding glacier packs, earlier run-off, and more annual precipitation falling as rain rather than snow. Downstream in the Prairies, it resulted in increased evaporation rates.[55]

Several studies have generated scenarios of climate change impacts in the Grand River Basin, in cities such as Cambridge, Kitchener, Waterloo and Guelph.[56] The Basin may experience temperature increases of 4.7 to 5.7 degrees Celsius. As a result, stream flow could be reduced by an estimated 20 to 40 per cent.

These hydrologic effects will, in turn, affect a variety of water resource uses. Despite an 11-month ice-free shipping season due to a warmer, carbon dioxide–enriched atmosphere, it is estimated that more frequent lower lake levels could increase Canadian commercial navigation costs by 35 per cent in the Great Lakes.[57] Lower water levels would also hurt recreational boaters and marina operators, rendering some marinas temporarily or permanently inaccessible. Increased seasonal variability would probably make it more difficult to predict navigational hazards.

There would be other effects. Canadian hydro power plants could lose many gigawatt-hours of relatively inexpensive and environmentally benign generating capacity. Lower levels and flows would diminish water quality and increase pumping and treatment costs

for municipal and industrial water users. Wetland and fishery resources would also be damaged. On the other hand, the capacity of many recreational beaches would be increased, and in some shore reaches, flood and erosion damages to buildings and other structures would be substantially reduced.

TRADING WATER: H_2O AND NAFTA

As already described, Canada does not enjoy a real water surplus, and climate change effects could exacerbate the situation. Also the very prospect of shipping our water to the United States for their development has become a lightning rod for Canadian nationalists. Moreover, there is considerable debate as to whether Canada's water resources can be treated as a tradable commodity subject to the provisions of NAFTA.

Given all this, the Government of Canada has attempted to set up a strategy to prevent the bulk removal of water from major watersheds for any reason, domestic or international. This strategy has three prongs.

1. It introduced amendments[58] to the *International Boundary Waters Treaty Act* to prohibit bulk removal from Canadian portions of boundary waters.
2. The International Joint Commission recommended that governments "should not permit any new proposal for removal of water from the Great Lakes Basin (GLB) to proceed unless the proponent can demonstrate that the removal would not endanger the integrity of the ecosystem of the GLB."[58]
3. At the suggestion of the Canadian Council of Ministers of the Environment, all provinces have developed legislation, regulations or policies, to prevent bulk water removal from major drainage basins in Canada.

The Government of Canada has attempted to set up a strategy to prevent the bulk removal of water from major watersheds.

In a 1993 joint statement on NAFTA, the governments of Canada, Mexico and the United States declared, "Water in its natural state in lakes, rivers, reservoirs, aquifers, water basins and the like is not a good or a product, it is not traded, and therefore is not and never has been subject to the terms of any trade agreement."

Despite this joint statement, critics fear that Chapter 11 of NAFTA—which permits private challenges to the laws and regulations of NAFTA governments—does open a door to bulk water exports to the United States. That chapter could be interpreted so that once local governments allow water to be withdrawn from its natural state by domestic entities, they would have to accord the same rights to foreign investors. The Department of Foreign Affairs and International Trade disagreed:

> In so far as trade in goods is concerned, the NAFTA and the WTO [World Trade Organization] do not impose disciplines on the ability of governments to regulate the extraction of water from its natural state, nor do they create obligations that would compel Canada or any province to allow the extraction of bulk water, including for export, without any limits. Because the proposed Accord relates to water in its natural state, it would not be subject to the provisions of these trade agreements with respect to trade in goods.
>
> Furthermore, as long as regulations governing the extraction of water from its natural state do not discriminate among NAFTA investors, or investments of investors, in like circumstances, on the basis of nationality, such regulations will be consistent with the national treatment obligation of Chapter 11 of the NAFTA. Also, such measures, if properly implemented, should not constitute an expropriation under the NAFTA.[60]

The Council of Great Lake Governors shares the concerns of Canadian governments about water exports from the Great Lakes. The group, which includes eight U.S. states and Ontario and Quebec, recently released a draft version of the proposed Great Lakes Basin Sustainable Water Agreement, part of the Annex 2001 Implementing Agreements. If adopted, the sustainable water agreement would commit the parties to "adopt and implement measures to prohibit new or increased diversions."[61, 62]

THE REAL COST OF DRAWING WATER

But is this a moot debate? Bulk water removal from the Great Lakes is no longer the best option for addressing water scarcity. Advances in conservation, improvements in desalinization technology, and the distance between markets have made bulk water exports a higher-cost option for addressing continental water scarcity.[63]

Indeed, currently, global trade in water occurs in very few places, on a very small scale, and only in the most extreme cases of water scarcity.[64] The island of Cyprus, for example, gets water from Turkey. It is highly unlikely that anyone outside North America will consider water exports from Canada as a way to satisfy water demand. As Dore's calculations show (see box, "The Economics of Transporting Bulk Water,"), it is too expensive to send water by tanker when closer options are available. It is more likely that thirsty nations, especially island nations, will find it cheaper to desalinate ocean water. (See Chart 14.)

It is highly unlikely that anyone outside North America will consider water exports from Canada as a way to satisfy water demand.

THE DIRECTION AHEAD FOR OUR WATER RESOURCES

Various provinces have stepped up to stop water exports. The *British Columbia Water Protection Act* prohibits large-scale diversions between watersheds for the export of bulk water. Alberta is withholding any new applications for water licences until it has done more studying. Alberta's *Water for Life* strategy has three goals: a safe, secure drinking water supply; healthy aquatic ecosystems; and reliable, high-quality water supplies for a sustainable economy.

Canadians will need to improve their water conservation. For example, Calgary's per capita water use has declined from 800 to 500 litres per day, due mostly to the use of metering. Even more water could be saved by adopting existing technology and altering habits, such as planting drought-resistant crops and improving irrigation techniques. According to the Alberta government, "Simulated modeling indicates irrigation water-use efficiencies could improve from 54 to 64 per cent in the Oldman Basin and from 40 to 55 per cent in the Bow Basin."[65]

Today, the answer to water scarcity is not trade, but improved governance and management of water resources. Canada must continue to take strong steps toward this goal at the watershed level. Because of the stress on our watersheds where industry and population

The Devils Lake Diversion

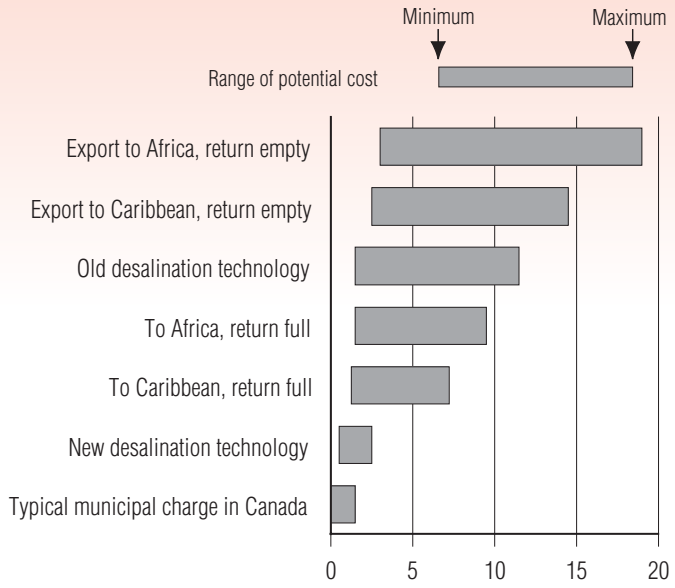
There are important environmental concerns about large-scale transfers of water from one basin to another. In theory, adjacent basins are unique and different ecosystems, and transferring water from one could result in negative impacts on the species and water quality of the other. Current laws require large and detailed environmental assessments to be completed before such transfers could occur. However, it is unlikely that all of the concerns would be allayed by these studies.

The recent case of Devils Lake, North Dakota, illustrates this concern. To alleviate local flooding, North Dakota proposed the diversion of water from Devils Lake into the Red River basin that flows north through Manitoba to Hudson Bay. Although the Devils Lake basin is in the Hudson Bay drainage area, the lake has not overflowed for centuries. Recently it has been accumulating water, flooding local lands.[1]

Canada, Manitoba and Minnesota expressed serious concerns that downstream water quality standards would not be met and that invasive species would negatively affect the Red River. In response, North Dakota agreed to install a filter at the outlet, and flow commenced in summer 2005. This does not finish the matter, however, as discussions are continuing between the parties. In addition, there are other similar diversion projects in North Dakota that are of concern to downstream jurisdictions.

1 Status Report on the Activities of the International Red River Board, Prepared for the International Joint Commission, Spring Semi-Annual Meeting, April 9–11, 2002, Washington, D.C.

Chart 14
Cost of Alternative Water Supplies
(cost per m^3)



Source: Policy Research Initiative, 2005, *Exporting Canada's Water I: Outside of NAFTA. Sustainable Development Briefing Note.* <www.policyresearch.gc.ca>.

are growing, we will have to manage our water resources properly. Furthermore, because most Canadian watersheds cross provincial and international political boundaries, the decision-makers in each watershed need strong legislation supportive of policies that prevent bulk water diversions and other removals.

The regions of Canada that are likely to experience the highest demand growth are also those that are most sensitive to water variability and climate change effects.

While it is unlikely that the world will beat a path to Canada's door demanding water exports, we need to be prepared for our own demand growth and that of our closest neighbour. The regions of Canada that are likely to experience the highest demand growth are also those that are most sensitive to water variability and climate change effects. To borrow a phrase from *Water for Life,*[66] water taken through existing licences, plus protecting the aquatic environment, plus allowing for future growth equals more water than is available.

For these reasons, Canada needs to protect its watersheds and remain vigilant about bulk water diversions. In the meantime, it makes sense to fund research on the environmental and economic effects of continued degradation of water resources. Across North America, solving scarcity through basin diversions will be a poor substitute for better water governance and management. These efforts should include implementing widespread metering and pricing.

CONCLUSIONS

Canada's abundant natural resources have been an important historic source of the nation's prosperity. World demand for natural resources will remain strong at least over the next 15 years, especially with the rise of China and India. To ensure that the management of these natural resources continues to contribute to the well-being of Canadians, we will have to weigh economic, environmental and social considerations.

The oil and gas sector in Canada has a bright economic future. The oil sands are likely to generate employment and revenue for many decades, as the United States will increasingly turn to Canada as a secure source of imported oil and gas. However, extraction of hydrocarbons, especially in the oil sands, creates local environmental issues, and these will need to be managed.

As the global pressure for Canada's energy resources converges with international efforts to curtail greenhouse gas emissions, regional tensions could be exacerbated. Energy producing provinces will enjoy healthy incomes from royalties and taxes, while consuming provinces will see increased costs and perhaps a flight of capital to energy investments. In the 1970s, a similar situation resulted in the ill-conceived National Energy Program, which is still resented. Provincial and federal governments will need to defuse these tensions in the coming decades by wisely investing their respective shares of royalty and tax revenues for the long-term benefit of Canada.

Energy producing provinces will enjoy healthy incomes from royalties and taxes, while consuming provinces will see increased costs.

Actions currently planned to deal with climate change or air quality will likely have little impact on the Canadian oil and gas sector's revenue, employment and profits over the next 15 years. However, should the world decide to take strong collective action on climate change after 2012, the oil and gas sector will need to reconsider investment and technology decisions between 2012 and 2020. Some of the higher-cost oil sands development and pipeline proposals could become uneconomic in the face of increased GHG mitigation costs, while proposals to accelerate R&D investments on sequestration technologies could become very attractive.

Either way, decisions made in the next 15 years will have a major effect for the next 50. Oil and gas firms may find that reframing their focus and self-perceptions from oil and gas companies to "energy companies," as companies such as Shell and BP have done, will provide them with strategic flexibility to manage risks and capitalize on opportunities presented by the coming "clean energy" revolution.

As for the forest sector, it has been an historically important generator of wealth and employment in most regions of the country, primarily through exports, notably to the United States and Western Europe. But the industry faces competition from other temperate-zone producers (such as Russia and New Zealand), as well as from tropical countries with faster-growing trees (such as Brazil and Indonesia).

The Canadian forest-products sector, particularly pulp and paper, needs renewal. Canadian pulp and paper mills are generally smaller and older than those of competing countries. These countries are entering export markets in direct competition with us, often at lower cost. The Canadian industry is struggling financially, given an average return on capital over the last decade of about 4 per cent, and depreciation that exceeds new investment by a wide margin. Governments must accept the closing of uncompetitive mills and inter-provincial trade of logs. It must facilitate the growth of productive mills and help them attract skilled people.

Such strategies will allow Canada's forest products sector to construct a sound domestic base from which it can then invest abroad to take advantage of rich off-shore timber and rapidly growing markets. While opportunities exist for commodities, for higher valued products, for biomass energy and for carbon sequestration, realizing these opportunities will take creative thinking and action on behalf of both industry and governments.

Policy opportunities exist to permit vibrant oil and gas and power-producing companies to be part of the solution for forest industry renewal. The oil and gas industry must find a way to reduce, offset or sequester its greenhouse gas emissions. Also, fossil-fuelled electricity-generating utilities must reduce their GHG emissions, while finding new power sources to serve their customers' growing demand.

The forest industry, which currently manages Canada's "working" forests for fibre, can also manage them to capture sequestration credits for those needing "offsets," such as the Canadian oil and gas and power generation industries. The forest industry can also generate energy from renewable sources for sale to the grid. There is a great opportunity to leverage Canada's strength in fossil fuel resources and forest products to maximize our economic opportunities and use domestic sequestration as a contribution to our Kyoto Protocol commitments.

Governments must accept the closing of uncompetitive mills and inter-provincial trade of logs.

Finally, is Canada the "Saudi Arabia" of water? Will the world beat a path to our door for our blue gold? This is unlikely. Canada is fortunate to have an abundance of fresh water, but much of it is not now economically accessible. Regions of the Prairies and Southern Ontario are facing tight supplies for withdrawals. The most populated regions of the country are also those most prone to water variability and the effects of climate change. And the ecological effects of bulk water removals from watersheds are not well understood.

Therefore, Canada will need to resist pressures for water trade until we gain a much better understanding of the environmental and economic impacts of such actions. Bulk water trade cannot substitute for better water governance and management in North America.

COMMON POLICY DIRECTIONS

As seen in the preceding pages, management of the three natural resources is fraught with challenges of differing type and magnitude. Reconciling these issues with the wise stewardship of our resources requires a coherent analytical framework. One such model of sustainable development distinguishes among four types of capital:

- Human capital (the embodied skills and knowledge of healthy workers);
- Physical capital (manufactured aids to further production, such as machinery and factories);

- Natural capital (resources such as oil, wood and ores, as well as air, water and species); and
- Social capital (institutions, customs and laws, including trust, that make the other forms of capital jointly productive).

As it is used to produce the goods and services we want, capital must be replenished and never consumed below critical levels. Economic and social development that is environmentally sustainable will ensure that future generations inherit an aggregate pool of the four types of capital at least equal to that which we enjoy.

Wise stewardship of the four kinds of capital will acknowledge that they are interrelated and reinforcing. Capital can be exchanged, one form for another. For example, much of Canada's economic history has been a process of turning revenues from forests and ores (natural capital) into roads, hospitals, power dams (physical capital) and skilled workers (human capital). In turn, revenue from use of this new capital can be used to ensure that we manage natural capital so that it is not run down below levels that threaten ecosystems and human health.

Wise stewardship of the four kinds of capital—human, physical, natural and social—will acknowledge that they are interrelated and reinforcing.

We have looked at each resource's particular policy needs, but some key policy directions are common across most of the resources examined. Here is a checklist of policy directions for governments, grouped according to the four kinds of capital:

Human

- *Develop skilled workforces* by:
  - offering better access to training programs, and
  - providing incentives to Canadian workers and their employers to improve their employability skills.
- *Attract workers to where they are needed* by:
  - promoting labour mobility,
  - promoting immigration, and
  - providing good labour market information.

Oil sands developments need training and retraining programs for the local labour force, as well as policies that will induce skilled labour to move to Northern Canada. Labour policy in the forest sector, on the other hand, needs to assist workers with retraining and mobility when mills close. Policy must also help attract skilled labour where innovative and productive forest product mills can effectively compete in North American and offshore markets.

Oil sands developments need training and retraining programs for the local labour force, as well as policies that will induce skilled labour to move to Northern Canada.

Physical

- *Nurture an attractive investment climate* in Canada by:
  - changing the capital tax regime,
  - removing impediments to plant or mill closures,
  - developing a true economic union in Canada by removing remaining interprovincial barriers to trade (such as restrictions on the interprovincial log trade), and
  - providing clear, efficient and predictable regulatory regimes.

These actions will encourage the capital investment required to develop Canada's oil and gas resources and to renew capital in the forest products sector.

Natural

- *Develop a long-term climate change strategy* to both reduce net GHG emissions and capture economic opportunities, including:
  - clarification of sequestration rules to encourage the development of technologies and economic opportunities for the oil, gas and forestry sectors, and
  - use of market-based incentives, such as emissions trading, to reach reduction targets at least cost.

The energy sector can help renew the forestry sector by sequestering carbon dioxide emissions in growing forests. But the provinces that own and manage the public forests arguably also own the carbon sequestration potential. To capitalize on sequestration, provinces

must clarify who owns the sequestered carbon and, ideally, provide the industry with an economic incentive to manage the sequestrated carbon. Furthermore, federal climate change policies must clarify the conditions under which sequestration credits can be claimed.

- *Improve governance and management of watersheds* to protect ecosystems and to ensure that Canadians continue to enjoy a plentiful supply of safe, clean water, including:
  - collaboration of water districts with the oil, gas and forest industries on water governance and management,
  - support of research on ecological impacts of climate change and bulk water removals on watersheds, and
  - enhanced use of water metering, and, eventually, use of water pricing.

Social

- *Streamline regulatory systems and institutions* to generate social and environmental benefits and to enhance the conditions for a competitive and innovative economy.

  Better coordination between federal departments, and among federal, provincial and territorial governments, on environmental assessments and regulation will bring benefits to northern and offshore oil and gas development, the forest industry, and our water resources. Even though it may be challenging at times, including stakeholders in the social and environmental aspects of development decisions and regulatory processes builds awareness, trust and long-term acceptance of government processes and development projects. Improved governance, including smarter regulation, builds the social capital that a nation needs to make the other forms of capital productive and to build investors' confidence that their innovative projects will succeed.

- *Defuse regional tensions and build trust* by:
  - resisting the temptation to confiscate and redistribute increased oil and gas revenues, and
  - using the federal share of these increased revenues (namely, increased corporate, personal income and sales taxes) to mitigate regional differences arising from increased revenues and prices.

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1 In 2006, The Conference Board of Canada's Canada Project Compendium report will address similar trends and effects in the agricultural and mining areas.

2 Natural Resources Canada, *Important Facts on Canada's Natural Resources,* November 2004, and Canadian Association of Petroleum Producers website. <www.capp.ca>.

3 Contrary views exist from credible sources. The Chief Economist of the U.S. Conference Board forecasts that oil prices are likely to fall to the US$30–$35 range over the next 12 months (*StraightTalk*, June 2005). Cambridge Energy Research Associates forecasts that global crude oil production capacity will rise dramatically over the rest of the decade (*Nickle's Daily Oil Bulletin*, June 22, 2005).

4 "Oil in Troubled Waters," *The Economist*, April 30–May 6, 2005, p. 6.

5 Organisation for Economic Co-operation and Development, International Energy Agency, *World Energy Outlook 2004*, p. 29.

6 Canadian Energy Research Institute, *World Energy: The Past and Possible Futures*, March 2005, p. 62.

7 *World Energy Outlook 2004*, p. 121.

8 Cambridge Energy Research Associates/CNA, p. 86. At this rate of production, reserves would last well over a century.

9 At a price of US$40 per barrel.

10 The Conference Board of Canada *Canadian Outlook: Long-Term Economic Forecast 2005* (Ottawa: The Conference Board of Canada, February 15, 2005).

11 The Canadian Association of Petroleum Producers (CAPP) defines bitumen as "petroleum in solid or semi-solid forms."

12 Impacts on air, water and land are all of concern as more projects commence.

13 Recently, companies with rights to extract the gas lost a regulatory ruling (Alberta Energy Utilities Board 2004-088) to the oil sands rights owners. The Alberta government has offered these gas producers royalty relief until production resumes.

14 *World Energy Outlook 2004*, p. 145

15 The Conference Board of Canada, *Sustainability and Energy Security: The Squeeze on Natural Gas*, (Ottawa: The Conference Board of Canada, October 2004).

16 Electricity from renewable sources will increase, but from a small existing base.

17 National Energy Board, "Canada's Energy Future—Scenarios for Supply and Demand to 2025," Backgrounder, p. 3.

18 Ibid., p. 27

19 Release of sulphur compounds can generate human and animal health problems, as well as acidification of ecosystems.

20 Canadian Association of Petroleum Producers, *2004 Stewardship Progress Report*. <www.capp.ca>.

21 Main policies for the Alternative Scenario in North America are listed in Appendix Y of the *World Energy Outlook 2004.*

22 National Energy Board, *Canada's Energy Future: Scenarios for Supply and Demand to 2025*, 2003.

23 Total crude production aggregates declining volumes of conventional light in Western Canada, rising then declining volumes of Eastern light offshore and conventional heavy Western, and rising volumes of heavy crude from the oil sands.

24 While it may be possible to conceive of even more aggressive scenarios to investigate the interactions of technology, climate change and energy production, the ones cited here reflect credible and reviewed international and Canadian scenarios.

25 The federal treasury will also benefit from increased corporate and personal income taxes from these regions.

26 Alberta royalties from oil sands production will be minimal until producers have recovered their investment.

27 All figures are for 2003, unless stated otherwise.

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35 Don Roberts, *State of B.C.'s Forest Industry: An Investment Perspective*, CIBC World Markets, (Ottawa: April 14, 2005).

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37 PriceWaterhouseCoopers *Global Forest and Paper Industry Survey 2004 Edition—Survey of 2003 Results*. <www.pwcglobal.com> Canada.

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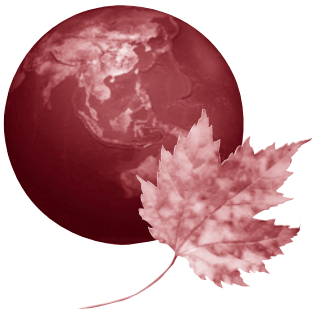

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HIGHLIGHTS

- *Longer lifespans and falling fertility rates are aging the population of many countries at an accelerating rate. By 2050, the world's population over the age of 65 will triple.*
- *This demographic trend, combined with the increase in early retirement, is putting pension plans under pressure, eliminating labour surpluses, lowering labour force growth, and undermining economic potential.*
- *Public and organizational policies and practices must begin to change now to offset the economic and social repercussions of an aging society.*
- *Keeping older workers in the workforce is one effective way of dealing with labour shortages. Policy approaches include reducing incentives for early retirement, encouraging later and more flexible retirement, passing legislation to counter age discrimination, and helping older workers find and keep jobs.*
- *Organizational policies and practices that were designed for an era of labour surplus must be adapted to the needs of an older workforce. Initiatives include programs that target older talent and provide work flexibility, training and professional development.*

CHAPTER 4

Rethinking the Workforce

Aging Populations and Canada

By the end of the first half of this century, vastly more people around the world will be old, with the number of people aged 65 and over rising to 1.5 billion by 2050. The demographic imbalance caused by low fertility and increased life expectancy will fundamentally alter the functioning of labour markets and undermine the funding of pensions, as the labour surplus of the last quarter of the last century is replaced by labour shortages in the first half of this century. This shift will dramatically affect everything from labour markets and capital to trade and geopolitics.

Aging presents a considerable challenge to the long-term sustainability of public finances, given its impact on the demand for public pensions, health services and long-term care. Population aging also has serious implications for economic growth as a result of a contraction of the potential labour force. Consequently, labour market policies and organizational practices designed for an era of labour surplus must be reviewed and realigned with an era of labour shortage.

Among the developed countries, European nations and Japan will experience the most pronounced aging trends up to 2050. It is no surprise that these countries are in the vanguard of policy reform regarding the changing structure of their population. Their approach to aging aims at mobilizing the full potential of older people. Pension reform is addressed within the overall context of promoting employment-friendly policies for older workers.

So that Canada can learn from best practices, this chapter examines these countries' innovative policy and organizational responses to the challenges posed by aging. The chapter also presents results from new research on the determinants of the retirement decision among Canadians, and concludes by suggesting policy and organizational initiatives for Canada based on international experience.

There is still time for Canadian decision-makers to adopt policies and practices to mitigate the impact and address the changes caused by the greying population. Organisation for Economic Co-operation and Development (OECD) projections show that the impact of retiring baby boomers will not begin to be felt until the next decade, and will peak in 2025.

Labour market policies and organizational practices designed for an era of labour surplus must be reviewed and realigned with an era of labour shortage.

CANADA: GREYER IN THE FUTURE

A post-war burst of fertility, which resulted in the baby boom, was followed by a downward trend in fertility. Canada's fertility rate peaked at four children per woman of reproductive age in 1959. Since then, it has declined steadily, hitting 1.49 in 2000, and there is no sign of this trend reversing. Over the next 20 years, we are unlikely to see significant changes in the key determinants of the fertility rate, including availability of birth control, income, child care costs and female participation in the labour force.

As such, population growth will keep falling, from an already low average annual rate of 1.1 per cent between 1980 and 2004 to only 0.7 per cent in the next two decades. And 82 per cent of that population increase is forecast to come from immigration. Even this immigration outlook is at risk since many of the countries that traditionally supply our immigrants will be facing similar trends within their own borders, and more nations will be competing with us for young, mobile workers.

The proportion of Canadians under the age of 15 is projected to keep falling and the proportion over 65, to keep rising. After 2010, the baby boomers will begin to retire, and by 2025, 20.4 per cent of the population will be over age 65—double the share in 1980. The elderly dependency ratio[1] is expected to jump from 19 per cent in 2005 to 33 per cent in 2025. In other words, there will be fewer people in the active labour force to support the retiring baby boomers.

This situation is exacerbated by the fact that an increasing number of Canadians are choosing to take early retirement. The average age of retirement has dropped from 64.9 in 1976 to 60.9 years in 1998, where it has more or less remained.

AN ELDERLY WORLD

We will try to make up for empty cradles with full immigration queues, but Canada is not the only country whose population is getting older. In 2004, the United Nations revised its "World Population Prospects." The most likely UN scenario is the medium fertility variant,[2] in which world population growth slows to 1.2 per cent annually from 2000 to 2005, compared with 1.7 per cent in the 1980s. And the UN projects growth to slow further, to average 0.7 per cent per year between 2025 and 2030.

The U.S.–Europe Demographic Dichotomy

Among the more developed nations, the United States is a demographic anomaly. During the 1970s, the United States and Europe shared the same demographic features: low fertility, aging and stable populations. But they parted demographic ways in the 1980s, when the U.S. population grew rapidly. Some of this increase came from immigration and some from a rebound in fertility rates—from 1.8 to about 2.1, mainly as a result of higher fertility rates among Latinos and African Americans.

Given this, the proportion of the population aged 65 and over is expected to remain largely unchanged in the United States at around 12.4 per cent between 1990 and 2010. After 2010, the early boomers will begin to retire, pushing that number up to 18.7 per cent by 2025, compared with the average of 22 per cent for the other more developed countries.

Even with this gradual increase, a large portion of the population will still be in the 15- to 44-year-old cohort in 2025, thanks to high immigration rates. The United States is expected to receive half of all net immigrants destined for the more developed countries between 2005 and 2025. Combined with higher fertility, immigration will ensure that there are more young people to support the retiring workforce. The elderly dependency ratio is expected to be only 28 per cent in 2025, compared with the average of 33 per cent for the more developed countries.

The number of people aged 65 or older is presently estimated to be 476 million. By 2050, the UN estimates this number will rise to 1.5 billion. There will be more people over 65 than under the age of 5. Instead of making up 15.3 per cent of the developed world's population, as they do today, those aged 65 and over will make up 25.9 per cent by 2050.

Canada is not the only country whose population is getting older.

There are several reasons why this is happening. These include better health care and nutrition, as well as stunning breakthroughs in medicine that mean more people are living longer. The UN Population Division data show that between 1950 and 2000, improvements in longevity in less-developed countries actually outpaced those in developed countries. Life expectancy at birth has made dramatic strides among all the countries shown in Table 1, except for South Africa.

The UN forecasts that life expectancy will continue to improve over the next 20 years. By 2025, people born in any of the countries listed in Table 1 will be able to expect to live to 70, while those in the more developed countries will enjoy a life expectancy of at least 80 years. Since many of these developed countries also had a post-war baby boom, those 65 years and over will make up 22 per cent of the population by 2025, up from 11.6 per cent in 1980.

The phenomenon of aging populations is most evident in countries such as Italy and Japan, which have not actively sought immigrants. In Italy, the population aged 65 and over will increase by 44 per cent between 2005 and 2050. By 2030, roughly half the Japanese population will be over 65. In contrast, the average age in the United States is expected to rise from 35 today to just 40 in 2050. (See U.S. demographics in box, "The U.S.–Europe Demographic Dichotomy.")

One part of the world where the population is not aging is sub-Saharan Africa. The combination of an HIV/AIDS epidemic, other infectious diseases and armed conflicts will leave African life expectancy at 56 years in 2025, compared with 80 years for North

Table 1
Life Expectancy at Birth

	1950–55	1975–80	2000–05	2010–15	2030–35	2045–50
Australia	69.6	73.5	80.2	81.6	83.7	85.0
Brazil	50.9	61.5	70.3	72.9	77.0	79.2
Canada	69.1	74.2	79.9	81.4	83.7	85.3
China	40.8	65.3	71.5	73.3	76.2	78.7
Egypt	42.4	54.0	69.6	72.4	76.3	78.4
France	66.5	73.7	79.4	80.7	83.1	84.8
Germany	67.5	72.5	78.6	80.0	82.3	83.7
Hungary	63.6	69.4	72.6	74.8	77.9	79.7
India	38.7	52.9	63.1	66.7	72.7	75.9
Ireland	66.9	72.0	77.7	79.2	81.8	83.5
Italy	66.0	73.6	80.0	81.2	83.5	85.1
Japan	63.9	75.5	81.9	83.7	86.6	88.3
Malaysia	48.5	65.3	73.0	75.0	78.1	79.9
Mexico	50.6	65.1	74.9	77.3	80.2	81.3
Netherlands	72.1	75.3	78.3	79.5	81.7	83.1
Pakistan	43.4	54.0	62.9	66.5	72.2	75.4
South Africa	45.0	55.5	49.0	44.6	53.3	59.4
Spain	63.9	74.3	79.4	80.8	83.2	84.8
Sweden	71.8	75.2	80.1	81.5	83.9	85.5
Switzerland	69.2	75.2	80.4	81.7	84.0	85.7
Turkey	43.6	59.5	68.6	71.0	75.4	77.7
United Kingdom	69.2	72.8	78.3	79.6	81.9	83.5
United States	68.9	73.3	77.3	78.5	80.8	82.4

Sources: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2004 Revision;* and *World Urbanization Prospects: The 2003 Revision*. <esa.un.org/unpp>.

Americans. The proportion of those aged 65 and over in Africa is projected to rise from 3.1 per cent of the total population in 1980 to only 4.5 per cent in 2025.

A WORLD WITH FEWER CHILDREN

With a fertility rate of 3.1 children per woman of childbearing age, Africa's population will still replace itself in 2025. This is very different from the experience in most of the rest of the world, where people are not only living longer than their great-grandparents did, but are having far fewer children. Since 1950, fertility rates in wealthy countries have fallen below replacement levels.[3] (See Table 2 and Chart 1.) By 2025, in the more developed countries, only 1.7 children are forecast to be born to a woman of childbearing age, capping a long slide that will result in the proportion of those under 15 dropping from 22.5 per cent in 1980 to 15.7 per cent by 2025.

This trend is happening around the world, not only in developed nations. The fertility rate in China, for example, has declined to 1.7 children per woman of childbearing age in the period 2000–05 from a high of 6.3 in 1950. Although, in China, this is partly due to the one-child policy, fertility rates are also forecast to fall below replacement levels within the next 15 years in Brazil, Turkey and Iran. (See Chart 2). Even India's fertility rate is expected to fall to 1.85 in the period 2030–35. As the younger age cohorts in developing countries shrink, the potential pool of emigrants from those countries shrinks as well. In fact, wherever we see reasonable economic prosperity, a high level of female literacy and easy access to contraceptives, we also see falling fertility.[4]

Wherever we see reasonable economic prosperity, a high level of female literacy and easy access to contraceptives, we also see falling fertility.

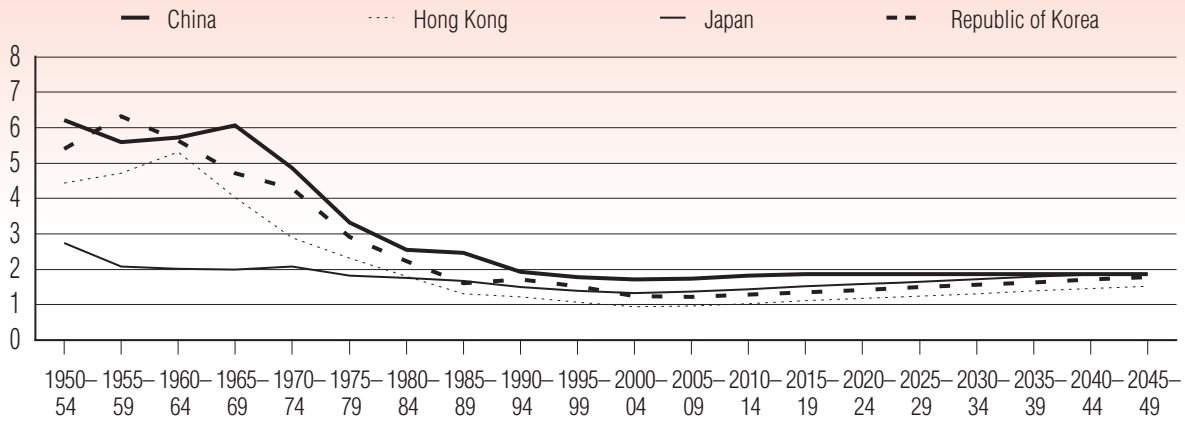
However, unlike the developed world, newly developing countries have not experienced decades of falling fertility, and thus will not experience the same greying of their populations. In 2025, the population aged 20 to 44 is projected to be the largest cohort in India and

Table 2
Total Fertility Rates

	1950–55	1975–80	2000–05	2010–15	2030–35	2045–50
Australia	3.18	2.09	1.75	1.79	1.85	1.85
Brazil	6.15	4.31	2.35	2.15	1.86	1.85
Canada	3.73	1.74	1.51	1.47	1.75	1.85
China	6.22	3.32	1.70	1.81	1.85	1.85
Egypt	6.56	5.50	3.29	2.75	2.19	1.94
France	2.73	1.86	1.87	1.85	1.85	1.85
Germany	2.16	1.52	1.32	1.41	1.69	1.85
Hungary	2.73	2.12	1.30	1.32	1.60	1.81
India	5.97	4.83	3.07	2.50	1.85	1.85
Ireland	3.38	3.48	1.94	1.89	1.85	1.85
Italy	2.32	1.89	1.28	1.41	1.66	1.85
Japan	2.75	1.81	1.33	1.44	1.72	1.85
Malaysia	6.83	4.16	2.93	2.39	1.85	1.85
Mexico	6.87	5.40	2.40	2.03	1.85	1.85
Netherlands	3.06	1.60	1.72	1.73	1.80	1.85
Pakistan	6.60	6.60	4.27	3.31	2.43	2.10
South Africa	6.50	5.00	2.80	2.48	2.05	1.85
Spain	2.57	2.57	1.27	1.42	1.70	1.85
Sweden	2.21	1.66	1.64	1.79	1.85	1.85
Switzerland	2.28	1.53	1.41	1.43	1.71	1.85
Turkey	6.90	4.72	2.46	2.21	1.89	1.85
United Kingdom	2.18	1.72	1.66	1.70	1.85	1.85
United States	3.45	1.79	2.04	1.98	1.85	1.85

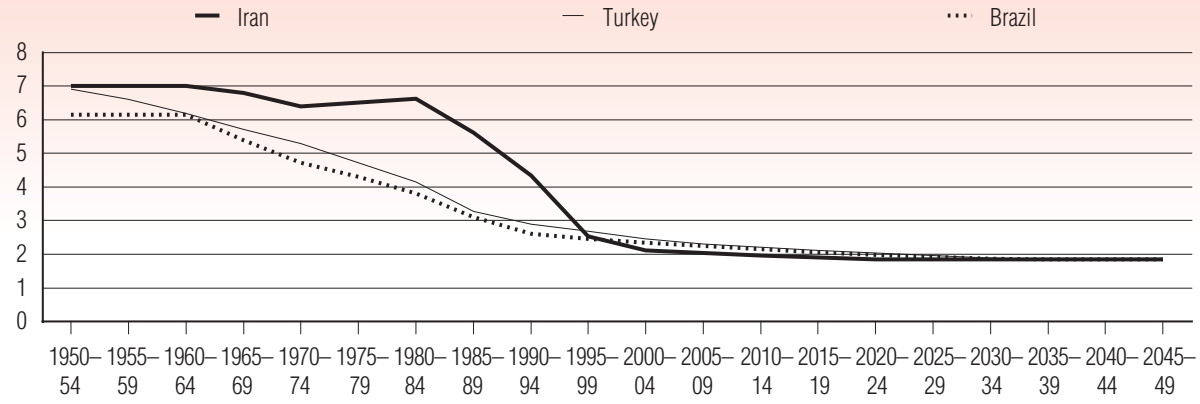
Sources: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2004 Revision;* and *World Urbanization Prospects: The 2003 Revision*. <esa.un.org/unpp>.

Chart 1
Total Fertility Rates—Asian Countries 1950–2050



Sources: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2004 Revision;* and *World Urbanization Prospects: The 2003 Revision*. <esa.un.org/unpp>.

Chart 2
Total Fertility Rates—Iran, Turkey, Brazil, 1950–2050



Sources: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2004 Revision;* and *World Urbanization Prospects: The 2003 Revision*. <esa.un.org/unpp>.

Brazil. Moreover, the proportion of those aged 65 and over in India is projected to reach only 8.1 per cent of the total population in 2025, less than half the average for the more developed countries. (See Chart 3.)

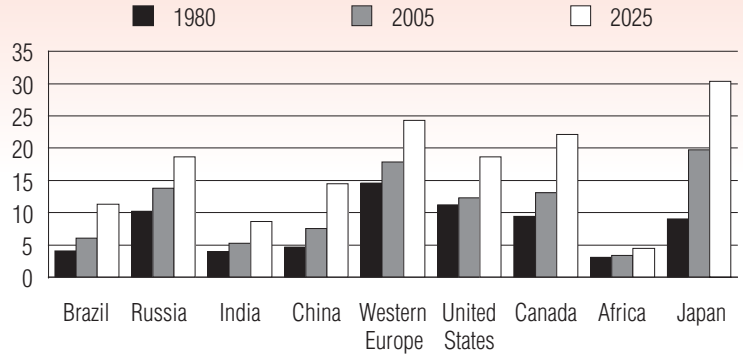
A RETIRED WORLD

Rising life expectancy and low fertility together create a demographic pincer movement, the impact of which is sharpened by increasingly early retirement. In 11 industrialized countries, more than 70 per cent of men aged 60 to 64 were working in the 1960s. By the mid-1990s, the participation rate of this age cohort had fallen to below 20 per cent in Belgium, Italy, France and the Netherlands, and to 35 per cent in Germany. Today, the average in the European Union (EU) is just 39 per cent, while the decline in the United States was more modest (from 83 per cent to 53 per cent).

In Belgium, a man is typically retired for almost a quarter of his life, and he works for less than half of it. This exodus from the labour force is caused largely by the generosity of state pensions. If allowed to continue, this will cost more-developed nations much of their productive capacity. Early retirement increases the number of pensioners (who are also living longer), while reducing the number of productive workers whose taxes support the pension systems.

In Europe, there are currently 35 people of pensionable age for every 100 people of working age. By 2050, if present demographic trends continue, there will be

Chart 3
Population of Those Aged 65 and Over
(per cent; share of population)



Source: The Conference Board of Canada; United Nations: Statistics Canada.

75 pensioners for every 100 workers. In Spain and Italy, the ratio of pensioners to workers is projected to be one to one. This rise in pension–support ratios threatens the viability of pension systems in the more developed countries, and thus threatens the well-being of their elderly.

This imbalance also lowers labour force growth, which undermines economic potential. In more-developed nations, labour force growth is forecast to slow to well below 1 per cent over the next 20 years. As labour becomes scarce, wages rise, forcing a more intensive use of capital. The situation is most problematic in Europe and Japan.

THREE CHOICES FOR COPING WITH AGING

Nations facing an aging population generally choose from among three options in the public policy toolkit: (1) increased immigration; (2) family-friendly policies to produce more babies; and (3) policies and practices to increase the labour force participation of older people.

The more pervasive the aging phenomenon globally, the harder it becomes to rely on immigration.

MORE FOREIGNERS

Immigration has become the main driver of population growth for many developed countries over the past three decades. Immigrants are, on average, younger than are native-born people, and they tend to have more children because they come from cultures with higher fertility rates.

However, countries such as Germany and Italy would need very high numbers of immigrants to prevent population decline and to maintain the existing ratio of workers to the retired. The UN Population Division estimates that, to maintain the current ratio between workers and pensioners in 2050, Germany would have to attract 188 million immigrants, which would be 80 per cent of its total population by then. Italy would need 120 million by 2050. The EU as a whole would need 700 million. Such an influx of people—who would bring with them their own languages, cultures and religions—would likely create unprecedented political turmoil on a continent where immigration is already a sensitive subject.

Moreover, it will become increasingly difficult for the more developed nations to find sources of immigrants. As we have seen, fertility rates in Brazil, Iran, Turkey and China are about to fall below replacement levels. These nations will not have labour to spare, especially since many of these countries are making significant strides in their own economic development, which will encourage potential emigrants to stay home. A fundamental truth emerges: the more pervasive the aging phenomenon globally, the harder it becomes to rely on immigration. David Coleman, a demographer at Oxford University, concludes that "there are no feasible migration solutions to the age-structure change and its effects on social security."[5]

MORE BABIES

Many European governments are changing their tax systems and employment laws to make it easier for women to have children while pursuing a career. France, for example, has raised its birth rate to near replacement levels by offering financial incentives for parents to have a third child. However, the high cost of raising and educating children in more-developed societies makes fiscally viable financial incentives for having more children seem a mere pittance by comparison. Similar policies in Quebec failed to make a difference.

LATER RETIREMENT

In developed nations, there has been a marked shift towards proactive labour-market programs focused on increasing the supply of older workers and stimulating the demand for older workers by lowering the costs of employing them. At the Lisbon Summit in 2000, EU leaders set targets to have half of those aged 55 to 64 employed by 2010.

Europe has pioneered a variety of institutional responses to aging. Its "active aging policies and practices," perceived as the way of the future, include lifelong learning, working longer, retiring later and more gradually, and being active after retirement through bridging jobs. Most developed countries have introduced policies and organizational practices that target older workers, including:

- Reducing incentives for workers to take early retirement;
- Encouraging later retirement and flexible retirement;
- Passing legislation to counter age discrimination; and
- Helping older workers find and keep jobs.

Most developed countries have introduced policies and organizational practices that target older workers.

KEEPING OLDER WORKERS WORKING

Japan, Sweden, the United Kingdom and Finland offer excellent examples of coherent nationwide strategies to keep older workers in the workforce. Each of these countries held a national dialogue with all labour market intermediaries, a process that produced recommendations to increase the labour force participation of older workers.

One of the most comprehensive strategies to increase the labour force attachment of older people is Finland's National Program on Aging Workers, which addressed issues at the individual, employer and society levels. From 1999 to 2002, the €4.2-million program focused first on legislative amendments and information campaigns, then on research and development, and finally on management training and workplace development. Legislative measures included occupational health regulations and pension reform to defer retirement. The research looked at new training methods for older workers and at organizational development plans.[6]

The integrated framework in these countries is removing both demand-side barriers (to motivate organizations to employ older people) and supply-side barriers (to encourage older people to continue to work).

Japan, Sweden, the United Kingdom and Finland offer excellent examples of coherent nationwide strategies to keep older workers in the workforce.

DEMAND-SIDE BARRIERS: MOTIVATING ORGANIZATIONS TO EMPLOY OLDER PEOPLE

By 2006, all EU countries will be required to pass legislation to prohibit age discrimination in the workplace.[7] The United States has had its *Age Discrimination in Employment Act* in effect since 1967, and in 1986 it eliminated mandatory retirement. This law and the *Americans with Disabilities Act* of 1990 significantly improved the employment rates of older Americans. The governments of many countries, such as Spain, Italy, Sweden and Japan, have also reviewed their laws that affect older workers, such as those dealing with mandatory retirement, notice period, severance pay, and the definition of unfair dismissal.

Legislation can change attitudes only in conjunction with policies to educate employers and older workers about their obligations and their rights. In most countries, regulatory changes are accompanied by attempts to dispel biases against older workers. Finland, for example, ran national campaigns to improve employers' attitudes toward older workers.

Due to collective bargaining provisions and organizational compensation practices, the employment of older people results in higher costs, since salaries and wages often rise with age and length of service. Because wage and social security contribution structures are deeply ingrained, many European governments have responded by offering subsidies to encourage employers to hire and retain older workers.

Table 3 summarizes selected initiatives in Japan, Sweden, the United Kingdom and the United States to adjust employment regulations, improve employers' attitudes toward older workers, and create incentives to recruit and retain them in the labour market.

REMOVING SUPPLY-SIDE BARRIERS

Motivating organizations to employ older people is only half the challenge; encouraging older people to work is the other half. Many OECD countries have adopted policies to improve older people's attitudes toward paid employment, to reduce financial incentives to withdraw from the labour force, to raise their skills and educational attainment, to ensure that potential work environments meet their needs and to help them locate job opportunities.

Improving Older People's Attitudes about Work

According to an international survey in 1997, the share of inactive people aged 55 to 64 who would prefer to work ranges from a low of about 15 per cent in France to a high of 45 per cent in Italy.[8] Reversing this trend will not be easy. Although older people might begin to regard work more positively as a result of public opinion campaigns, they are not likely to take up paid employment until it becomes financially advantageous to do so.

Recognizing this, the U.K. government implemented the New Deal 50 Plus, an initiative that provides financial incentives for older welfare recipients to return to work. Welfare recipients who volunteer for the program receive guidance from a personal advisor and, once employed, receive an additional "50 plus element" as part of the United Kingdom's Working Tax Credit. Participants who find employment through this program can also get training grants to improve their skills or to learn new ones. Along similar lines, programs in other countries could easily be marketed to older workers. These include the Wage Cost Reduction Scheme in France and the Earned Income Tax Credit in the United States.

Table 3
Removing Demand-Side Barriers: Motivating Organizations to Employ Older People*

Country	Adjusting Employment Regulations	Improving Employers' Attitudes Toward Older Workers	Creating Incentives to Recruit and Retain Older Workers
Japan	Set out in 1999 to raise mandatory retirement age to 65 over 10 years A 2001 provision under Japan's *Employment Measures Law* asks firms to give equal opportunities in hiring and recruiting regardless of age. Follow-up Guidelines for Employers to Offer Equal Opportunities to Job Seekers Regardless of Age specify exceptional cases in which firms can set age limits when making job offers. Contracts through placement agencies have been extended from one year to three years. Fixed-term contracts for workers aged 60 and over have been extended from three years to five years. The minimum income requirement for employment insurance was eliminated in 2001 for part-time and temporary placement workers.	Guidelines for Employers to Offer Equal Opportunities to Job Seekers Regardless of Age were distributed through the media, local economic organizations, private placement agencies and Public Employment Security offices. The Association of Employment Development for Senior Citizens, a public utility foundation that promotes the employment of older people, offers counselling to employers regarding the continued employment of older workers and disseminates good organizational practices on the Internet.	The Subsidy for Employment Development for Specified Job Seekers pays 25 per cent of wages for one year to employers who hire 60- to 64-year-olds through placement agencies. The Subsidy for Urgent Employment Development for middle-aged and older persons is available for three months for hiring 45- to 59-year-olds on a trial basis. The Continued Employment Security Promotion Subsidy offers three types of grants to employers to continue employing their older workers until age 65. In exchange for an extended retirement age (beyond age 60), employers offer either contracts or special career programs with specified wage reductions that are more in line with what new hires would earn. The Subsidy for Employment Security of Transferred Older Persons compensates organizations that set up subsidiaries to employ their older workers during times of restructuring.
Sweden	A commission called the Seniorgruppen published recommendations in 2002 to eliminate legislative and contractual barriers to hiring and retaining older workers. A separate commission looked into age discrimination.	A 1998 parliamentary commission called Senior 2005 set out to combat ageism.	The Special Employment Subsidies program covers wage costs up to SEK525 per day (roughly half of the salary of a full-time worker) for up to 24 months for people over 57 who have been unemployed for at least two years.
United Kingdom	Sought feedback on the consultation paper *Equality and Diversity: Age Matters* in 2003 to craft anti-age discrimination legislation. Age discrimination is to be outlawed by October 2006 in accordance with an EU directive. Mandatory retirement below the age of 65 is to be eliminated by 2006, and employees are to have the right to request to continue working beyond age 65.	The Age Positive campaign and the non-statutory Code of Practice on Age Diversity in Employment were developed in 1999 to promote age diversity in employment. In 2000, a media campaign further reinforced the Code's message of anti-age discrimination at work. A campaign began in 2005 to inform 1.4 million employers on the business case for age diversity in the workplace.	
United States	Under the *Age Discrimination in Employment Act* of 1967, mandatory retirement was banned in 1978 for those under the age of 70 and eliminated completely in 1986. The *Americans with Disabilities Act* of 1990 provides protection with respect to hiring, termination, wages and promotion, and also requires employers to offer disabled employees reasonable accommodation (relevant since more than 60 per cent of disability benefit recipients were age 50+ by the end of 2004).	National Employ Older Workers Week is organized annually by the U.S. Department of Labor to promote older workers' role in the labour force. This includes events and awards to exemplary older workers and to employers that hire older workers. Reduction of negative stereotyping of older workers is one of the aims of the United States' *Age Discrimination in Employment Act*.	

* Information in this table is derived from various publications on aging from the Organisation for Economic Co-operation and Development.

Balancing Income Support and Work Incentives

In many OECD countries generous income support systems for older people encourage early retirement. Pension reforms are one of the key means governments have to affect workers' retirement decisions. Reforms focus on removing inherent disincentives to remaining employed and replacing them with incentives to extend employment. Many reforms include an increase in the minimum age of eligibility for a full pension and often offer financial incentives for working longer. In some instances, early retirees' benefits are also scaled back.

Japanese workers have been able to combine work and pension since the mid-1960s, with pension rights continuing to accrue for each additional year of contributions. The 2000 pension reform in Japan led to several changes. The minimum age of entitlement to the flat-rate portion of the pension will increase from 60 to 65 between 2001 and 2018. The earnings-related pension, which is mandatory for all private sector employees under 70, will see its minimum age of access increase between 2013 and 2030, and will see its benefits scaled back by 5 per cent. In 2002, the earnings test was extended to apply to working beneficiaries aged 65 to 69. Pensions are now indexed to inflation rather than wages, which may reduce the benefit level by up to 20 per cent compared with the old system.

Pension reforms are one of the key means governments have to affect workers' retirement decisions.

Further Japanese reforms were proposed in 2004 to improve the sustainability of the pension system. They included additional reductions in benefits and an increase in payroll taxes, from 13.85 per cent to 18.35 per cent of earnings by 2017. The government expects that the replacement rate of average wages will be reduced from 59 per cent to 50 per cent over the same period.

Sweden's new pension system also strengthens incentives to work. Pension entitlements are based on lifetime earnings. Following major reforms in 1999, 86.5 per cent of contributions are fed into a notional account, and the remaining 13.5 per cent is pre-funded. The guaranteed portion is indexed to consumer price inflation, and the earnings-related portion is indexed to real wages. Sweden's new pension system generates one of the highest returns from each additional year of work after the age of 61. Also, on reaching 61, employees can work while drawing a pension.

Sweden influences retirement decisions by sending every citizen an annual "orange envelope," which contains a report on present and future pension entitlements, including scenarios for monthly old-age pensions if they retire at 61, 65 or 70. A survey found that 93 per cent of Swedes over 35 are now aware that the size of their pension depends on the number of years they work.

In the United Kingdom, the minimum age for drawing a non-state pension is set to rise from 50 to 55 by 2010. As of April 2006, workers will be able to continue working for the same employer while drawing a partial pension. By delaying their retirement from age 65 to age 70, older workers can now increase their weekly pensions by more than 50 per cent or they can take a lump sum of £20,000 to £30,000.

In the United States, the age at which full social security pension benefits are paid out will increase gradually from 65 to 67 by 2027. Workers who choose to retire at age 62 receive only 70 per cent of their full pension benefits. Alternatively, workers can increase their pensions by a certain increment for each month that they work beyond age 65 until age 69. This increment is scheduled to increase to take into account the rising full retirement age. Moreover, the earnings test that had previously applied to pensioners of 65 to 69 years was abolished in 2000.

Denmark also implemented reforms in 1999 in order to extend labour market participation. The age of eligibility for full pension was raised from 60 to 62, and a tax bonus of DK100,000 was made available to workers who prolonged their employment after the age of 62.

Reducing the Generosity of Unemployment and Disability Benefits

Many countries have tightened the eligibility requirements and reduced the generosity of unemployment and disability benefits to prevent workers from using these social security programs as a route to early retirement. This extends older workers' labour force participation and reduces public spending on social security programs.

In Japan, for example, disability pensions are based solely on medical grounds. As of 1998, Japanese recipients of unemployment benefits cannot claim old-age pension benefits. In 2001, the duration of unemployment benefits was significantly reduced for those aged 60 to 64.

In Sweden, the use of disability pensions as part of counter-cyclical labour market policy was abolished in the early 1990s for those aged 50 to 59, and in 1997 for those aged 60 to 64. In the mid-1990s, the Swedish government decreased its disability benefits by 2 per cent, strengthened the eligibility criteria and allowed disability decisions to be reinvestigated.

The United Kingdom increased the rigour of its assessment system by sending disability claimants to state-employed doctors. It also reduced the level of benefits in 1995. Seven public employment service offices began a three-year pilot project in 2003 to explore effective ways to shift Incapacity Benefit recipients back into employment.

Italy deserves special mention for having brought its disability benefits expenditures under control. As of 1984, disability pension entitlements depend entirely on the physical and psychological condition of the applicant. Between 1990 and 1999, the proportion of gross domestic product (GDP) devoted to disability benefits has gone down from 1.7 per cent to 1.0 per cent, while the OECD average has increased from 1.2 per cent to 1.3 per cent.

Teaching Old Dogs New Tricks

Given the rapid obsolescence of older workers' skills and employers' preference to train and develop younger workers, European governments are taking an active role in adult education and training policy approaches designed to enhance older workers' employability. Sweden's government, for example, offers older workers public study grants and individual skills assessments. A study allowance enables Swedes aged 51 to 55 to take a number of vocational training courses in areas with labour shortages.

The U.K. government is also removing age barriers to learning. As of 2006, it will eliminate the age limit that formerly applied to higher education student fee loans, and it will raise the age limit on maintenance loans to 60, in keeping with the state pension age. A regional initiative called Experience Works improves the training and employability skills of workers and job seekers over the age of 45. This program also offers employment services to workers and employers, and it strives to improve age diversity in the workplace.

Improving Working Conditions to Meet the Needs of Older Workers

While workers of all ages deserve good working conditions, older workers sometimes need a less physically and psychologically demanding workplace if they are to work at all. Governments can help employers make workplaces more accessible by offering management guidelines and various forms of incentive-based funding.

Day-to-day management practices have a significant impact on the work environment. The National Older Workers Information System in the United States is a repository of more than 250 management strategies to help employers effectively manage older workers. The European Foundation for the Improvement of Living and Working Conditions has also published a guide to strategies for managing an aging workforce. These strategies include eliminating age discrimination from hiring practices, ensuring that older workers have equal access to training, and providing age-friendly lighting and seating.

Governments can help employers make workplaces more accessible.

Japanese employers who improve facilities and equipment for employees aged 60 to 64 may receive a subsidy of up to ¥20 million for up to five years. Furthermore, the subsidy for barrier-free workplaces for older people was introduced in 2000, and low-interest loans are available for up to 30 per cent of costs to remodel the workplace to improve conditions for older workers.

Helping Older Workers Find Employment

Once out of work, older people typically have a harder time finding new jobs, so the long-term unemployment rate is higher for the older unemployed than for the younger unemployed. Governments can help prevent older workers from becoming discouraged and withdrawing from the labour force by providing employment services proactively to minimize the duration of unemployment following job loss. These employment services would focus on improving job search skills as well as on job placements.

In Japan, Public Employment Security Offices (PESOs) provide placement services and visit firms to scout for job openings for older workers. In every prefecture, there is an Elderly Employment Support Center that operates out of the PESO to help middle-aged and older workers develop their career plans and to meet the specific needs of older workers. Talent Banks were established in 1999 to place job seekers aged 40 and above with managerial, specialized or technical knowledge in small and medium-sized enterprises. Career Exchange Plazas, which work in cooperation with Talent Banks to provide job-hunting assistance to older white-collar workers, place 37 per cent of their clients. For workers aged 60 and over, Older Persons Vocational Experience Utilization Centers provide free placement services. Silver Human Resource Centers are public welfare organizations that have been offering free placement services for temporary and part-time work since the mid-1970s.

Governments can help prevent older workers from becoming discouraged and withdrawing from the labour force by providing employment services.

The Japanese government also offers employers a subsidy to help soon-to-be-dismissed employees find new jobs. In addition, any group of three or more individuals aged 45 or older can receive a subsidy to create joint employment opportunities for older people. The subsidy covers two-thirds of the first six months' expenses to establish a new business.

In the United Kingdom, the Prince's Initiative for Mature Enterprise offers business start-up loans of up to £5,000 to unemployed people over 50 who have a viable business plan and who have been refused loans by two financial institutions.

In the United States, the long-running Senior Community Service Employment Program is the only federal employment program targeted specifically at older workers. It provides subsidized employment to low-income workers aged 55 and over, mostly in not-for-profit and public organizations.

Several countries have improved their employment service to older people. The U.S. Department of Labor published *A Guide to Serving Mature Workers in One-Stop Career Centers* to attune its public employment placement workers to the needs of older workers. The U.K. government has devised a point-based incentive system to motivate Job Centre staff to place older Incapacity Benefit recipients into jobs.

Policy-makers must work with industry to develop integrated strategies to deal with the aging workforce.

ORGANIZATIONAL RESPONSES

Employers' mindsets are not generally attuned to issues concerning older workers. Policy-makers must work with industry to develop integrated strategies to deal with the aging workforce. However, some creative employers have managed to find business opportunities among the challenges of an aging workforce. A few companies are adapting their human resources practices and policies to engage older workers. The following five initiatives provide Canadian organizations with examples of excellent international practice.

Age: Part of Any Diversity Program

Older workers must be part of an overall diversity strategy. Moreover, as the population ages, organizations will have to modify their products and services to meet the needs of an older customer base.

B&Q is the largest home improvement and garden centre retailer in Europe, and the third largest in the world. Age diversity is a key element in this British company's strategic plan.[9] In 1989, B&Q launched its "Grey Revolution" to attract and retain older employees who understood its product lines. It introduced its "Over 50" stores to meet the needs of both older employees and customers. An independent study by Warwick University found that these new stores recorded higher profits, lower staff turnover, lower absenteeism, and better customer satisfaction.

Deutsche Bank also recognized that the changing age demographic of its customers, the longer working life of its employees, and its impending talent shortage required it to implement innovative age diversity policies and business practices.[10] It formed intergenerational investment teams for wealthy clients, recruited experienced relationship managers in the consumer business, hired retired managers to support junior employees as "door

openers" in the banking business, created technology systems to transfer knowledge from one generation to the next, and promoted phased retirement and other flexible work arrangements to ease the transition to retirement.

Attraction, Recruitment and Retention

As the populations of many countries age, the pool of talented and experienced workers will continue to shrink. Organizations will have to attract people from non-traditional groups, including older workers, if they hope to meet their staffing demands in the future.

Netto is a large Danish supermarket chain with operations in Scandinavia, Germany and the United Kingdom.[11] Netto hires older people because older customers like dealing with people in their own age group. It also opened three "senior supermarkets," where half of the staff is 50 years of age or older. These stores were as profitable as the best of the regular stores, achieved excellent customer satisfaction ratings and had lower sick-leave costs. Based on this experience, Netto will introduce more age diversity in its workforces across Europe.

Organizations will have to attract people from non-traditional groups, including older workers, if they hope to meet their staffing demands in the future.

During the 1990s, the American bookstore chain Borders found that 50 per cent of all books were purchased by people over 45 years of age.[12] As a result, the company established a formal hiring and retention initiative for older employees. Now, 16 per cent of its workforce is over the age of 50, up from 6 per cent in 1998. Borders' "passport" program is designed for employees who would like to continue working when they move to a warmer state in the winter. Its 401K pension plan is also being adjusted so that older workers can invest part of their salary in a deferred-income annuity, which ensures a monthly income upon actual retirement. Borders has found that the turnover rate in the older-worker population is 10 times less than that younger workers.

To reflect the changing demographic makeup of Australia, Westpac, a large financial services company, hired older people to work in its call centre operations.[13] In 2001, only 18 per cent of the bank's workforce was over 45 years of age; this had increased to 23 per cent by 2004. Westpac reports that older employees tend to relate better to customers, especially those in the boomer generation. Moreover, Westpac's older workers had lower rates of absenteeism and turnover, and higher rates of productivity and employee satisfaction.

Work Design and Organization

Job redesign has been promoted in Japan and Scandinavia as an effective organizational response to the aging workforce. Firms reorganize the division of labour within work teams so that individuals with less physical capability can contribute to the work process.

Volvo's Torslandaverken plant in Sweden coped with a severe labour shortage in the early 1990s[14] by having older employees, as well as those with acute medical problems, perform specialized service or preparatory tasks on vehicles before they were moved to the assembly line. This left the heavier work to the younger and more fit employees. In addition to retaining the experience of older workers, the plant saved money by reducing early retirements and sick leave. The younger workers also gained valuable knowledge from their more experienced colleagues. Finally, intergenerational work teams were found to increase harmony in the working environment.

Ruoka-Saarioinen Oy, a large Finnish food production company, extends its older employees' working life by one or two years by improving the physical working environment.[15] It bought ergonomically designed equipment and introduced fitness and weight-loss programs to improve the physical and mental health of employees. With employees now retiring later, the investments are recouped through reduced recruitment and training costs.

International Truck and Engine Corporation, operating in the United States, reduced injuries and increased productivity by modifying one of its assembly lines to permit truck chassis to be rotated upside down. This way, they could be worked on from above rather than from below.[16] Combined with ergonomically designed tools, this made the work less physically demanding and safer, so older employees could continue working.

Work Flexibility

Older employees experience significant social and psychological shifts as spouses retire, children leave home and health concerns arise. Progressive organizations establish flexible working arrangements that allow employees, of all ages, to meet personal and familial

demands. For example, a Belgian finance company, Fidisco NV, has instituted flexible working patterns.[17] Most notably, men over 60 and women over 55 may work two hours less per week without a loss in salary. Employees may also convert these reduced working hours into extra holidays.

St. Mary's Medical Centre, a large American medical facility, allows employees who are approaching retirement to reduce their work hours without jeopardizing their pensions or other benefits.[18] As a result, older workers remain on the hospital's workforce, reducing early retirements.

A final example of work flexibility is IBM-Sernet, inaugurated in 1991 as a partnership in which a group of older, retired managers from IBM Italy[19] work with their former employer to offer consulting services. This arrangement keeps highly experienced professionals within the IBM sphere.

Progressive organizations establish flexible working arrangements that allow employees, of all ages, to meet personal and familial demands.

Training and Professional Development

Continuous learning remains a key ingredient in individuals' development and productivity. Similarly, organizations have to keep pace if they are to remain vital and viable. Older employees need to maintain a reasonable level of learning to be creative and current, and employers must provide the opportunities to learn. As the workforce ages, the core employability skills are likely to change, and several international organizations have responded.

With much of its workforce over the age of 50,[20] Air France adopted a complex system that lets 500 employees every year evaluate their careers based on their experience and motivation. This allows people to better position themselves within the organization. Every participating employee can use a tutorial system to aid intergenerational cooperation and to transfer knowledge. Within three years of retirement, employees may also participate in a training module to ease the transition to retirement.

In 2003, the Environment Service Department (ESD), a service branch of the town council of Groningen in the Netherlands, won an award from the Dutch Taskforce of Older People and Employment.[21] More than half of the organization's workforce is over 40, and ESD lets employees vary their work responsibility based on life stage and capability. Employees temporarily unable to perform their jobs are given another opportunity that fits with their capabilities. If employees cannot permanently work in their regular job, they are trained to coach younger employees or assume other specialized maintenance roles. As a result, employee satisfaction remains high, sick leave is low, and requests to move elsewhere in the town's organization are infrequent.

The Ohio State University Medical Center has developed educational programs targeted specifically at older employees.[22] "Program 60+" lets older employees audit any college class free. In addition, the "Bridge Program" helps mature workers overcome any anxieties about returning to or beginning college.

THE CANADIAN CONTEXT: WHAT KEEPS OLDER WORKERS IN THE LABOUR FORCE?

Before Canada adopts new policies based on international experience to mitigate the impact of aging, it is important that we understand the forces that influence Canadian workers' retirement decisions. Except for two studies based on the Statistics Canada General Social Surveys (GSS), there has been very little Canadian research on why we decide to retire.

Before Canada adopts new policies to mitigate the impact of aging, we must understand the forces that influence Canadian workers' retirement decisions.

In 2001, Morley Gunderson[23] analyzed the factors that influence retirement decisions. He found that people who were covered by an employer pension plan were 21 per cent more likely to have retired during the five years preceding the survey than people who did not have such a plan. This was the most significant determinant of whether somebody retires.

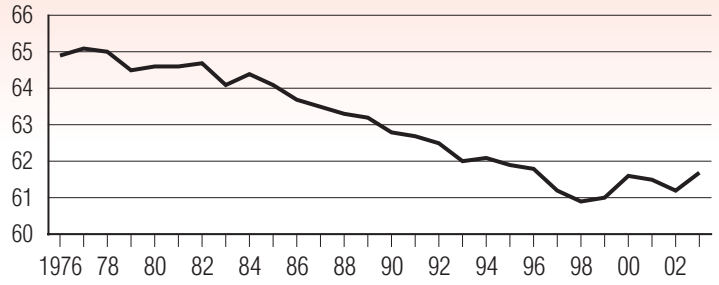
Gunderson also found that having a spouse who has retired was an important factor in explaining retirement. This confirms that retirement is a family decision. In addition, people are more likely to quit their jobs if their health is poor. People are also more likely to retire if they have interest income. This indicates that accumulated savings is an important factor in the decision to leave the labour market. Moreover, the probability of retiring early is positively correlated with high-prestige occupations; people with only a secondary school diploma are less likely to retire early.

One study found that having an employer pension plan was the most significant determinant of whether somebody retires.

One obvious unifying thread influencing the retirement decision is expected post-retirement income, along with the ability to save to generate such income. Pension plan coverage, interest income, a high-prestige occupation and a secondary school diploma all correlate highly with an ability to save money for retirement, either because of early retirement provisions in the pension plan or because of high career earnings.

A recent Statistics Canada analysis of data from the 2002 GSS brings out other important considerations. For example, more than one-quarter of the respondents in this survey who retired between 1992 and 2002 would have continued to work if they could have cut back their work hours without reducing their pension benefits. Finally, a more recent survey from the University of Windsor revealed that the most important human resource practices for retaining older employees were associated with recognition and appreciation of a job well done.[24]

Chart 4
Average Age of Retirement in Canada
(years)



Source: Statistics Canada.

Econometric Analysis of the Retirement Decision

To enhance Gunderson's survey results, The Conference Board of Canada conducted empirical research to determine the relative importance of factors that influence the average age of retirement. The only official time series available on average retirement age comes from Statistics Canada's Labour Force Survey. The data are presented in Chart 4, which illustrates the important decline in the average retirement age from 65 years in 1976 to 61 years in 1998, and the subsequent stabilizing of the average retirement age at between 61 and 62 years from 1998 to 2004.

The Conference Board analyzed the change in the average age of retirement, using some of the factors identified in the survey research as explanatory variables. The results were conclusive, if not surprising.

First, a proxy variable for wealth on retirement (net financial assets held by individuals and by unincorporated businesses divided by the number of employees in the population) was by far the most important driver of the average retirement age. As per capita net financial assets rose, the average age of retirement fell. The most recent pause in the decline in average retirement age can be traced to a decline in the growth in net financial assets after the bursting of the high-tech bubble, and to low interest rates.

The variable that we used as a health indicator was also significant in most of our estimates: the more days of work lost because of illness or disability among workers aged 55 and over, the more the average retirement age tends to fall. This confirms the Gunderson survey results, which indicate that people are likely to quit working earlier if their health is poor.

Business cycles, as represented by the unemployment rate, also tend to influence the average retirement age. At the bottom of a business cycle, jobs are lost and unemployment is high. Older workers who lose their jobs have trouble re-entering the labour market. Thus, during economic slowdowns, unemployed older workers are more likely to take early retirement, and often they are offered financial incentives by their employers to do so. In the mid-1990s, early-retirement incentive programs

very likely affected the average retirement age statistics. In the late 1990s, the average retirement age stabilized, and now, with the gradual elimination of these incentive programs, it may start rising again.

Finally, the results of our econometric analysis indicate that a more generous public pension plan affected the average retirement age. In 1987, for example (1985, in the case of the Quebec Pension Plan), several major changes to the public pension system came into effect. In particular, the provisions for paying flexible retirement benefits started at age 60 rather than age 65. Once workers could get retirement benefits at age 60, the average retirement age dropped. In addition, average real Canada Pension Plan/Quebec Pension Plan (CPP/QPP) benefits grew continuously from the early 1980s to the first years of the new millennium (see Chart 5), strongly suggesting that the generosity of the CPP/QPP is an important factor in the decline in the average age of retirement.

In 1997, the provincial and federal governments adopted a hybrid approach—steady-state funding.

These results are similar to those found in Europe, where increasing retirement income, mainly the result of more generous public pension plans, resulted in more people taking early retirement.

Public Pension Schemes: The Canada Pension Plan/Quebec Pension Plan

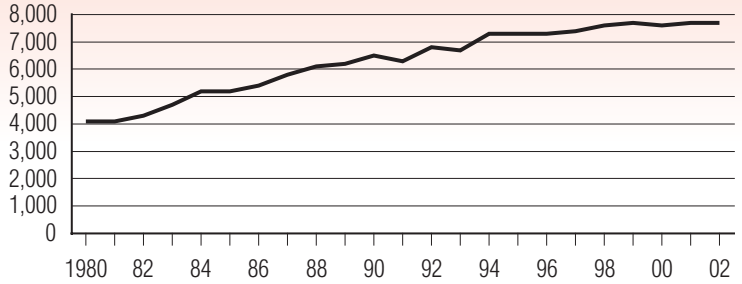
The aging of the population is putting increasing pressure on the Canadian pension system. When it was introduced in 1966, the Canada Pension Plan (CPP) was designed as a pay-as-you-go plan, with a small reserve. This funding approach meant that benefits from one generation would be paid largely from the contributions of later generations. The funding of CPP this way would have imposed a heavy financial burden on working Canadians after 2020. So in 1997, the provincial and federal governments adopted a hybrid of pay-as-you-go and full funding, called steady-state funding.

Moving to a full-funding approach would have been unfair across generations. During the transition to full funding, younger contributors would have contributed much more than their forebears, paying for the benefits of baby boom retirees while simultaneously saving for their own retirement. As part of the steady-state funding approach, contributions were increased, the future growth of benefits was reduced, and the CPP Investment Board was created to invest the funds not required to pay current benefits. Over time, a large enough reserve will be created to pay the growing costs that are expected as more and more baby boomers begin to collect a retirement pension. CPP and QPP assets are projected to represent 17 per cent of GDP by 2020.

Steady-state funding requires that the contribution rate be set no lower than the lowest rate expected to ensure the long-term financial stability of CPP without recourse to further contribution rate increases. The current steady-state funding rate of 9.9 per cent is expected to generate contributions that exceed benefits paid out every year between 2004 and 2021; hence, the current system is sustainable, at least until that time.

CPP's early retirement incentives fall near the midpoint among OECD countries. Canadians can start receiving an actuarially adjusted CPP retirement pension any time after turning 60. The pension benefit is adjusted downward by 0.5 per cent for each month the person retires before the age of 65, and upward by 0.5 per cent for every month the person delays retirement past age 65, until the age of 70. However, according to the Chief Actuary of Canada,[25] these adjustments are too generous for contributors who elect to take their retirement benefit before age 65. Conversely, election to continue working past 65 is penalized. In addition, Canada is more generous than most OECD countries by allowing eligibility for the CPP at age 60. It is telling that more than 40 per cent of Canadians are accessing the CPP retirement pension at age 60.

Chart 5
Average CPP/QPP Benefits (recipients 65+)
(2002 constant dollars)



Sources: Survey of Consumer Finances and Survey of Labour and Income Dynamics, Statistics Canada.

In addition, low-income Canadians aged 60 and above are eligible for Spousal Allowance to help protect low-income seniors from poverty. However, by permitting spouses to access this income support at the age of 60, the allowance is a de facto early retirement scheme, especially among older women. This may help explain the gap in workforce participation rates between older men and women.

Finally, as in many OECD countries, disability benefits in Canada had been used as a de facto pathway to early retirement. However, after several reforms to the CPP disability benefit program in 1994 and 1997, notably to the eligibility criteria, the inflow into CPP disability has been more than halved among older Canadian workers. This has effectively forced workers to remain longer in the labour force.

Reforms to the CPP disability benefit program have forced workers to remain longer in the labour force.

Tax-Sheltered Retirement Savings

Another important factor affecting retirement decisions is the treatment of retirement savings by the tax system. In the early 1980s, the federal government revised the rules governing Canada's private retirement system extensively. Among their aims were these: to assure fair opportunities for Canadians to provide for their retirement years, and to enable Canadians to avoid a serious disruption in their standard of living upon retirement.

Since that time, the real value of tax-deferred/tax-sheltered retirement savings has been eroded. Limits on tax-deductible retirement savings are now very low, whether one is saving individually through a registered retirement savings plan (RRSP) or through a registered pension plan (RPP) sponsored by an employer. As recent Conference Board of Canada research has shown, the result is that many Canadians are unable to save enough on a tax-deferred basis to maintain their standard of living in retirement.[26]

There are two reasons why tax-deferred/tax-sheltered retirement savings limits are so much lower now than in the 1970s and 1980s: first, RPP and RRSP limits were frozen for a generation; second, inflation lowered these ceilings in real terms, year after year. The maximum amount that a defined benefit pension plan may shelter currently is $1,833 per year. The 2005 federal budget proposes increasing the current RRSP limits to $22,000 per year by 2010. Compared with a generation ago, these are very low limits, and much lower than those in the United States and the United Kingdom. This erosion of tax sheltered retirement savings has tended to increasingly discourage early retirement in Canada—appropriate when viewed through the lens of meeting the challenges posed by an aging population.

Defined Benefit Plans

The impending retirement of so many Canadians is putting Canada's private retirement system under pressure. This is especially true in the case of defined benefit (DB) plans. A survey conducted by the Conference Board and Watson Wyatt indicates that the proportion of chief financial officers (CFOs) who believe that there is a severe pension plan crisis in Canada has more than doubled in the past year, from 20 per cent in 2004 to 43 per cent in 2005. Many of the large DB pension plans are extremely generous, often enabling Canadian workers to retire with full pensions well before 65. The generosity of DB plans will encourage early retirement and adversely affect labour force participation over the next 20 years.

The Canadian public service pension plans are especially generous. This helps explain why public servants retired on average 2.5 years before private sector workers did in 2004. Governments will find it difficult to scale back the early retirement provisions of these plans in the face of likely union opposition.

Many Canadian DB pension plans are facing large funding deficits due to the equity bear markets from March 2000 to October 2002, and to a low-interest-rate environment that hurts investment fund returns. DB plans will come under increasing pressure as the population ages. In order to meet their future pension liabilities, companies will be forced to put up cash to restore solvency levels, thereby reducing their ability to pay dividends and to invest.[27] The scale of the crisis is indicated by the following statistics.

- Of the 784 DB pension plans registered with a federal or provincial pension authority at the end of 2004 (covering roughly 5.6 million employees), 460 (59 per cent) had a deficit. The total deficit of the 460 plans was $8.6 billion. (The deficit calculations include no indexation of benefits.)

- Assuming the indexation of benefits, 751 (96 per cent) of the plans had a deficit. The total deficit of the 751 plans was $89.9 billion.
- As of the end of 2004, approximately $17.4 billion would be required annually over the next five years to make up for the investment losses incurred during 2001 and 2002 and for lower yields on interest-bearing assets in recent years.

What accounts for the change in perspective of CFOs—especially the CFOs of large organizations—on the severity of the pension plan crisis? For starters, government legislation required many plan sponsors to make large extra contributions in 2004 to maintain plan solvency. Moreover, these improvements in solvency levels will be more than wiped out by the new pension actuarial standards being introduced during 2005, which will further increase the costs of pension plans. Finally, all of these DB plans will come under enormous pressure after 2010 as the baby boomers begin to retire.

Given the problems associated with DB plans, many employers have moved to defined contribution (DC) plans, which shift the bulk of the financial risk onto the backs of employees. Not surprisingly, as in other countries, in Canada the shift from DB to DC plans is already well underway. (See Chart 6.)

The number of registrants in defined contribution pension plans has increased from fewer than 200,000 in 1974 to 836,000 in 2003. Nevertheless, in 2003, only 15 per cent of registered pension plan members were part of a DC plan. The shift toward DC plans is mainly affecting new hires, and thus will not affect the ability of baby-boom workers to take early retirement.

IMPLICATIONS FOR CANADA

PUBLIC POLICY RESPONSE

Dealing with Canada's aging population will require both public policy and organizational responses. Encouraging later retirement must be a key policy objective if we are to ease the burden of aging and achieve fiscal sustainability. Based on international experience and analysis of the determinants of retirement in Canada, a successful strategy to deal with aging would comprise the following elements.

End Age Discrimination

Canadian governments should aggressively remove the legislative and structural barriers to those who choose to work beyond age 65. Mandatory retirement is an anachronism. Age discrimination must be tackled to help ensure that older workers are not denied opportunities to work because of their age.

Dealing with Canada's aging population will require both public policy and organizational responses.

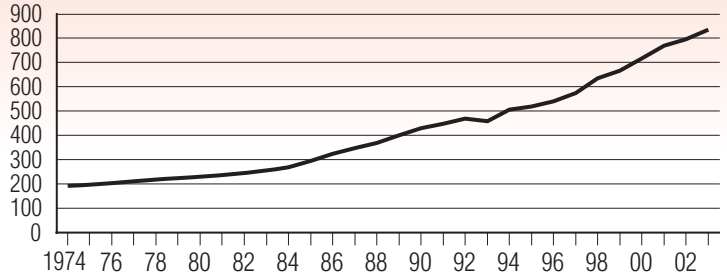
Reform Publicly Funded Pensions to Promote Later Retirement

With respect to publicly funded pensions, Canada has already taken important steps to ensure that the public pension scheme is solvent. In addition, the limits imposed on RRSP and RPP contributions indicate that tax-sheltered retirement savings have, over time, offered less support for early retirement. However, given the importance of financial incentives, policy-makers should reform the CPP/QPP early retirement provisions and the structure of many public-sector defined benefit pension plans, which provide strong incentives to retire early. Recognizing the better health and longevity of the Canadian population, the age of CPP/QPP eligibility should be gradually increased from 60 to 65, notwithstanding the political difficulties involved.

Implement Human Resource Development Policies and Practices That Are Friendly to Older Workers

Policies to increase the age of retirement should be accompanied by policies that ensure ample employment opportunities for older workers. Measures that affect both

Chart 6
Number of Registrants in Defined Contribution Pension Plans (DCPP's) (000s)



Source: Statistics Canada.

the demand for older workers and their availability and skills include the following:

- Increase the demand for, and supply of, jobs for low-paid older workers through job subsidies or lower taxes. Canadian governments could consider scrapping all taxes on income employees earn after their 65th birthday, after setting a tax-free income ceiling.
- Offer government-subsidized training to maintain the skills of older workers.
- Consider wage subsidies for employers who hire older unemployed workers, as is done in France, Germany and Korea.
- Engage in aggressive publicly funded ad campaigns promoting continued employment of older workers.
- Encourage our aging workers to stay connected to the workplace in their retirement years through provision of incentives, subsidies and other mechanisms. Self-employment, mentoring and other less structured employment arrangements would enable Canadian society to benefit from their knowledge and experience.

Policies to increase the age of retirement should be accompanied by policies that ensure ample employment opportunities for older workers.

Create an Integrated Policy Framework to Manage the Issues of the Aging Workforce

Policy-makers must work with small and large organizations to redress the spotty attention that has been paid to this national issue. Rather than taking an initiative-based public policy approach, policy-makers have an opportunity to weave an integrated policy framework that will address both the supply side and demand side issues of our aging workforce.

ORGANIZATIONAL RESPONSE

At the organizational level, little is being done. A 2005 Conference Board survey of employers shows that while 88 per cent of respondents are aware of the problem of an aging workforce, only 8 per cent have plans to hire retired employees. Very few organizations are making strategic changes to address the aging workforce issue. The following recommendations require implementation at the organizational level.

Review and Realign Human Resource Policies and Practices within the Reality of an Aging Labour Force

Canadian organizations must set up human resource strategies that encourage the increasing number of underutilized older people to participate in the workforce. Measures that can attract older workers include the following:

- Eliminate ageism, which has become part of most organizations' culture and mindset after decades of early retirement incentives in a labour surplus environment.
- Modify the rigid work schedules that characterize most workplaces, and offer flexible work arrangements for older workers.
- Create age-friendly workplaces through job and workplace redesign.
- Implement lifelong learning initiatives to rectify the skill obsolescence of older workers.

Eliminate the Customary Abrupt Work-Retirement Separation in Favour of a Gradual Transition from Full-Time Work to Retirement

Canadian organizations should change their workplaces in the following ways:

- Institutionalize "bridge" jobs. Bridge jobs are part-time or temporary employment that allow a gradual transition from full-time work to retirement. Bridge jobs have proven successful as an older-worker retention strategy in Europe.
- Design contingent employment policies for older workers after their separation from full-time employment or bridge jobs.
- Eliminate barriers to older workers' employment prospects through increased compensation flexibility. Organizations should eliminate seniority-based pay scales after an age threshold, which would make older workers a more attractive proposition for employers.

Given the time lags involved, Canadian policy makers and organizations must act now. We have at most 10 years before the accelerating aging of the population will begin to significantly undermine economic performance and social well-being.

1 Dependency ratio refers to the number of people aged at least 65 years relative to the working-age population, normally defined as being between 20 and 64.

2 The medium fertility variant in the UN population projection assumes medium fertility, normal mortality and normal international immigration.

3 The population replacement rate is estimated to be 2.1 children per woman of childbearing age, although it varies depending on life expectancy.

4 Adair Turner, "Demographics, Economics and Social Choice." Presentation at London School of Economics, November 6, 2003.

5 *The Economist*, "A Modest Contribution," October 31, 2002.

6 Organisation for Economic Co-operation and Development, *Ageing and Employment Policies* (Finland: OECD, 2004), p. 119.

7 Organisation for Economic Co-operation and Development, *Ageing and Employment Policies* (Spain: OECD, 2003), p. 75.

8 Insights on aging in specific countries are derived from country-specific reports on aging and employment policies published by the Organisation for Economic Co-operation and Development.

9 International Labour Organization, "Promoting Decent Work for an Ageing Population: Actors, Partners and Corporate Social Responsibility." Paper presented to G8 High Level Meeting on Employment, Paris, May 12–13, 2003.

10 Deutsche Bank, "Age Diversity at Deutsche Bank: Initiatives and Challenges." Presentation at a Joint Conference Board Diversity Conference, May 5–6, 2005.

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13 "Business, Boldness and Benefits: How Westpac Tackled the Ageing Workforce," *Human Resources Magazine* (May 12, 2005). <www.humanresourcesmagazine.com.au>.

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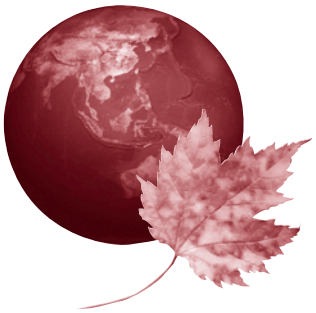
23 Morley Gunderson, *Income Security Programs Analysis of Factors Influencing Planned and Actual Retirement Decisions* (Ottawa: Human Resources Development Canada, Strategic Policy, Evaluation and Data Development, Strategic Evaluation and Monitoring, May 2001). SP-AH084-05-01E.

24 M. Armstrong-Stassen, *Aging Workforce Research Project—CARP—50+ Employees and Retirees* (Windsor ON: University of Windsor, Management and Labour Studies, Odette School of Business, November 2004).

25 *Canada Pension Plan, Actuarial Adjustment Factors Study*, Actuarial Study No. 2 (Ottawa: Office of the Chief Actuary, March 2003).

26 The Conference Board of Canada, Executive Action, *Restoring Equity to Canada's Retirement Savings System*, (Ottawa: The Conference Board, March 2005).

27 See G. Edward Reed, Ian Markham and Karen DeBortoli, *The Pension Plan Crisis Continues . . . And Its Grip Is Stronger: Summary of Key Findings from the Conference Board/Watson Wyatt Survey of Canadian CFOs on Pension Risk* (Ottawa: The Conference Board of Canada, 2005), p. 1.



5

HIGHLIGHTS

- *In 2020, the world will be even more interconnected, complex, uncertain and turbulent than it is now. Canada's openness and engagement will bring a healthy flow of capital, trade, people and knowledge; it may also bring conflict and violence.*
- *Canada will be a "taker," not a "maker," of global security trends. Our stability, resources and geographical location will provide some shelter from violent conflict, but terrorism, the proliferation of weapons of mass destruction, and general global instability will threaten our well-being and security.*
- *The growing disparity among and within nations, coupled with increased mobility, will introduce potentially catastrophic social and health risks. One of the most likely and imminent is a flu pandemic.*
- *Many countries will prosper as market forces drive increased efficiency and specialization. Yet in being less diversified, countries will also be more vulnerable to supply disruptions.*
- *Our close ties with the United States will offer a measure of stability. However, increased U.S. demands for access to and cooperation around resources, security and trade could increase bilateral tensions.*
- *The world will confront new risks of a global scale. Canada will need to have sufficient capacity to anticipate, react to and mitigate the human and economic costs of events that threaten the security of its population.*

CHAPTER 5

Facing the Risks

Global Security Trends and Canada

In 2020, the world will be an increasingly interconnected, complex and turbulent place. Globalization will create rapid and expansive shifts in the geopolitical, economic, social, environmental and biological landscape. While change, growth and integration will increase opportunities for wealth and well-being, they will also create new channels for risk and insecurity.

Canada's prosperity and strength are linked to our openness and engagement in an increasingly interdependent world. Our growing interconnectedness will bring a healthy flow of capital, trade, people and knowledge; it will also bring conflict, violence and uncertainty. This chapter presents a tentative portrait of the future based on key uncertainties and risks arising from the global trends that will dominate the world in 2020.[1] This chapter explores the darker side: the risks and threats that *may* emerge from an increasingly interconnected and uncertain world. (See Exhibit 1, "Degrees of Certainty, Degrees of Risk.")

Our portrait is a composite, not an exploration of alternative futures (the latter is a common technique in the study of global security issues). However, consistent with the approach used throughout this year's *Performance and Potential*, we want to present an integrated view of what the world of 2020 might look like, and to discuss what this would mean for Canada. We have drawn from scenarios and projections in the most respected and recognized international security and futures planning literature to create our synthesis of the key uncertainties and risks.[2]

The complexity and flux that will dominate the future do, however, make 15-year projections unavoidably broad and speculative. We have tried to balance scope and depth, as well as realism and a degree of imagination, in order to create a plausible portrait of Canada's human security challenges and choices. The scenario might be described as "business as usual," as it is a projection based on current trends.[3] It is important to bear in mind that political and other leaders have the capacity to create a different set of outcomes, should they have the will to do so.

For many of the areas discussed in this chapter, there is a broad consensus about the influences and the issues but not about the timing or the events themselves. In the more traditional security areas, such as the risks of conflict, war or terrorism, the sources of risk are relatively straightforward but the outcomes and repercussions are highly speculative. Issues and threats that either have an impact on or are the result of political responses or events are, by their nature, less stable and more difficult to predict with certainty. On the other hand, trends and risks that follow a more linear path—such as expanding technology or economic growth—are easier to forecast. Still, the confidence of these predictions diminishes as the length of the projection period increases. Over a 15-year horizon, forecast errors are inevitable.

While change, growth and integration will increase opportunities for wealth and well-being, they will also create new channels for risk and insecurity.

We have limited our discussion of certain critical sources of risk. Those arising from environmental sustainability and demographic changes are woven into our portrait, but they are explored in more detail in chapters 3 and 4.

Exhibit 1
Degrees of Certainty, Degrees of Risk

This exhibit highlights examples of the risks and events discussed in this chapter. It is meant to present a credible synthesis of the key uncertainties and risks and their overall impact on Canada and should be viewed as indicative rather than definitive.

CERTAINTY	OVERALL IMPACT ON CANADA: Low	Medium	High
Probable	**Rise of service sector** creates both widely divergent employment opportunities and more employment and income stability. **Failed and failing states** create global tension and instability. **Market-based allocation of resources** leaves economies less diversified against risk and global supply chains more vulnerable to disruptions due to inadequate system redundancies.	**Global competition for natural resources** creates new global tensions; creates window of opportunity for Canada but also brings resource-based economic risks, particularly in the North. **Income disparity** between nations and within nations creates global economic and social challenges. **Canada–U.S. economic integration** secures markets but leaves us vulnerable to economic challenges in the U.S. **Increased Internet access** heightens risk of personal crimes and abuse.	
	Infrastructure integration with the United States leaves us more vulnerable to disruptions. **Nuclear accident** overseas involves Canada in rescue and clean-up efforts. **Global governance deficit** leaves all nations with fewer ways to resolve disputes or cooperate on global issues. **Changing labour market patterns** creates a split between those who can specialize and up-grade and those who cannot. **War in Asia** affects Canada through tensions in immigrant groups, and Canadians are involved as peacekeepers or as interveners.	**Terrorist attack**, of limited magnitude, in Canada causes minimal physical damage and loss of life but has a major psychological impact. **Proliferation of weapons of mass destruction** creates regional and global tensions and risks. **Income inequality in Canada** increases, concentrating social and economic problems in particular groups. **Increased technological innovation and integration** link business and commerce, but shocks are transmitted more quickly through the system. **Infectious disease** (such as HIV–AIDS and tuberculosis) increases in particular groups. **Transnational crime** spreads and grows.	
Less Probable		**Liberalization, market-driven economy** lowers governments' willingness to intervene in social development. **War in Asia** between major powers involves Canadians (through impact on immigrant groups and intervention). **Cyber attack** on financial industry causes disruptions to commerce and economy.	**Pandemic** spreads quickly through the world, including Canada. Decimates global and Canadian population and has grave economic and social impact. **Terrorist attack**, of large magnitude, in Canada. **Nuclear accident** in Canada. **Global war** (highly unlikely).

Source: The Conference Board of Canada.

This chapter is organized around three categories of risk most relevant to Canadians:

- **Conflict risks** based on violence, including conventional threats, such as war, and new or non-conventional menaces, such as terrorism;
- **Social and health risks**, including increased vulnerability to disease and crime; and
- **Economic and technological risks** and insecurities emanating from globalization and the shift to market-driven decision-making processes, including disruptions to economic and resource infrastructures, greater disparities between the rich and the poor, and weakened global governance.

For each risk area, we describe the most influential global features and trends, and we lay out the key dangers and uncertainties that may erupt in the next 15 years. We then examine how these global trends and risks might influence Canada's future security prospects and choices.

As an open, liberal and democratic society, Canada will never be, nor should we want to be, completely protected from global trends and influences. Our geographical location, wealth, education, stability and integration with the largest economic and military power on the planet will provide a degree of shelter and stability. But our limited weight and influence will hinder our ability to control global trends and events. In the end, Canada's prosperity and well-being will rest on our commitment and ability to actively engage in the world.

TRADITIONAL SECURITY RISKS

By 2020, the geopolitical landscape will have shifted significantly, creating tensions, ruptures and hot spots that will have an impact on global, as well as Canadian, security. While a major global conflict is not likely, changing demographic, economic and political realities will put pressure on existing structures and relationships. Asia's prominence, the growing competition for natural resources, the continuing presence of failed and failing states, terrorism, the proliferation of weapons of mass destruction, weak international governance, and the continued military prominence of the United States will all contribute to growing international, domestic and ideological conflicts.

GLOBAL TRENDS: DISEQUILIBRIUM

The Rise of Asia

By 2020, Asia—already a rising force—will have become even more dominant. Many countries will focus on that region: feeding it, fuelling it, buying its goods, educating the people of its middle classes, entertaining its masses, and exploiting its dynamism. Others will be jockeying to wield influence or respond to the ripple effects of its massive growth. The U.S. National Intelligence Council describes this trend as globalization with "an Asian face."[4]

Asia's prominence, the growing competition for natural resources, terrorism, and the continued military prominence of the United States are just a few of the factors that will contribute to growing international, domestic and ideological conflicts.

Political Weight of China

Global interdependence with an Asian hub will have momentous security implications. In 15 years, China's political and military weight will have grown substantially, making it the second-largest defence spender, after the United States.[5] Nearly every other country will lose ground.

To be sure, China will be challenged internally. As China grows more prosperous, its citizens will exert increasing pressure for more political say. One can't predict whether China will reform its political institutions to align with its market-based economy; however, it will be under considerable pressure to do so.[6]

China's strength may generate some tension with the United States, but the real strain will be felt within Asia itself. While accepting the reality of China's rise, Japan (with its massive wealth, but relatively old population), Russia (with its declining demographic and economic presence, but still armed to the teeth) and India (with its increasingly assertive voice, very large economy and significant military capability) will *not* be willing to accept a Chinese claim to regional dominance. Stability in the region depends on maintenance of the balance of power.

Thus, a very cold peace is likely to prevail among these bigger powers, and skirmishes could erupt between, for instance, China and Japan. However, the most likely source of conflict would come from tensions between these larger powers and their smaller neighbours—in particular, between China and Taiwan and Vietnam, or between India and Pakistan. These larger powers will also have stakes, sometimes competing or even conflicting ones, in the tensions and confrontations that develop between or within neighbouring states. Even the "smaller" players in the region include countries of significance, such as Indonesia (the world's largest Muslim country), and South Korea and Vietnam (with their imposing military apparatuses).

Finally, most Asian political systems will probably still be in transition, with a few consolidated democracies and a whole slew of political hybrids—China and Russia among them. The region will be rife with tension, while its political institutions will have a limited ability to deal with these tensions.

Table 1
Global Oil Reserves, 2004
(per cent)

Rank	Country	Share of global reserves
1	Saudi Arabia	22.1
2	**Canada***	**16.8**
3	Iran	11.1
4	Iraq	9.7
5	Kuwait	8.3
6	United Arab Emirates	8.2
7	Venezuela	6.5
8	Russia	6.1
9	Libya	3.3
9	Kazakhstan	3.3
11	Nigeria	3.0
12	United States	2.5
13	**Canada****	**1.4**
13	China	1.4
16	Norway	0.8
Total global reserves		**161.9 billion tons or 1,188.6 billion barrels**

*Canada is ranked 2nd, with 16.8 per cent of global oil reserves, *when full estimates of oil sands reserves are included* (based on the U.S. Department of Energy's *Country Analysis Briefs*).
**Canada falls to 13th position *when only oil sands under active development are included* in the ranking.
Sources: British Petroleum, *2005 Statistical Review of World Energy*; U.S. Department of Energy, Country Analysis Briefs. <www.eia.doe.gov/emeu/cabs/canada.html>.

Competition for Natural Resources

A second major development resulting from Asia's rise is a heightened global competition for natural resources, particularly energy. This will generate tensions both directly—among consumers whose growth, wealth and power depend on access to these resources—and indirectly, as resource-rich countries try to manage the impact of high prices on their currency, industry and economy.

Heightened global competition for natural resources, particularly energy, will generate tensions.

Oil will still be the global energy mainstay in 2020. Supply will be increasingly tight and will be concentrated in a few countries, in the absence of major unforeseen new discoveries. (See Table 1.) Demand for steel, aluminum and most other metals will become even stronger. For rare minerals, competition will be acute. None of the major global economic and military powers, with perhaps the exception of Russia, will be self-sufficient in any of these resources; all will consider protecting the flow of these primary products a strategic priority. Competition for privileged or guaranteed access will be fierce; territorial claims with resource implications—in the Arctic or the South China Sea, for instance—will heighten the risk of open conflict.[7] Courtship and competition for preferential ties with resource-rich states and regions, particularly the Middle East, will be on the rise. Attempts by any major power to gain a strategic foothold—such as the United States' involvement in Iraq—will be resisted and actively contested.

This emphasis on protecting and securing access to vital resources heightens potential risks for conflict, and it further raises resource costs. Even the realization that global oil production will peak at a future point and then decline, as U.S. oil production did in 1978, is enough to raise tensions—especially with the prospect of having to supply fuel for the 100 million cars expected in China by 2020.[8] Open conflict can disrupt supplies; the mere threat of conflict can increase insurance and protection costs.

Failed and Failing States

While a heightened focus on resources will create immediate threats to security, the main danger to global stability will come from the consequences of the competition. Higher prices for primary products are not always an unmitigated boon for producing countries, and resource dependence in underdeveloped countries is strongly associated with poor governance, corruption, instability, civil war and state failure.[9] Moreover, high commodity prices will encourage greater international specialization. Over the next 15 years, the booming demand for primary commodities will make many economies in the Middle East, Africa and Latin America even more dependent on resource exports, deepening the already significant global division of labour.

Resource-rich countries, even those whose manufacturing sectors survive the Chinese assault of the 1990s and 2000s, will feel the pressure of high currencies driven by ever-higher commodity prices. Many weak states will become weaker, and some stronger ones will struggle. The situation will be particularly acute for countries already grappling with conflict and poor governance—primarily in sub-Saharan Africa, but also in the Middle East, the Andean region of South America, Central America and parts of the Caribbean. These states will be extremely fragile, with their economies vulnerable to commodity price fluctuations and their governments unable to strengthen their political hold. This uncertainty is a recipe for civil war, instability and even terrorism. For commentary on the relationship between economic status and terrorism, see box, "Poverty and Terrorism."

Resource-rich countries will feel the pressure of high currencies driven by ever-higher commodity prices.

Terrorism

In 15 years, terrorism will still pose significant danger.[10] Information and communications technologies will be more sophisticated, making it easier for distributed networks of terrorists to operate with impunity.[11] In the meantime, travel and migration will continue to increase, putting increased pressure on border management. Countries lacking the capacity to facilitate trade and efficiently manage the movement of people will find that their frontiers have become more permeable.

Poverty and Terrorism

The links between poverty and terrorism are multi-faceted and complex. Poverty *per se* does not create a terrorist, nor does prosperity unmake one. Ideas lead to terrorist violence, and also away from it.

Terrorists are remarkably modern, articulate and educated. From Germany's *Rote Armee Fraktion*, Italy's Red Brigades and France's *Action Directe*, to Lebanon's Hezbollah, the 9/11 "pilots" and now London's suicide-commuters, those who wage terrorist violence have much in common with one another, and surprisingly little with "the wretched of the earth."[1]

According to the best publicly available database on terrorists, two-thirds or more have college degrees, good jobs and a middle-class upbringing or better.[2] Kruger and Maleckova's detailed study of Israel's experience showed that having a living standard above the poverty line or a secondary school or higher education was positively associated with participation in Hezbollah. They also found that the Israeli Jewish settlers who attacked Palestinians in the West Bank in the early 1980s were overwhelmingly from high-paying occupations.[3]

Old "relative deprivation theories" are not much help either, as terrorists, just like the Latin American guerrillas of the 1960s,[4] operate most often in the midst of lengthy periods of growth and development. The first Intifada, which launched the mass suicide-bombing fashion, is a particularly striking example. It came after a generation of unheard-of economic and social progress on the West Bank and Gaza—GDP per capita went from US$165 in 1968 to US$1,715 in 1991, by far the best performance of any Middle Eastern economy, including Israel; life expectancy went from 48 to 72 years between 1967 and 2000, while infant mortality declined from 60 per 1,000 to 15 per 1,000; literacy rates similarly rose to 86 per cent, higher than in Egypt, Tunisia or Syria; and for the first time, university education was provided.[5] And yet, the Intifada was launched to significant public applause leading, sadly, to a drastic reversal of the progress that had been accomplished. Clearly, ideals of individual or collective salvation, independence, revolution or Holy War have more weight than material conditions.

1 Olivier Roy, *Globalized Islam: The Search for a New Ummah* (New York: Columbia University Press, 2004).

2 Marc Sageman, *Understanding Terror Networks* (Philadelphia: University of Pennsylvania Press, 2004).

3 Alan B. Krueger and Jitka Maleckova, *Education, Poverty, Political Violence and Terrorism: Is There a Causal Connection?* National Bureau of Economic Research Working Paper No. 9074 (Cambridge: NBER, July 2002).

4 Yvon Grenier, *The Emergence of Insurgency in El Salvador* (Basingstoke: Macmillan, 1999).

5 Efraim Karsh, "What Occupation?," *Commentary* (July–August 2002).

The Multiple Dimensions of Terrorism

Confronting terrorism will have a variety of meanings for Canada because terrorism can take a number of different forms:

Direct Target	Canada could be the intended target of terrorist attacks (based, for example on retribution for participation in the war in Afghanistan). Canadian individuals or assets abroad might also be attacked for similar reasons.[1]
Proxy Target	Canada could be used as a proxy target for the United States. In this instance, terrorists would exploit our strong integration with the United States to damage portions of their infrastructure and economy. The most likely targets would be energy and telecommunications infrastructure, although an attack on the Toronto subway system would have as strong an impact in the United States as one targeting Seattle or Chicago.
Foreign Battlefield	Canada's large and diverse immigrant community could act as a conduit for violence resulting from civil tensions in foreign countries, even if Canada itself is not directly involved in the conflict. There is little reason to believe that the Air India case will remain an exception.
Base of Planning Operations and Training	Canada could be used as a base from which to attack the United States. In 1999, for example, Ahmed Ressam was caught at the border with a bomb in his car. He had planned to detonate the bomb at the Los Angeles International Airport during the Millennium Day celebrations.

1 "Canada Last Unscathed Entry on Al Qaeda List," *The Toronto Star*, July 9, 2005, p. F3.

The world, however, will show a strong degree of resiliency. The recent events in New York, Bali, Spain and London, as well as the more chronic violence that the United Kingdom has experienced with the Irish Republican Army (IRA), Spain with the Basque Euskadi ta Askatasuna, and Israel with Hamas and other groups, all demonstrate open societies' remarkable resistance to terrorist shocks. Over the past three decades, Londoners have learned to live with the threat of IRA bombs; media reports following the July 2005 bombings of the Underground referred to British steadfastness, evoking memories of the World War II Battle of Britain. To be sure, Americans have become much more security conscious in the past four years. The country has gone to war in Afghanistan and Iraq. The routine of travellers has fundamentally changed. Yet in many other respects, day-to-day life has gone on as before. In economic terms, even the events of September 11, 2001, had a relatively minor impact on U.S. economic performance, including stock prices.[12] The bombings on July 7, 2005, in London barely registered on non-British stock exchanges—*even on that very day*.

However, terrorism will fundamentally alter how countries interact with their citizens. Free states, such as Canada, will have to build capacity to deal with the threats, as well as the consequences, of terrorist attacks. (See box, "The Multiple Dimensions of Terrorism," for an outline of the possible forms of terrorism confronting Canada.) This will involve far-reaching changes in the way we guarantee law and order and view individual freedoms and privacy. In the end, civil liberties in Canada will reflect a balance between assurance of safety and freedom. By 2020, Canadians will have learned—as the British, Americans and Israelis will have learned before us—that encroachments on privacy, some restrictions to civil liberties, and a higher degree of leeway for security agencies can be compatible with liberal democracies.

Countries such as Canada—with solid economic, political and social foundations—will be able to protect themselves, preserve their freedom, and sustain their prosperity in the face of terrorist threats, in spite of the costs involved. This will not be the case for weak states.

Free states, such as Canada, will have to build capacity to deal with the threats, as well as the consequences, of terrorist attacks.

Failed and failing states will continue to be closely linked to terrorist threats. (See box, "Failing States," for a definition of what constitutes a failed state.) While most will not actively sponsor terrorist activities, they will offer ideal conditions—from poorly controlled territories to badly paid and more easily corrupted officials—for coordinating terrorist activities (as was the case in Afghanistan). Also, many of the world's weaker states house extractive activities—such as pipelines and port facilities—which provide easy marks for destructive attacks that can have serious global consequences. Failed or failing states will also be important default targets, as terrorist activities in wealthy, well-protected and well-policed states become harder to carry out. Weak states, however, are no more likely to sponsor terrorist organizations than are powerful ones—the risk of retaliation is too high, with attacks easily traced back to a "strategic address," as the Taliban learned in Afghanistan.

Failing States

There is a growing concern about the impact of failing and failed states on both regional and global stability. Fragile states are more likely to create refugee flows, spread disease, be the bases for terrorist activity and breed regional instability and failure. However, there is uncertainty about the definition and the scope of the problem. How many states, exactly, are at serious risk of failure? The estimates vary. The World Bank has identified 30 low-income countries under stress.[1] The UK Department for International Development lists 46 fragile states.[2] But what, exactly, is a failed state?

According to Robert Rotberg,[3] the success (or failure) of a nation-state can be measured by its ability to deliver "political goods." These goods include security, law and order, medical and health care, schools and education, critical infrastructure, a money and banking system, a business environment, a forum for civil society and a method for regulating environmental commons.

A Taxonomy of State Success and Failure[4]

Strong States

- Have full control of their territories;
- Provide high-quality political goods to their citizens; and
- Perform well according to indicators such as GDP per capita and the United Nations Development Programme (UNDP) Human Development Index.

Weak or Failing States

- Are inherently weak (because of geographical, physical or fundamental economic challenges); or
- Are situationally weak (because of internal conflict or despotism);
- Usually have ethnic, religious, linguistic or other tensions that limit or decrease their ability to deliver political goods;
- Have conflicts that are on the edge of exploding into open conflict; and
- Have GDP per capita that has fallen or is falling.

  Examples: Iraq (under Saddam Hussein), Belarus, North Korea and Libya.

Failed States

- Provide limited political goods;
- Forfeit their role to warlords or non-state actors (such as Hamas);
- Do not provide any measure of security, except, perhaps, in major cities;
- Have failed economic infrastructure and health-care and education systems;
- Show precipitous decline in GDP per capita, soaring inflation, flourishing corruption and frequent food shortages; and
- Often have a very rich minority that take advantage of the failed system.

  Examples: Nepal, Congo, Liberia, Afghanistan and Iraq.

Collapsed States

- Are rare and extreme versions of a failed state;
- Are ruled by the strong, with a general vacuum of authority;
- Rate poorly on all indicators of health; and
- Can return to being failed states if security is restored to rebuild and strengthen governance institutions.

  Historical examples: Lebanon, Tajikistan and Sierra Leone.

1 The World Bank, *Fragile States: The Low Income Countries Under Stress (LICUS) Initiative* [online]. (Washington: The World Bank, March 2005), [cited August 24, 2005]. <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20127382~menuPK:34480~pagePK:34370~theSitePK:4607,00.html>.

2 UK Department for International Development, *Why We Need to Work More Effectively in Fragile States* [online]. (London: DFID, January 2005), [cited August 24, 2005]. <www.dfid.gov.uk/pubs/files/fragilestates-paper.pdf>.

3 Robert Rotberg, *National–State Failure: A Recurring Phenomenon?* [online]. (Washington: National Intelligence Council, November 2003), [cited August 24, 2005]. <www.cia.gov/nic/PDF_GIF_2020_Support/2003_11_06_papers/panel2_nov6.pdf>.

4 Adapted from Rotberg, *National–State Failure*.

Weapons of Mass Destruction

Technological progress and the massive increase in global wealth will make the production or acquisition of weapons of mass destruction (WMD), from virus strains to portable bombs, both uncomplicated and relatively cheap. By 2020, the number of states and non-state organizations with access to extremely powerful weapons will be significantly larger than it is now. (See Table 2.)

While the global arsenal of WMD will be larger, many states will be constrained by regional balances of power, which will limit their freedom to use such weapons. Iran, for example, is currently surrounded by nuclear powers—with India and Pakistan to the east, Russia to the north, and Israel and the U.S. presence in Iraq to the west. In this context, the acquisition of a nuclear weapon might not radically change the regional equation or increase the risk of nuclear conflict.

Table 2
Projected WMD Capabilities by the Year 2030
(N = no capability; L = limited capability, development potential or suspended capability; W = weaponised capability)

Country	Nuclear	Biological	Chemical
United States	W	L	L
United Kingdom	W	L	L
France	W	L	L
China	W	W	W
Russia	W	W	W
India	W	W	W
Pakistan	W	W	W
North Korea	W	W	W
Israel	W	W	W
Iran	W	W	W
Iraq	W	W	W
Taiwan	L	L	W
Ukraine	L	L	L
Egypt	L	L	W
Libya	L	W	W
Syria	L	W	W
Algeria	L	N	N
Saudi Arabia	N	N	W

Note: The study does not include Canada, but there is no reason to believe that Canada will develop any WMD.
Source: U.K. Ministry of Defence, Joint Doctrine and Concept Centre (JDCC), Strategic Trends Project. <www.jdcc-strategictrends.org/Pages/st_frames.asp?view=dim&dim=7&id=0>.

Weak regimes and weak states, however, will pose a more dangerous risk. Weak regimes—such as North Korea's—might not be overly concerned about what happens to their countries or their people, while weak states—such as Afghanistan and Sudan—might not have much control over the organizations with access to WMD operating in their territory. In both cases, add poverty and inadequate technology to the mix, and another, much greater danger arises: an accident.[13] (See box, "Focused Event Analysis: A Nuclear Accident in Asia.")

Global Governance Deficit

The security risks stemming from inter-state wars, weak states, terrorism and WMD proliferation will not be offset by an expanded capacity for global governance. The United Nations (UN) is unlikely to adapt to the changing geopolitical landscape, and no real alternative appears to be emerging. A dominant characteristic of the world in 2020 will be this global governance deficit.

The challenge, once again, relates to Asia's growing prominence—which will not be reflected adequately in existing institutions. While Europe's status and power—in spite of its wealth and demographic weight—will have declined significantly by 2020,[14] it will still cling to its overrepresentation in global institutions, including the Group of Eight (G8) and particularly on the UN Security Council. At the same time, Asian countries will be split by old and deep divisions (between China and Japan, but also between China and India, Japan and Korea, and India and Pakistan) and will not be strong enough to impose change or to fashion new global institutions that reflect their collective weight and power, particularly in the face of European resistance. The Iraq crisis, and the many global governance "reform" reports that followed,[15] will not have changed the collective global security framework. Instead, the shifting geopolitical landscape will create strong ruling coalitions, with the United States in a prominent position.

A related risk, for Canada and other smaller countries, will be the predilection of the Untied States to "go it alone": losing patience with what it perceives to be ineffective international institutions and processes, and choosing instead to act unilaterally in what it sees as its own interests. There are many recent examples of such U.S. behaviour, ranging from failure to recognize the International Criminal Court and to ratify the Kyoto Protocol, to the recent decision to ignore the NAFTA Extraordinary Challenge Committee on the softwood lumber dispute. This behaviour is likely to continue, given America's extraordinary power. It could further weaken the credibility of international law and exacerbate the global governance deficit, limiting the opportunities for smaller countries to influence outcomes.

The shifting geopolitical landscape will create strong ruling coalitions, with the United States in a prominent position.

Military Prominence of the United States

In 15 years, the United States will still be, by an overwhelming margin, the most powerful military force in the world. (See Table 3.) As the only major Western society with a growing population and an open, innovative and responsive economy,[16] it will continue to dominate the world. Asia's rise and its competing claims to increasingly scarce resources will challenge the United States. This will occur in spite of a continuation of the decline in primary resource intensity because of technological advances and a shift toward a services-oriented economy, which is less dependent on resources.

Focused Event Analysis: A Nuclear Accident in Asia

Robert McNamara has recently called the world's attention to the risk of a nuclear accident stemming from the "hair-trigger alert" status of the Russian and U.S. nuclear weapons arsenal.[1] Under current rules, each country has only 15 minutes from the moment a possible attack is detected to make a decision about retaliation. The complexity of both the process and the communication requirements within and between the two governments make the risk of a decision based on faulty information extremely high. While the Russians are willing to reduce the risks significantly by eliminating the state of alert (relying instead on each state's surviving massive nuclear capability), the Bush administration will not make the compromise. So the danger remains.

Other risks of accidental nuclear threats are developing, however, whose implications are perhaps not as apocalyptic but whose prevention and containment are far more problematic.

The Nuclear Club

By 2020, the nuclear club will be larger than it is now. The capabilities of its members, including the weaker ones, will also have grown. McNamara's list of member states includes Egypt, Japan, Saudi Arabia, Syria and Taiwan. Add South Korea (or a re-unified Korea sandwiched between China and a newly nuclear Japan), Iran and Brazil to the list of current members (the United States, Russia, China, the United Kingdom, France, India, Pakistan and Israel) and briefly consider the complex web of rivalries that exists between each of these states . . . . It is an unstable mixture which, with hair-trigger alerts and less than perfect detection and communication capabilities, could become a recipe for disaster—nuclear disaster. Even assuming moderation and responsibility on the part of every single one of the political leaders involved—a big assumption—the likelihood that nuclear weapons will be used sometime in the next 15 years is high.

Rising energy demands will also contribute to the problem. Access to a limited supply of natural resources will probably drive a global revival of nuclear electricity generation; both nuclear technology and potentially fissile material will be commonly traded. It is far from clear whether existing control regimes would be able to keep up with the resulting explosion of demands on their capacities. The current paralysis in global non-proliferation discussions, along with the growing risk that terrorist organizations could acquire nuclear devices, guarantees that most countries that have the means to develop or buy nuclear weapons will do so.

Risks to Canada

The most likely location for a nuclear accident would be in South Asia or the Middle East. As with most threats discussed in this section, Canada would be a traumatized, but relatively sheltered, spectator.

The radioactive fallout over Canada would be limited, compared with many regions of the world. Hostility between the immigrant communities involved (if it were a nuclear strike between two states) could become inflamed or violent, but the massive efforts to organize rescue and aid for the victims could dilute tensions. There would be a significant short-term impact on the global economy, but we would be largely protected by our close economic links with the United States (where global capital would seek refuge) and our energy resources. Our government and citizens would be free to use our wealth to help mitigate the staggering disaster.

Finally, some Canadians (serving as part of military coalitions, emergency rescue efforts or as peacekeepers) would face risks arising from the government's decision to intervene abroad, even though our own country would remain relatively secure.

1 Robert S. McNamara, "Apocalypse Soon," *Foreign Policy* [online]. (May/June 2005), [cited June 6, 2005]. <www.foreignpolicy.com/story/cms.php?story_id=2829&print=1>.

However, the divisions within Asia, the growing insecurity of Europe, and the United States' continuing insulation from the main areas of inter- and intra-state conflict—in Asia, the Middle East, sub-Saharan Africa and South America—will create opportunities for the U.S. government to build provisional alliances, playing countries against each other to limit any unrestrained growth of power. In an increasingly Asia-centred world, a disproportionate amount of power will be waged by this partial referee, who will not shy away from joining the game, if need be.

Now, what could that mean for Canada?

CANADA: PARTIALLY SHELTERED

Even if we continue to slip in our relative economic performance (see Chapter 1), Canada will still be wealthy and stable in 15 years. However, we will have less than 2 per cent of the world's gross domestic product (GDP), only 1 per cent of the world's military expenditure, and only 0.5 per cent of the world's population. (See Table 4.) Our role in global dynamics will be marginal; the global governance deficit will further frustrate any desire we might have to exert influence.

Canada will be a "taker," not a "maker," of global security trends. However, our demographic, economic and military marginality does not have to mean irrelevance or impotence—if we engage in focused efforts with highly competent people and excellent national-level institutional support. While we will have to adapt to and manage the impact of global trends, we might also profit from certain risks and insecurities. This is especially true for the growing global competition for natural resources.

Table 3
Global Trends in Military Power

Rank	Country	Military expenditures (US$ 000s)	Military expenditures (as a % of GDP)
1	United States (2003)	370,700,000	3.3
2	China (2004)	67,490,000	4.3
3	Japan (2004)	45,841,000	1.0
4	France (2003)	45,238,000	2.6
5	United Kingdom (2003)	42,836,500	2.4
6	Germany (2003)	35,063,000	1.5
7	Italy (2003)	28,182,800	1.8
8	Saudi Arabia (2002)	18,000,000	10.0
9	India (2004)	16,970,000	2.5
10	Australia (2004)	16,650,000	2.7
11	South Korea (2004)	16,180,000	2.8
12	Turkey (2003)	12,155,000	5.3
13	Brazil (2004)	11,000,000	1.8
14	Spain (2003)	9,906,500	1.2
15	**Canada (2003)**	**9,801,700**	**1.1**
16	Netherlands (2004)	9,408,000	1.6
17	Israel (2003)	9,110,000	8.7
18	Taiwan (2003)	7,574,000	2.6
19	Mexico (2004)	6,043,000	0.9
20	Greece (2004)	5,890,000	4.3

Source: Central Intelligence Agency, *CIA World Factbook*, 2005.

Table 4
Canada's (Light) Weight in the World
(based on GDP, population and military power)

	Value	World rank	Share of world (%)
GDP (2004, CDN$ trillions)	1.318	13 (of 231)	1.8
Population (2003, millions)	32.8	37 (of 238)	0.5
Military expenditure (2003, US$ millions)	9,801.7	15 (of 170)	1.0
Military expenditure as a share of GDP (2003, per cent)	1.1	128 (of 165)	n.a.

Sources: Statistics Canada; Central Intelligence Agency, *CIA World Factbook*, 2005.

Resource Boom Risks

As a massive producer of resources and energy, Canada will benefit immensely from rising prices. In the case of oil, Canada is one of the only major suppliers with political stability and institutional soundness. In contrast to Saudi Arabia, Iraq, Kuwait, Venezuela, Kazakhstan and almost every other significant producer of oil, Canada has the ability to manage and contain the tensions that flow from resource dependence. (See box, "Will Canada Catch Dutch Disease?") Paradoxically, higher global security risks, especially surrounding other primary producers, will increase Canada's appeal to investors and will lead to potentially greater profits and economic gain.

While conflict and instability elsewhere would create certain opportunities for Canada, they would also produce significant risks. An international war in Asia or the Middle East, or terrorist attacks and regional instability, would generate volatility, uncertainty and insecurity. The best scenario for Canada and Canadians is a stable world where commodity and energy prices remain high.

The Blessings and Challenges of Geography

Our proximity to the United State will increase the risk of a terrorist assault on this country. In particular, Canada will be vulnerable to attacks meant to disrupt North American or global communication networks, or oil and energy supplies to the United States. But the United States is unlikely to leave itself open to attack through Canada. The United States will continue to take a strong interest in the security and defence of Canada's territory, consistent with its own national security interests. In the post 9/11 environment, Canada will be under increased pressure to contribute to the overall security of the continent.

In the post 9/11 environment, Canada will be under increased pressure to contribute to the overall security of the continent.

Given the differences in size, power and interests between our two countries, managing our relations with the United States is a perennial source of concern. Canada's dependence on the U.S. market ensures that trade and investment issues top the Canadian agenda, but trade irritants are a lower priority for American interests. Most U.S. citizens would be surprised at Canada's angry reaction to the softwood lumber dispute; that is, the U.S. decision not to abide by the NAFTA tribunal decision. Increasingly, the agenda for continental cooperation will combine security with economic issues, as the work plan for the *Security and Prosperity Partnership of North America* clearly demonstrates.[17]

Our location will shelter us from other risks, however. The primary market for our resources will remain the United States, placing Canada's main trade channels for energy and goods in the most secure territory in the world. No pipeline or high-tension electricity line will ever be completely impenetrable, but those linking Alberta and Quebec to the United States, for instance,

Will Canada Catch Dutch Disease?

Canada's large export-oriented resource sector is likely to expand as the global economy demands more resources to fuel its growth. This demand and expansion will create a window of opportunity for prosperity and for disparity—in the form of "Dutch Disease."

Dutch Disease refers to what happens when the discovery of natural resources crowds out other sectors of the economy. It was first observed in the Netherlands in the 1960s after the Dutch discovered large natural gas deposits in the North Sea and experienced a large increase in incoming investment and outgoing exports. As the guilder grew in strength, non-gas exports became less globally competitive and firms in the manufacturing sector began to lose markets, lay off workers and eventually stagnate.[1]

The Paradox

The idea that natural resource discoveries can be harmful is paradoxical. An increase in general wealth should improve the overall economy, even with a redistribution of income and investment. But, as the Dutch discovered, there are certain risks and side effects specific to the resource sector:

- Prices in the resource sector are often volatile, may have a declining trend in relative prices and—for non-renewable resources—have only a short lifespan.
- Committing resources to developing this sector may draw resources away from other sectors such as manufacturing, which have a higher potential to generate long-term benefits and are more capable of dynamic innovation.
- Resource industries are capital-intensive; resource exploitation leads to few permanent jobs.
- In countries with weak political structures, lucrative resource rents are often associated with corruption and other governance problems. The distortions caused by resource rents can, at the extreme, lead to violent conflict and even state failure, in what has become known as the "resource curse."[2]

A Mild Case

If Canada were to catch the dreaded Dutch Disease, it would likely be a very mild case. While the increase in the Canadian dollar has created competitive pressures and slowed down export industries in Central Canada overt the past two years, it has not precipitated a severe decline in manufacturing output or exports. Clearly, long-term appreciation would drive some manufacturing establishments out of business, but this would also be consistent with the ongoing process of economic restructuring driven by the integration of Asian developing countries into the global economy. Our resource sector is relatively intensive in capital as well as research and development, and it is capable of providing high-income employment. Finally, though Canada relies more heavily on resources than many of its OECD counterparts, this sector constitutes a small, albeit important, portion of the Canadian economy as a whole. (See Chapter 3.) But the effect of Canada's resource abundance on our role within the global economy may be difficult for some Canadians to accept. Even a modest increase in our reliance on non-renewable resources will create a stigma of being simply "hewers of wood and drawers of water," and may prove politically unpalatable.

Canadian Concerns

In Canada, the Dutch Disease phenomenon would have regional, and therefore constitutional, implications. Increased demand and prices for natural resources would shift investment and wealth away from the manufacturing centres in southern Ontario and Quebec, towards regions such as Alberta, British Columbia and, possibly, Newfoundland and Labrador and Nova Scotia. If the gap between Western Canada's economic power and its political clout expands, so could its resentment. After all, Albertans haven't forgotten the ill-fated attempt to manage the distributional impacts of the high oil prices of the late 1970s through creation of the National Energy Program. In contrast, Central Canada would be under pressure to use its current political dominance to defend the strength of its economic infrastructure, through a more nationalist economic policy, or, in the case of Quebec, through political nationalism.

The greatest concern, however, would be the impact on the North. In the absence of other industries and jobs, the resource sector would end up dominating the Northern economy. Many of the jobs (and profits) would go to non-Northerners with the specialized skills needed for the extractive industries. This would have severe effects on income distribution, the environment, social structures and traditional lifestyles. While the opportunities might create short-term gain for a traditionally disadvantaged group, there is also the risk that rapid industrial development would overwhelm the North's social structures.

1 Christine Ebrahim-zadeh, "Dutch Disease: Too Much Wealth Managed Unwisely," *Finance and Development* 40, 1 [online]. (March 2003), [cited August 4, 2005]. <www.imf.org/external/pubs/ft/fandd/2003/03/ebra.htm>.

2 For discussions about the "resource curse," see, for example, Terry Lynn Karl, *The Paradox of Plenty: Oil Booms and Petro-States* (Berkeley: University of California Press, 1997); Paul Collier, "Ethnicity, Politics, and Economic Performance," *Economics and Politics* 12 (2000), pp. 225–245.

will be among the world's safest. This protection will extend to all Canada–U.S. trade, resource and information channels—from electricity grids to computer networks and telecommunication facilities—making Canada's critical infrastructure one of the most secure in the world.

The Flip Side of Coziness

The other side of this North American coziness is that Canada will also have to deal with the fallout from U.S. world engagement. We will be perceived, from the outside, as part of Fortress America, indistinguishable from our neighbour, at least when it comes to anti-U.S. mobilizations and actions. Make no mistake—Canada

could well be a terrorist target in its own right. Terrorism will thus be the most significant direct security threat to Canada, given the overwhelming military superiority of our North American neighbour and protector.

Fallout from Foreign Instability

In terms of their potential direct impact, state failures will pose a limited risk to Canada, as most will take place in countries and regions that are geographically and economically remote, such as Africa or South America's Andean region. Haiti is the obvious exception, given the significant presence of the Haitian diaspora in Montréal. But even the implications of continuing Haitian conflict and instability will be felt primarily by the United States. This will allow Canada to rely on U.S. action or, at the very least, on significant U.S. support for our own initiatives. While an ever-deeper crisis in Haiti may pressure the Canadian government to act, violence or disturbances on Canadian soil are extremely unlikely.

There is growing evidence that immigrant communities are not integrating as successfully into Canadian society as was once the case.

While the failure of a state poses a limited risk for this country, conflict between states elsewhere could well create security threats within Canada. A war in Asia, for example, would have a profound impact in this country, since Canada's ever-growing and diverse pool of Asian immigrants almost guarantees that we will have communities from the two sides of any conflict. Indeed, there are already instances of ethnic tensions in schools in large Canadian cities that reflect disputes in South Asia and the Middle East, for example. That said, the breadth of Canada's diversity also limits discord, as communities of bystanders, from Asia as well as other parts of the world, would outnumber the Canadians with a direct stake in any conflict.

Still, tragedies such as the Air India bombing could happen again, killing hundreds and perhaps thousands of Canadians. While these kinds of events will not threaten the state itself, the fallout could be exacerbated by continued unrest abroad, especially if we fail to integrate newly arrived immigrants. Canada's experience over the last 15 years suggests a mixed record. The relative social harmony, by global standards, of cities such as Toronto, Vancouver and Montréal provides a degree of confidence in Canada's ability to maintain its social cohesion. At the same time, there is growing evidence that immigrant communities are not integrating as successfully into Canadian society as was once the case, so we cannot take past harmony for granted.[18]

Outside conflicts will pose other possible risks, through the financing or recruitment activities of foreign states or organizations involved in civil or interstate war. While difficult to predict, the impact on Canada will depend on the number of Canadians affected.

In summary, Canada's shelter will not be perfect, but our stability, resources and geographical location will help to insulate us from the more traditional threats to world security that will exist in 2020.

SOCIAL INTEGRATION, DIS-INTEGRATION AND THE NEW CHALLENGES TO SOCIETY

The social implications of current global dynamics and integration create new sources of insecurity for individuals and nations. The most important underlying trend is the growing disparity between and within countries—a gap that shows no signs of reduction despite the growing wealth that globalization produces. In the spaces created, both within and between countries, two big security threats are likely to thrive: infectious diseases and transnational crime.

GLOBAL TRENDS: POLARIZATION

Pervasive Disparities

The world of 2020 will display striking disparities.[19] While life expectancy will have improved in much of the Western world, Asia and the wealthiest parts of Latin America, it will have levelled out in Russia and Eastern Europe, and will have declined significantly in sub-Saharan Africa and Andean Latin America.

Globalization will bring wealth and prosperity, but the aggregate numbers will hide huge disparities. By 2020, accelerated growth in China, India, Indonesia and Vietnam will make hundreds of millions of poor people richer and push global poverty statistics downwards. GDP per capita will rise in most countries (albeit at a slower pace in the United States, Canada, Western

Europe and Japan),[20] and the absolute number of destitute people will fall.[21] The outcome will be a limited, but real, global convergence of incomes. However, this convergence will be somewhat misleading. It will mask the growing income gaps within countries, as well as the continuing gaps between rich and poor in the world as a whole and in developing countries. (See tables 5 and 6.)

The potential for problems emerging from growing income gaps within and among countries is huge. Many commentators have pointed to endemic poverty as an explanation for what went wrong in New Orleans in the aftermath of Hurricane Katrina. New Orleans was vulnerable to social breakdown because so many poor people lived there. Poverty prevented these people from evacuating, and, in the absence of help from the government, chaos ensued.

Revenues in almost every country will become more concentrated, with small segments of the population capturing a growing portion of the wealth. While this concentration of income will be particularly intense in China and other fast-growing Asian economies, it will also remain high in Latin America, and increase in North America, most of Western Europe, Eastern Europe, and even Africa.

National capacity to govern and provide services will also be widely divergent. Wealthy societies will be able to exploit technological advances and managerial competence to ensure order and provide health, education and other services to their population; less wealthy states will have patchy coverage and delivery; and the poorest will have no coverage at all. Military capability will be concentrated in a small number of countries, with the United States holding a dominant position. Advanced policing and surveillance capabilities will be poorly distributed.

Technological Exception

One exception to this polarizing trend will be access to information and communications technology. As cheap networks expand, connectivity will become increasingly disconnected from wealth. By 2020, more of the world's poor will have access to cellphones and the Internet. While access to these technologies will improve their quality of life, it will also make many poor people more aware of disparities of income and wealth, both within and between countries. Thus, technological diffusion could increase social tensions.

Table 5
Income Distribution for Selected Countries
(Gini coefficient)*

	1960	1980	2000	Change in distribution of income between 1960 and 1980	Change in distribution of income between 1980 and 2000
South Africa	60.70	60.70	60.70	=	=
Brazil	49.70	57.90	52.10	+	–
Mexico	56.00	56.20	51.80	+	–
Nigeria	39.10	39.10	50.40	=	+
Venezuela	43.20	38.10	48.90	–	+
United States	36.30	39.70	45.70	+	+
Thailand	44.00	44.00	44.80	=	+
Argentina	47.00	44.00	44.00	–	=
Vietnam	39.30	39.30	43.10	=	+
China	29.50	29.50	40.50	=	+
Egypt	32.10	32.10	39.40	=	+
United Kingdom	27.70	27.40	36.20	–	+
Russia	24.70	24.70	35.60	=	+
France	51.40	30.00	32.90	–	+
India	32.70	32.20	32.70	–	=
Poland	25.90	24.80	32.10	–	+
Canada	**32.20**	**31.00**	**31.80**	**–**	**+**
Indonesia	34.30	34.70	31.50	+	–

*The lower the Gini coefficient, the more equitable the distribution of income.
Source: Surjit Bhalla, *Imagine There's No Country: Poverty, Inequality, and Growth in the Era of Globalization* (Washington: Institute for International Economics, 2002), Table C.1, pp. 218–223.

Table 6
Consumption Shares of Rich and Poor
(per cent)

		1960	1980	2000
Developing World	Consumption by poorest 20 per cent of developing countries' population	3.9	3.2	4.38
	Consumption by richest 20 per cent of developing countries' population	59.93	65.7	56.29
World	Consumption by poorest 20 per cent of the world's population	2.11	1.61	2.5
	Consumption by richest 20 per cent of the world's population	67.77	71.4	69.5

Source: Surjit Bhalla, *Imagine There's No Country: Poverty, Inequality, and Growth in the Era of Globalization* (Washington: Institute for International Economics, 2002), Tables 12.2, 12.3, pp. 198–199.

Despite wide access to communications technologies, other technologies will remain out of reach. The ability to police standards—in agriculture and food production in particular—will remain concentrated in the wealthy North and in a few company-controlled export zones. Food quality will vary drastically from poorer to richer countries, with significant impacts on health standards and quality of life.

A Political Divide

The last big divide will be political. The wave of democratization of the 1990s could falter as democracy fails to bring prosperity to the developing world. Quite a few countries may revert to authoritarian regimes, although some will hold regular, but largely inconsequential, elections. Russia's semi-authoritarian regime will probably be more entrenched than ever, and China will still not have opened significantly, in spite of the pressure from its growing middle class.

Conflict over power and governance will generate tensions, both within countries and between them. States with adequate control and defence capabilities will be able to manage, while weaker states will become weaker still.

By 2020, globalization will have created a complex world of great prosperity and disparity. Our interconnectedness will leave us open to opportunities and new vulnerabilities—infectious disease and organized crime.

New Vulnerabilities

Infectious Diseases

AIDS threatens to engulf the continent of Africa. The number of those afflicted, as well as estimates of the spread of the disease, is horrendous—almost beyond comprehension. In 2004, the sub-Saharan region of Africa accounted for only 10 per cent of the world's population, but was home to more than 60 per cent of its HIV carriers—25 million people in Africa are living with AIDS. That same year, 3.1 million Africans became newly infected and 2.3 million died. While the prevalence of AIDS on the continent as a whole is now 7.4 per cent, it has reached almost 30 per cent in South Africa and 40 per cent in Botswana, with women beginning to bear the brunt of this devastating disease (13 women for every 10 men in southern Africa).[22] And this epidemic has yet to reach its global peak.

Infection rates in many African countries continue to rise, and they are also escalating in Russia, China and India, and in countries where the problem had previously been considered minor, or even marginal.[23] In the next 15 years, this trend will play out with potentially devastating economic and social consequences. For each country, the key issue will be the government's ability to sustain administrative and health capabilities in the face of an epidemic that directly affects its staff. Several African countries appear to be caught in this trap—AIDS destroys the government's capacity to deal not only with AIDS itself but also with any other challenge, including the provision of basic law and order.[24] What could very well multiply in coming years are health crises precipitating governance crises, leading to more failed states.

To make matters worse, there is a growing consensus that a large-scale, and possibly catastrophic, flu epidemic is imminent.[25] While it will not be the only health crisis threatening world populations,[26] it will be the most menacing. This long-awaited flu virus is expected to be so contagious that any attempt to close off borders and control migration would be completely ineffective.

The number of people in Africa afflicted with AIDS, as well as estimates of the spread of the disease, is horrendous—almost beyond comprehension. And this epidemic has yet to reach its global peak.

The consequences would be devastating. Extrapolating from the 1918 flu epidemic, the estimated number of victims ranges between 180 and 360 million. While the toll could be lighter, it could also be much heavier, as the virulence of the most likely candidate—the H5N1 avian virus—is much higher than that of the Spanish flu of 1918–19.[27]

Predicting the economic impact of such a disaster is simply not possible. Where severe acute respiratory syndrome (SARS) killed only 800 people globally, estimates of its total costs, including medical expenses and impact on economic activity, reach CDN$50 billion.[28] In 1999, what experts from the U.S. Center for Disease Control considered a "medium-level epidemic" was expected to have *direct* costs to the U.S. economy of

approximately US$166 billion, excluding disruptions to commerce and society.[29] The indirect costs would be staggering. Aside from the sheer dent in the global workforce, an epidemic of medium proportions would break global production chains, shatter trade and impede the delivery of services involving human contact. A flu pandemic on a large scale would throw the world into a sudden and possibly dramatic global recession.

While the pandemic would spread throughout the world, the impact would be highly skewed. Asia would be the hardest hit, as most scenarios suggest the flu would start in its markets and cities, where extremely high concentrations of people and animals and poor sanitary conditions favour both mutations and transmission. African countries, with populations weakened by AIDS, tuberculosis and malaria, would also pay a high price.

Even countries with vaccine-production capacities (only nine countries in 2005)[30] would not be able to supply enough doses to protect themselves. Current world production (300 million doses) would only partially immunize the population of the United States, as more than one dose per person would probably be needed. Global coverage would be almost impossible, even assuming significant increases in production capacity,[31] because producing countries would keep their output for themselves and poorer, non-vaccine producing countries would be left out.

The number of failed states would certainly increase, since poorer countries rely on a small pool of qualified leaders and public servants. Military and police capabilities, already affected disproportionately by the AIDS epidemics in much of sub-Saharan Africa, would decline precipitously. Administrative capacities would also shrink, hindering any attempts to deal with the immediate crisis or to recover afterwards.

A pandemic would feed on and heighten existing inequalities. It would not only kill millions of people, it would have the power to close borders, destabilize economies and topple unstable governments. It would elevate the more traditional security risks examined in the first section of this chapter, and would help shape a world where other threats could blossom.

Transnational Crime

Criminal organizations are not waiting for some kind of epidemiological disaster to enrich their coffers. Current estimates put the value of criminal activities at between US$500 billion and US$1.5 trillion.[32] Illegal drugs alone are worth around US$300 billion, which is larger than the GDP of 163 countries.[33] This value is likely to increase in coming years, riding the many waves of globalization—from the increasingly efficient transportation and communication networks, to the growing inequality and the perpetuation of pockets of extremely poor governance and weak administrative and repressive capability.

The value of illegal drugs—around US$300 billion—is likely to increase in coming years, riding the many waves of globalization.

In the coming decades, drug production and trafficking is expected to remain the most significant illegal activity in the world. Its pattern, however, is changing. While cocaine and heroin still dominate the global picture, wealthier countries are moving quickly towards locally produced synthetic drugs (methamphetamines, ecstasy, and possibly other yet-to-be developed "designer" drugs). As a result, traditionally dominant South–North transfers are losing their primacy. Production in the South continues to increase, feeding declining prices for cocaine and heroin, slowing the consumption decline in the North and reorienting trafficking towards the South and the East. This pattern holds true for the Americas, Eastern Europe and Asia. In China, for example, current migration to urban areas—representing the largest movement of people in human history—has increased China's wealthy, urban population and disrupted traditional social structures. This has created lucrative openings for the drug trade.

The transnational model pioneered by drug traffickers is, and will remain, the norm. The infrastructure is established and can quickly be converted to transport new "products," from people and organs, to legal drugs. A case in point is the re-export of AIDS drugs, sold in Africa at or near cost for humanitarian reasons, to Europe by Central African traffickers.[34]

Technological progress will further enhance criminal activity by providing efficient transportation and communication networks. The sheer volume of trade, transaction and data transfers supported and enhanced by the new technologies complicate surveillance. Combined with liberal trade regimes, technological progress will create new windows of opportunity for criminal activity. Caribbean-based Internet casinos, for example, use servers based in Canadian First Nations reserves to bypass U.S. laws and offer their "services" in the United States, where Internet gambling is illegal.

Corruption, poverty and a very poor distribution of administrative and repressive capabilities will make it easier for criminal networks to exploit governance holes.

The growing wealth of criminal networks will also give them the power and means to infiltrate, manipulate or take over small and weak states. Bolivia's experience in the 1980s with a drug trafficker named Roberto Suarez—he offered to pay the country's external debt in exchange for immunity—might cease to be exceptional. The problem, while especially acute for failed or failing states that simply do not have the ability to control their whole territories, is not limited to unstable countries or regions. Brazil, by no means a weak or failed state, is proving incapable of controlling drug trafficking, which has taken over the periphery of its largest cities.[35] While Brazil will probably be able to contain the problem because of its huge wealth and administrative capability, weaker states such as Nicaragua, Haiti, Afghanistan, Nigeria, Côte d'Ivoire, Cambodia and Myanmar will have little control. Worse still are states, such as Pakistan, where massive drug trafficking and high levels of corruption coincide with nuclear capabilities.

As the economic centre of the world gravitates towards the East, corruption in India and China will create new challenges and problems. More stable government institutions, in both cases, will be critical for continued economic growth. Yet corruption continues to plague India and is a quickly growing problem, at all levels, in China.

Corruption, poverty and a very poor distribution of administrative and repressive capabilities will make it easier for criminal networks to exploit governance holes. Now, add a pandemic to that stew.

CANADA: VICTIMS AND VECTORS

While Canada can be typified as a "sheltered taker" in the face of traditional threats, our relative safety starts to shrink when we begin to confront the non-traditional threats that will slip through the holes of the patchwork world of 2020. Canada, in fact, will be poorly protected, partly because the ground in which the threats will develop lies within our borders.

Pandemic

Canada would not escape the imminent pandemic, and given the lack of global preparedness, panic would reign.[36] An H5N1 avian flu epidemic could kill as many as 1.6 million Canadians.[37] It would paralyze our manufacturing sector; border disruptions would shatter integrated production lines and could last more than a year. Direct medical costs could surpass hundreds of millions of dollars. (See box, "Focused Event Analysis: A Minor Pandemic in Canada.")

While Canada would be deeply affected by the overwhelming global impact and aftershock, we would be in as good a position to respond as any other developed country. As one of the nine countries manufacturing vaccines, we could possibly produce enough to inoculate a significant portion of our population about six months after the beginning of an epidemic—with the lag time being even shorter by 2020 if current technological progress continues. Our solid human resource and public administration capabilities would probably allow us to weather the crisis without long-term damage to national governance. An added asset is that most Canadians are healthy and would probably have as good a survival rate as any people on the planet. However, this would not be the case for some Canadians.

The Inequality Factor: Vectors and Victims

Health crises and criminal activity will enhance existing inequalities. Concentration of income and regional disparities is on the increase. The continuing challenges confronting Canada's public health-care system will have created profound differences between those who can afford private care and those who cannot.

Focused Event Analysis: A Minor Pandemic in Canada

The Canadian government predicts that a minor flu pandemic would kill between 11,000 and 58,000 Canadians, hospitalize between 34,000 and 138,000, sicken between 4.5 and 10.6 million, and cost between CDN$10 billion and $24 billion in direct and indirect health costs.[1] These estimates are conservative.

Compared with the devastation incurred by the 1918–19 flu pandemic, which killed about 50,000 Canadians out of a population of 8,148,000 (a death rate of 6.25 per 1,000),[2] the estimated death rates for a minor flu pandemic are remarkably (perhaps unbelievably) low, ranging between 0.3 and 1.7 per 1,000. These lower rates might be justified by Canada's generally healthier population, its stronger health-care system and probable access to antiviral drugs and vaccines. But they might not . . . .

The most likely culprit, the H5N1 avian flu virus, could be much more virulent than was the case of the 1918 Spanish flu.[3] Antiviral drugs would be in limited supply. Current stocks could treat 960,000 people,[4] but they are not enough to treat hospitalized victims (34,000–138,000) and use as prophylaxes for health-care workers (600,000), essential service providers (1 million) and the 9 million or so persons at high risk of severe or fatal outcomes following influenza infection.[5] It will take months to develop vaccines that might reach the Canadian population more than six months after the beginning of the outbreak.[6]

If the number of victims exceeds the estimates, the cost would also skyrocket, since more than 80 per cent of the estimated economic losses are associated with loss of life.[7] Current calculations of cost exclude disruptions to commerce and society[8] (such as the closure of schools, factories, offices and other public places where large numbers of people meet) and are therefore low estimates.

The scenario for Canada, however, is less bleak than for other parts of the world. Our vaccine production capacity, at between 0.3 and 0.4 doses per head, was the highest in the world for the years 2000–03.[9] Canada's largest producer has a current capacity (20 million doses, with a projected production for the year 2007 of 50 million doses) that puts Canada well ahead of every other nation.[10] The total production capacities of the United States and Western Europe in 2003 were, respectively, 84 million and 76 million doses.[11]

While the vaccine will arrive too late to ease the first blow, Canada's experience with the 2003 SARS outbreak helped prepare our health-care systems and workers for the eventuality of an epidemic.

Preparedness aside, some of Canada's biggest challenges in managing a minor pandemic might arrive along the vectors of inequality. Viral death rates are consistently correlated to poverty. AIDS is a spectacular recent global example, but even for the 1918–19 flu, poorer countries were much more harshly affected than richer ones—while Canada's death rates hovered around 6 per 1,000, they were between 4 and 8 times higher in sub-Saharan Africa.[12]

In Canada, the effects are likely to play out along regional, social and ethnic lines. While major urban centres will be better equipped, they will also have larger concentrations of poorer and less healthy people. Aboriginal people—disproportionately affected by diseases such as tuberculosis and AIDS, and more concentrated in isolated communities with poorer general health conditions—will be particularly vulnerable.

The equality issue, however, has another dimension. The first doses of vaccine will come in late and in small quantities, with enough to treat a minority of Canadians. Decisions will have to be made about who is treated and when.

Canada's Pandemic Influenza Plan, for instance, has created a ranking of priority groups: 1–Health-care workers, paramedics and ambulance attendants, and public health workers; 2–Providers of essential services; 3–Persons at high risk of influenza infection; 4–Healthy adults; and 5–Children 24 months to 18 years of age.[13]

Rationales for priority vaccination, based on ethical, epidemiological and practical considerations, are always disputable. The issue could generate political debate and tension. As Martin Meltzer and his colleagues from the Center for Disease Control have pointed out: "Society should prepare to debate the criteria of who should be vaccinated first against the next influenza pandemic . . . A key starting point for such a debate will be the definition of the objective(s) of a pandemic influenza vaccination intervention."[14]

1 Public Health Agency of Canada, *Canadian Pandemic Influenza Plan* (Ottawa: PHAC, February 2005), p. 19. The estimates are based on a widely used U.S. Center for Disease Control study: Martin I. Meltzer et al., "The Economic Impact of Pandemic Influenza in the United States: Priorities for Intervention," *Emerging Infectious Diseases* 5, 5 (September–October 1999).

2 Niall P.A.S. Johnson and Juergen Mueller, "Updating the Accounts: Global Mortality of the 1918–1920 Spanish Influenza Pandemic," *Bulletin of the History of Medicine* 76, 1 (Spring 2002).

3 Laurie Garrett, "The Next Pandemic?" *Foreign Affairs* 84, 4 (July/August 2005).

4 Public Health Agency of Canada, *Pandemic Influenza* [online]. (Ottawa: PHAC, 2004), [cited August 1, 2005]. <www.phac-aspc.gc.ca/influenza/pandemic_e.html#8>.

5 Public Health Agency of Canada, *Canadian Pandemic Influenza Plan*, Annex D, p. 100.

6 Public Health Agency of Canada, *Canadian Pandemic Influenza Plan*, Annex E, p. 105.

7 Meltzer et al., "The Economic Impact of Pandemic Influenza in the United States," p. 664.

8 Ibid., p. 659.

9 World Health Organization, "Global Distribution of Influenza Vaccines, 2000–2003," *Weekly Epidemiological Record*, 79, 40 [online]. (October 2004), [cited August 4, 2005]. <www.who.int/wer/2004/wer7940.pdf>, p. 366.

10 ID Biomedical Corporation, ID Biomedical Receives Clearance for Fluviral Clinical Testing in the U.S., [online]. (January 7, 2005), [cited August 4, 2005]. <www.idbiomedical.com/vaccines_frameset.html>, and Fluviral S/F, [online]. [Cited August 4, 2004]. <www.idbiomedical.com/vaccines_frameset.html>.

11 World Health Organization, "Global Distribution of Influenza Vaccines, 2000–2003."

12 Johnson and Mueller, "Updating the Accounts: Global Mortality of the 1918-1920 Spanish Influenza Pandemic," p. 110.

13 Public Health Agency of Canada, *Canadian Pandemic Influenza Plan*, Annex D, pp. 100–101.

14 Martin I. Meltzer et al., *Modeling the Economic Impact of Pandemic Influenza in the United States: Implications for Setting Priorities for Intervention* [online]. (Atlanta: National Center for Infectious Diseases, Centers for Disease Control and Prevention, 1999), [cited August 10, 2005]. <www.cdc.gov/ncidod/eid/vol5no5/melt_back.htm>. This is a companion paper to Meltzer et al., "The Economic Impact of Pandemic Influenza in the United States: Priorities for Intervention."

Above all, the gap between the living conditions of Aboriginal people and the rest of the population will still exist and, in many areas, will have continued to widen. (See Table 7.)

This disparity will be particularly glaring for health issues. While Aboriginal people's health conditions are now converging with those of the rest of the population, recent progress could be wiped out by an HIV/AIDS crisis. In 2003, Aboriginal people accounted for 25.3 per cent of all positive HIV test reports that indicated ethnicity, up—*by a third, in only five years*—from 18.8 per cent in 1998. [38] A recent study in British Columbia suggested that the high prevalence of hepatitis C among young Aboriginal people foreshadowed an epidemic "of African proportion."[39] Unless this deadly trend is quickly reversed, by 2020 HIV/AIDS in Canada will have become a largely Aboriginal disease.

Add the higher prevalence of drug-resistant tuberculosis and hepatitis to the mix, and a flu pandemic would devastate Aboriginal populations, a reminder of the disastrous age of European arrival on the continent and of the 1918–19 Spanish flu epidemic, which wiped out whole Aboriginal communities.

As in the rest of the world, continuing or increasing inequality will deflect infectious disease and pandemic threats and put a disproportionate burden on those most vulnerable. For Canada as a whole, this means that a major source of health insecurity lies within our boundaries, in poor Northern communities and in the streets of our urban cores.[40]

Table 7
Inequalities in Canada: A Focus on Aboriginal Canadians

	Non-Aboriginal Canadians	Aboriginal Canadians
Average income, 2000	$29,769	$19,132
Low income, 2000 (share of total population)	16.2%	34%
Unemployment rate, 1997	7.4%	19%
Life expectancy, 2000:		
• males	76.3 years	68.9 years
• females	81.5 years	76.3 years
Suicide rate, aged 15–24, 2000:		
• males	24 per 100,000	126 per 100,000
• females	5 per 100,000	35 per 100,000
Education: share of population . . .		
• without at least high school	31%	48%
• with a university degree	49%	15%

Sources: Statistics Canada; Canadian Institute of Child Health.

Inequality would also affect the way in which transnational crime manifests itself in Canada. Poorer sections of the population are not only recruiting grounds for criminal gangs, they are also a primary market for their "goods." The correlation between relative poverty, criminality, drug addiction and gaming addiction is unlikely to change.

The high prevalence of hepatitis C among young Aboriginal people foreshadows an epidemic "of African proportion."

Once again, the impact risks are higher in the Aboriginal population. This is partly because of social and economic conditions, but it is also because that population has the youngest youth cohort of any group in Canada—one with high unemployment and an elevated school dropout rate. Predictably, Aboriginal people are also overrepresented in the prison population (17 per cent of total)[41] and among intravenous drug users. For Aboriginal communities as a whole, the growing penetration of gambling, the high incidence of problem gambling and the high rates of youth unemployment create favourable conditions for criminal network infiltration.[42]

Obviously crime, transnational or not, will also have other vectors into Canada. French Canadian chapters of the Hells Angels and the Montréal Italian Mafia have been joined by gangs from China, Vietnam and the Caribbean. With increased immigration, ethnic networks will continue to have a significant influence in criminal activities. It is not that ethnic networks are more likely to be criminal, but that ethnic networks, which are based on "presumed kinship," provide a higher degree of trust in a field where formal social control mechanisms are, by definition, weak.

Health and social issues could very well be the most important human security challenges confronting the Canadian government and society. These challenges

will likely pivot around the most marginalized groups and individuals in society—as vectors, but especially as victims. To succeed, policy interventions will need to address social exclusion itself.

MARKETS, TECHNOLOGY AND VULNERABILITY

This section examines one of the more controversial aspects of human security: the extent to which economic and technological trends pose threats to general security and well-being. As the world relies increasingly on market forces to allocate resources within and between national economies, different, and possibly greater, risks to our individual and collective well-being will emerge.

Over the next 15 years, many of the world's economies will keep growing, but at greatly varying rates (see Chart 1), and the market itself will be in flux. Competition will enhance both prosperity and vulnerability. Specialization will increase rewards as well as risks of displacement. Technology and integration will allow us to take advantage of global opportunities *and* make us more vulnerable to accidental or intentional interruptions.

GLOBAL TRENDS: INTEGRATION

Five basic trends will affect the economic and technological environment of the future: growth, innovation, specialization, liberalization and integration. All five are interdependent and have become collectively embedded in most conceptualizations of globalization. Along with most other observers, the U.S. National Intelligence Council describes globalization as a megatrend that will drive many of the critical political and economic developments of the next decade and a half.[43] (See box, "Globalization Unpacked.")

These five trends will feed off each other, with the consequences rippling and interacting at international, national and individual levels. An expanded global economy will see more economically and technologically specialized regions and countries, increasingly integrated through international markets. But this global expansion will harbour a multitude of distributional inequalities and risks.

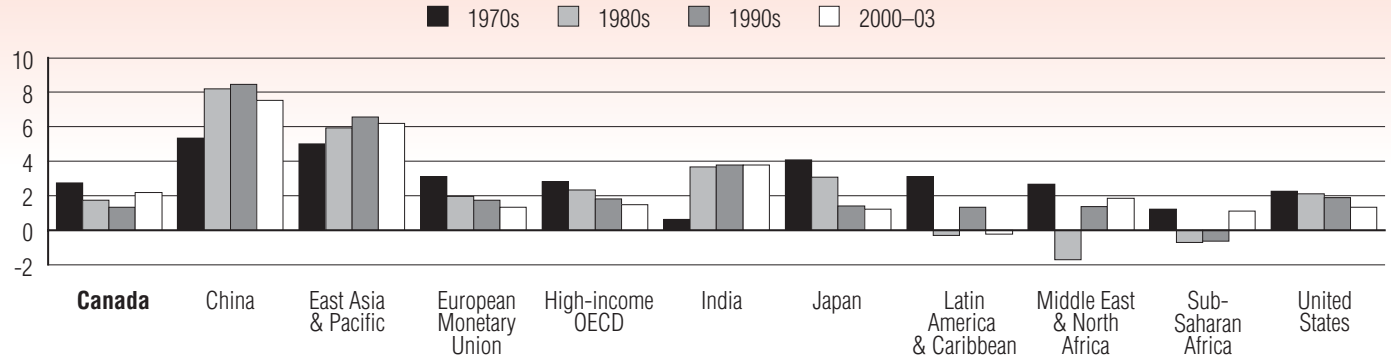
Globalization will drive many of the political and economic developments of the next 15 years, bringing with it a multitude of distributional inequalities and risks.

Convergence Effect

Countries

By 2020, there will be limited global economic convergence. While global living standards will be rising, on average, the progress will be due mainly to the successful integration of a small number of very large developing countries—notably China and India—into the global economy.

Chart 1
Average Annual GDP Growth Rate for Selected Countries and Groups, 1970–2003
(per cent)



Source: World Bank, *Global Development Indicators*, 2005.

Globalization Unpacked

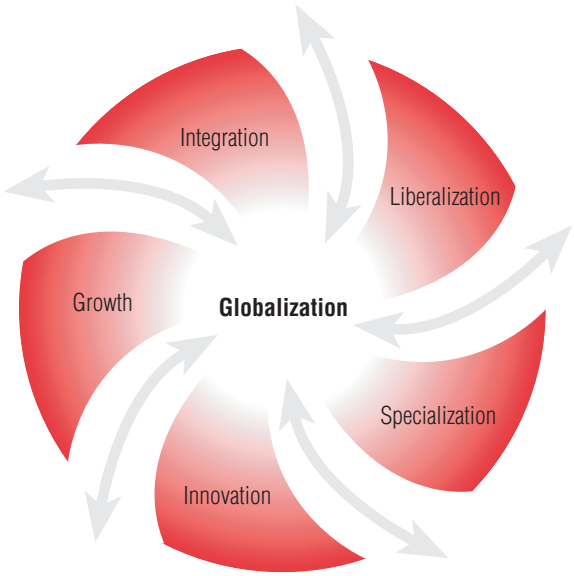
Five trends will determine the economic and technological environment of the future: growth, innovation, specialization, liberalization and integration. All five are interdependent and collectively embedded in most conceptualizations of globalization.

Growth
Economic growth will continue. The few existing long-term economic forecasts are essentially projections that use current average growth rate trends. The U.S. National Intelligence Council, for example, estimates that in 2020 the world economy could be 80 per cent larger than in 2000, with a 50 per cent higher average per capita income.[1] Not surprisingly, most estimates show that growth will be concentrated in emerging markets, such as China and India,[2] but even sophisticated forecasts rarely consider how this expansion will influence global income disparities.

Innovation
Innovations in technology, production and organizational management structures adopted by firms in their search for competitive advantage will drive much of the world's economic growth, especially in relatively wealthier countries. Levels and trends in innovation are well documented in the Conference Board's benchmarking exercise. (See Chapter 1.)

Specialization
It will become easier and more viable for countries, firms and individuals to become specialists. Many countries will find their production and exports increasingly concentrated in fewer sectors as they build on their comparative advantages. Firms will also find it easier to focus on core markets—either by divesting themselves of their other interests, or by decentralizing to increase the autonomy of their various operations. Individuals will probably need more specialized skills to compete in the job market. Mastering the complexities of new workplace technologies will allow them to exploit these skills through a variety of short-term contracting and consulting arrangements.

Globalization Framework



Source: The Conference Board of Canada.

Liberalization
Liberalization, perhaps the most controversial aspect of globalization, is a consequence of a decision by governments to rely more heavily on market forces for the allocation of goods, services and factors of production. Liberalization is most visible in deregulation, privatization and the removal of barriers to domestic and international commerce. Susceptible to reversals in government policy, liberalization is one of the most volatile trends affecting economic prosperity and security. Future scenarios seem split in terms of trade liberalization, even within the same organizations. Both the U.K. Ministry of Defence[3] and the U.S. Commission on National Security[4] predict that the private sector will take a larger role in determining international commerce, but they also identify a strong movement towards increased protectionism.

Integration
While the degree of future global economic integration will depend on the outcome of the contest between liberalization and protectionism, other forms of integration will be affected more by technological developments than regulatory ones. Infrastructure, especially in communications, will continue to expand and integrate across borders. Firms will become more integrated through production linkages; individuals will engage in a broader range of economic and social activities, less limited by the constraints of time or geography.

1 National Intelligence Council, *Mapping the Global Future: Report of the National Intelligence Council's 2020 Project* [online]. (Washington: NIC, 2004), [cited June 20, 2005]. <www.cia.gov/nic/NIC_globaltrend2020>, p. 29.

2 The World Bank, *Global Economic Prospects and the Developing Countries* (Washington: The World Bank, 1997).

3 UK Ministry of Defence, Joint Doctrine and Concept Centre, *Strategic Trends Project: The Military Dimension* [online]. (Swindon: JDCC, January 2003), [cited May 30, 2005]. <www.jdcc-strategictrends.org/Pages/st_frames.asp?view=dim&dim=7&id=0>.

4 U.S. Commission on National Security/21st Century, *New World Coming: American Security in the 21st Century. Supporting Research and Analysis* [online]. (Washington: U.S. Commission on National Security, 1999), [cited August 14, 2005]. <govinfo.library.unt.edu/nssg/NWR_A.pdf>.

Globalization will leave other parts of the world behind. Much of sub-Saharan Africa, for example, will remain unattached to the global economy, with a sizable percentage of their populations living in dire poverty. Many developing countries will continue to rely primarily on cheap, unskilled labour, or on natural resources. Research and development, as well as other technology-intensive activities and processes, will be concentrated in countries that are already relatively advanced. The demand for primary resources, especially energy, will expand dramatically as the Asian economies continue their rapid growth.

While the future will generate far more wealth, this wealth will be shared even less equally than now. The effects on human well-being and security will depend, in large part, on which end of the distribution curve countries find themselves.

Markets

Markets will emerge as the primary mechanism for resource allocation within and between countries. Fewer domestic markets will be sheltered from their international counterparts, as suppliers and buyers will be able to sell or purchase their wares through an ever-expanding global marketplace. (See Chart 2.) The communication and transportation infrastructures that link markets will also become increasingly integrated, with multiple and conflicting consequences. While producers and consumers will be more closely connected and networks will be more expansive, competition will intensify. Expanded markets (in terms of both growth and integration) will allow suppliers to tailor goods and services to specific consumer needs, without sacrificing efficiencies of scale. Niche products, however, will themselves be refined further, generating close substitutes that will increase market sensitivity to price fluctuations.

Corporations

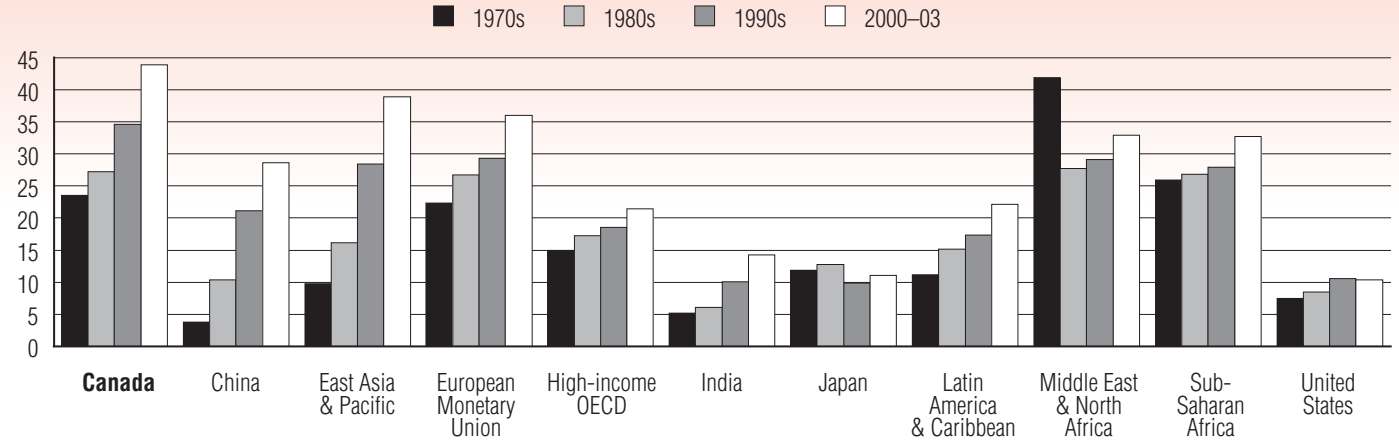
The new economy will undoubtedly influence how corporations build and organize themselves, but predictions paint two contrasting and contradictory images. The first is of an enormous international and vertically integrated industrial polyglot capable of manipulating governments and markets, and moving activities and revenues to take advantage of the shifting opportunities offered by different locations. According to critics of the current international economic system, these corporations will be the chief villains of globalization—responsible for exploiting labour, devastating ecosystems, and corrupting governments.[44]

The alternative portrait of the typical corporation formed by the new economy is more benevolent. This firm is smaller, leaner and more flexible. It is more specialized, more sensitive to its customers, more efficient and more reliant on technology. It is also more closely linked to other firms farther up and down the production chain, and more fully integrated into a complex and cutthroat international economy through marketing, research, investment and trade.

One image of the typical corporation formed by the new economy is of an enormous international and vertically integrated polyglot capable of manipulating governments and markets. The alternative portrait is more benevolent, leaner and more flexible.

Management expert Peter Drucker points out that ". . . one thing is almost certain: in future there will be not one kind of corporation but several different ones."[45] These competing visions, however, have a common element: a focus on specialized production units more closely linked through increasingly international networks.

Chart 2
Trade as a Share of GDP, 1970–2003
(per cent)



Source: World Bank, *Global Development Indicators*, 2005.

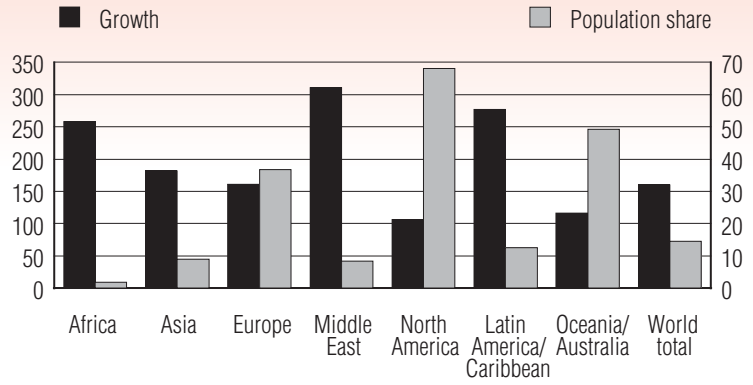
INTEGRATED MARKET-BASED ECONOMY, INTEGRATED MARKET-BASED RISKS

An integrated, technologically advanced and market-based global economy will create new opportunities. It will also generate risks and insecurities. For example, the integrated global economy is increasingly dependent on sophisticated logistics and, hence, is vulnerable to disruptions to the supply and flow of information, resources and goods. Conversely, global integration creates a strong incentive to protect the infrastructure of global supply chains. As countries become interdependent, it is in their interest to cooperate and avoid conflict. Increased specialization results in gains from trade and higher average incomes, but it renders countries, corporations and individuals less diversified and thus more susceptible to risk. Competitive pressures to reduce costs result in a lower degree of redundancy that could potentially weaken governments' ability (or will) to confront, proactively or reactively, security risks or crises.

Disruptions

Complex, integrated and internationalized resource, production and information channels are more sensitive to disruptions from competitive pressures, accidents or design. The Organisation for Economic Co-operation and Development (OECD) has argued that intra-industry and intra-firm trade increase the speed with which shocks are transmitted through an industry[46]—though corporate and supply chain integration may provide a degree of insulation from transitory market shocks and competitive pressures. Supply chains and integrated production using just-in-time methods will be particularly vulnerable, due to smaller inventories of intermediate inputs and a shortage of alternative sources or substitutes.

Chart 3
Growth and Population Share in Internet Use, 2000–05
(per cent)



Source: Adapted from Internet World Stats.

Technology

Technological innovation and integration, especially in the field of communications, has changed how we live, work, play and perhaps even love. Globally, both Internet usage and the share of the population using the Internet continue to grow at an amazing rate. (See Chart 3.)

Hackers may maliciously disrupt the operation of important computer systems, compromising human safety and well-being.

This rapid expansion will continue as populations in developing countries come online, creating new risks and insecurities that will be as novel and dynamic as the pace of technological change itself. Power outages, software crashes, hardware malfunctions and infrastructure failures will leave us open to disruptions in both our work and leisure activities. Our reliance on technology will also increase our vulnerability to hackers, viruses and other technology-based threats. (See, for example, boxes "Focused Event Analysis: A Cyber Attack on the Financial System" and "Exploiting Vulnerable Groups Through Technology.")

While reliable statistics on the extent of computer hacking are unavailable, one report estimates that computer viruses and hacking cost U.S. businesses more than US$266 billion per year, an implausible 2.5 per cent of U.S. GDP.[47] As more people, businesses and governments become connected through computer systems, vulnerability (and the extent and cost of computer viruses and hacking) will increase. The risk is that hackers may maliciously disrupt the operation of important computer systems, compromising human safety and well-being. (See box, "Focused Event Analysis: A Cyber Attack on the Financial System.") While the future will undoubtedly include security improvements, history suggests that hackers and viruses will continue to abound—becoming more sophisticated, complex and resistant to protective measures.

Focused Event Analysis: A Cyber Attack on the Financial System

Each day, individuals, businesses, institutions and governments transfer trillions of dollars around the globe. Most of these international monetary transactions are cleared through two trading systems: the Clearing House Interbank Payments System (CHIPS)[1] and The Society for Worldwide Interbank Financial Telecommunications (SWIFT).[2] Together, these two systems handle more than 6,270,000 payments *per day*. While exceptionally secure, CHIPS and SWIFT have a global and financial reach that makes them attractive targets for hackers or terrorists.

The people who provide security to computer and communications systems for financial institutions are in a constant battle with opponents trying to infiltrate the systems. While most security breaches have been relatively minor, the fact that they do occur makes a major security breach conceivable. So, imagine that a criminal or terrorist group were able to bypass the security system of a financial institution involved in large international transactions . . .

The Scenario

Hackers, either criminal or terrorist, infiltrate the financial transfer computer system. They divert money from approved transactions to unauthorized destination accounts. Discrepancies in the accounts ultimately alert the information technology (IT) security personnel at the various financial institutions. Once the security breach is recognized, a red alert goes out and a significant portion of the financial services sector closes for hours, or even days, as IT security people try to locate and contain the problem, and then work to get the system up and running again.

While the transfer system is closed, many transactions are delayed and others are aborted. Ports become clogged because importers cannot claim containers until the payments have been settled. International investment slows to a trickle; stock and foreign exchange markets close. Interrupted sales of Treasury bills to foreign purchasers force the U.S. government to enact emergency financial measures, which lead to the shutdown of some government services.

The impact cascades into domestic financial markets, as uncertainty drives up interest rates and individuals and businesses try to withdraw cash from their accounts to finance their current purchases (or out of fear that their money is not secure). The strain on the domestic financial system leads to the closing of many Automated Teller Machines (ATMs) as they run out of cash, and the increased volume of transactions eventually leads to the temporary shutting down of the ATM system.

The infiltrators are able to divert a large amount of money into their own accounts before the breach is detected. They are now richer and can use their new-found wealth to continue buying arms, developing new networks, training new recruits, paying off officials or producing new drugs.

Though the individuals and corporations affected are fully compensated, the funds come from the financial institutions' reserves, insurance companies, and the government. The process for figuring out liability is lengthy and costly. Money is spent investigating the failure and fixing it; even more money is spent by financial institutions on improving their security.

The most pernicious effect, however, is the diminished confidence in the financial system. People, organizations and states begin to look for alternative ways to handle some of their finances; money that was previously available to invest in both personal and national economies is diverted. The financial industry, built on trust and money, ends up losing both.

1 CHIPS processes most of the U.S. dollar transfers, handling US$1.4 trillion per day, involving 270,000 payments originating in 19 countries. <www.chips.org>.

2 The SWIFT system handles more payments (more than 6 million per day, on average) from more countries (200), and deals primarily with European transfers. <www.swift.com>.

Exploiting computer use for identity theft and other criminal activities specifically targeting individuals is also on the rise. In the United States, the Federal Trade Commission has reported that identity theft is one of the fastest-growing crimes, having increased fivefold between 2000 and 2002.[48] Though most identify theft involves stolen wallets or is committed by someone the victim knows,[49] computer-based versions are a growing problem. In what is known as "phishing," criminals use the Internet to acquire sensitive information for financial gain. According to Antiphishing.org, more than 86 per cent of phishing crimes involve the fraudulent use of a legitimate financial institution's name to trick unsuspecting targets. Tracing the criminals is difficult, since the average lifespan of an illegal site is less than six days.[50] As e-commerce and personal Internet use grow, so will the scope for Internet fraud, theft and abuse.

Exploiting Vulnerable Groups Through Technology

While access to the Internet broadens personal access to information and support, it also presents risks—such as Internet gambling and pornography—for certain groups of people. Internet pornography helps perpetuate the exploitation of vulnerable groups, most worryingly children. The Internet has also become a vehicle of choice for individuals wanting to lure children into exploitive or abusive situations. These activities are inherently difficult to regulate, which presents a serious challenge to governments.

Specialization and Redundancy

Specialization leaves firms and workers less diversified and thus more susceptible to risk. Niche producers risk being rapidly displaced by competitors with close substitutes; workers risk losing their jobs to automation, lower-wage competitors abroad, or more highly specialized individuals.

While the efficiency imperative drives specialization, it also limits the security provided by redundancy. Idle capacity and system duplication are important elements in risk management. During crises, redundant systems can be essential for the maintenance or restoration of important services. While private markets and producers incorporate a certain amount of redundancy into their systems to offset risk, it is usually not broad or efficient enough to handle new threats, larger systemic risks, or uncertainty.

Labour Markets

While the trend towards a more globalized and integrated economy will affect labour markets, there is not enough hard data to support detailed predictions about changing career patterns. There is some evidence that future employment will be less reliable,[51] but the most likely effect will be a split in the labour market between those who can specialize and take advantage of new opportunities by constantly upgrading their skills, and those who cannot.

James Cornford, in his study of the media sector in London, England,[52] called attention to this change in labour market segmentation. He found that the media industry in the United Kingdom was beginning to express some concern about the "digital divide" between successful, well-connected and technology-savvy workers, and those who, for reasons such as family commitments, ethnicity or gender, could not acquire or maintain the necessary skills and networks, or who were incapable of bearing the risk of volatile income.[53] Cornford also described four departures from the classic image of labour markets in an industrial society: frequent employment changes interspersed with periods of self-employment; reward structures based on merit instead of seniority; an emphasis on experience and demonstrated skills over credentials; and continuous skills development. (See box, "The New Labour Market.")

The New Labour Market
(one possible view)

	Classic Labour Market	New Labour Market
Employment Pattern	• job for life with one corporation or public bureaucracy	• frequent changes of employment interspersed with periods of self-employment
Reward and Remuneration	• reward structures built on seniority and climbing the corporate ladder	• meritocratic reward structure • youngest employee may be the best paid
Training	• intensive initial period of funded training (apprenticeship)	• culture of continual, incremental, self-funded learning
Qualifications	• formal credentials	• experience and track record

Source: Adapted from James Cornford, "Opportunities and Risks in the New Media Labour Market: London Case Study Final Report," Prepared for the European research project *Opportunities and Risks in New Work Field of the Information Society: The Case of New Media* (London: European Social Fund, November 2003).

Labour markets will most likely see a split between those who can specialize, by constantly upgrading their skills, and those who cannot.

While this new employment structure may not dominate all employment, it is probably a close representation of the transformation being brought about by both market integration and technological diffusion. What are the implications of such a model?

At one extreme would be the so-called "Americanized" labour market, with low and declining unionization rates (12.8 per cent in the United States in 2000), fewer benefits, lower wages for unskilled workers and weaker labour laws.[54] These apparent disadvantages for individual workers, however, would allow for greater flexibility, enhanced efficiency and higher levels of productivity.

At the other extreme would be the so-called "European" labour markets, with greater stability, better benefits and stronger roles for unions and labour in management processes. Individual workers would be protected, provided they are gainfully employed, but the downside would be higher levels of unemployment, heavy regulation and a lack of flexibility.

The actual outcome, however, will lie somewhere between these extremes.

Labour markets only partly determine the distribution of disposable income and the incidence of poverty. Government policy on taxes, transfers and service provision is also an important determinant of welfare.

Government Intervention Deficit

Discussions about the dominant trends of integration, globalization and liberalization are often riddled with assumptions about governments' declining ability or interest in addressing the attendant risks. The argument is that international competition for capital and skilled labour will motivate governments to lower business restrictions and costs in order to attract investment, industry and talent. The alleged policy instruments include lower taxes and, financial incentives (for corporations and investors), and less restrictive regulatory burdens. Reduced government revenues would then leave less money for social expenditures—to assist the poor directly through income transfers, to offset the worst effects of poverty through the provision of health and other social services, or to help break the intergenerational poverty cycle through education.[55]

While plausible, these assumptions and concerns remain hypothetical. In most OECD countries, government revenues and expenditures, as a percentage of GDP,[56] appear to have peaked in 1999–2000 and have begun to decline—but only slightly. This slight downward shift is, as of yet, impossible to interpret as a trend because it cannot be separated out from cyclical variations.

The institutional dimensions of liberalization and integration may impose other constraints on policy-making. International trade agreements could limit a state's ability to negotiate, set and adhere to standards in labour markets, health and food safety, and environmental protection insofar as they are applied in a fashion that discriminates in favour of domestic producers. At the same time, global institutional weakness might restrict our capacity to deal with international problems at an international level.[57]

Present trends in the international economy contain both benefits and risks, and there are legitimate concerns about the distribution of these benefits and risks across different groups. A report by the Center for Economic and Policy Research comparing the last 20 years of globalization (1980–2000) with the previous 20 years (1960–80) argues that globalization has been associated with (although not necessarily linked to) diminished progress in the areas of economic growth, health outcomes and other social indicators.[58] While the evidence is open to interpretation, their analysis indicates a strong possibility that the trends explored in this section will have adverse global consequences, in addition to their anticipated benefits.[59]

CANADA: THE PROSPERITY DISPARITY

The bottom line for measuring how economic and technological opportunities affect human security and well-being is our ability as individuals to sustain a high standard of living without excessive risk. While many of the trends analyzed in the previous section should enhance the overall prosperity of Canada and Canadians, their distributional consequences may well be less benign.

Economic Restructuring

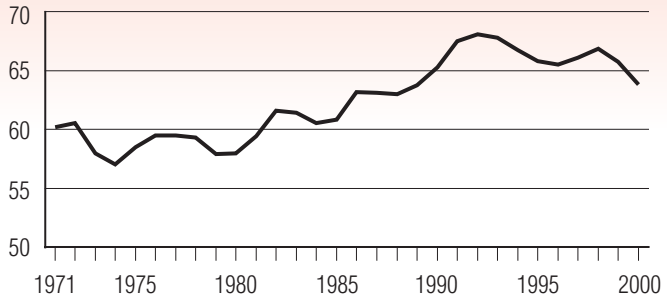
In Canada, globalization will likely result in further economic restructuring. As countries continue to grow, specialize and integrate, Canada's primary resources will be in greater demand, particularly in the energy sector. While this resource boom will lead to increased incomes and wealth, they will not be distributed evenly. (See Chapter 3 of this report.) The boom may also create competitive pressures elsewhere in the domestic economy (notably in manufacturing), as well as internal political tensions as the Canadian federation copes with changes in economic performance and fiscal capacities across regions and orders of government. (See box, "Will Canada Catch Dutch Disease?") However, the resource sector accounts for a falling, although important, share of Canada's economy. This may limit the overall impact of these trends.

The resource boom will lead to increased incomes and wealth, but they will not be distributed evenly.

Service Sector Expansion

Canada may also experience an expansion of the service sector beyond its current two-thirds share of GDP,[60] which continues past trends and follows the progression of global specialization. (See Chart 4.) While Canada will increasingly specialize in the production and export of high value–added, knowledge-based services, Canadians may view this trend with mixed feelings. On the one hand, the service sector is composed of widely divergent employment opportunities—ranging from the

Chart 4
Services as a Share of Canada's GDP
(per cent)



Source: World Bank, *Global Development Indicators*, 2005.

proverbial minimum wage "McJob" in the fast food industry, to the often-extravagant benefits and windfalls reported in some of the investment firms in the financial service sector. While creating opportunities for highly educated and skilled individuals, the knowledge-based economy may represent a dead end for individuals with fewer skills and opportunities. On the other hand, the service sector tends to be less cyclical than the goods production sector, and thus more likely to provide employment and income stability.

Corporate Reliance on Integrated Markets

The advantages and disadvantages of evolving firm structure and the increased reliance on integrated markets will be more apparent in Canada than in most other countries. Canada's economy already has a higher degree of international market integration than the economies of many other G8 countries. Our firms have strong and established linkages into international, or at least continental, supply chains. Our economy is largely liberalized, and our firms are exposed to international competitive forces. (See box, "Canada–U.S. Economic Integration: Risky Business?" for a discussion of our economic links to the United States.) While we know that these conditions will become more pronounced in the future, we do not have the data to make detailed predictions about how these developments will affect the economic security of Canadians.

Dynamic and Demanding Labour Market

Canada will continue to be an attractive location for some high value–added activities in research and development and in technology-intensive production. Our well-educated workforce will be able to take advantage of the advances in knowledge and technology that underpin this sector. However, as noted earlier regarding service-sector expansion, there may be adverse distributional consequences that will see low-skilled and less well-educated workers increasingly worse off in both relative and, possibly, absolute terms.

Even for Canadians able to take advantage of the opportunities presented by the economic transformation, the emerging labour market will be both dynamic and demanding. Highly skilled workers may face greater short-term uncertainty and vulnerability to market pressures, even if their long-term prospects for rewarding employment remain promising. Others who are less skilled or well placed may simply be excluded from participating in the new economy at anything beyond a marginal level. An increasing reliance on technology and the enhanced integration of communications systems will also present greater challenges and risks to Canadians with lower levels of education and fewer resources.

Some of the problems associated with low income can be ameliorated by public policy.

Overall, however, there is little evidence that measures of labour market performance such as job tenure duration[61] or rates of long-term unemployment[62] are significantly worse than they were 20 years ago. While these averages may conceal important disparities, workers seem reasonably adaptable, and the future labour market should remain relatively safe.

Income Disparity

While the labour market will show the same level of security, disparities may become more dramatic and entrenched. Income inequality has grown since the mid-1970s, with past improvements showing a significant reversal since the mid-1990s.[63] Some caution is needed in extrapolating this trend, since inequality measures seem to have peaked in the late 1990s and the increase in inequality is lower for total income and after-tax income categories.[64] In addition, inequalities are actually declining substantially among the elderly, a rapidly growing segment of the Canadian population.[65]

According to an OECD study,[66] Canada's overall poverty rate also increased slightly (by 0.8 per cent) from 1995, reaching 10.3 per cent in 2000. The increase has been concentrated in the 51–65 age group, with declining

poverty rates limited to the 18–25 age group. Even if income inequality and poverty rates were not accelerating dramatically, social and economic insecurities would still pose a challenge if low incomes continue to be concentrated in particular groups or areas—such as Aboriginal people, immigrants, Northern communities and inner cities.

Of course, some of the problems associated with low income can be ameliorated by public policy. (See box, "Poverty and Government Policy.") According to Social Development Canada statistics, social security expenditures in Canada have remained consistently in the range of 50 to 54 per cent of total government expenditure for the past 25 years. As a percentage of GDP, these expenditures are more cyclical in nature. Expenditures in 1999–2000 were slightly above those of the late 1970s, for example, though at just under 22 per cent of GDP they represent a significant decline from the 28 per cent range reached after the recession of the early 1990s. It is hard, however, to get any sense of how adequate these expenditures might be, without understanding needs and outcomes.[67]

How governments decide to target social spending will be critical in determining how well Canadian society responds to the broader human security risks that various groups face. The competition over spending priorities

Canada–U.S. Economic Integration: Risky Business?

Canada's economy is inextricably tied to the economy of the United States. This continental connection brings Canada its greatest economic opportunities and uncertainties. Two main sources of risk come from current U.S. macroeconomic imbalances and from U.S. policies affecting cross-border linkages.

U.S. Macroeconomic Imbalances

There is a loud debate over whether or not current U.S. macroeconomic imbalances (primarily the fiscal and current account deficits) will lead to an economic crisis.[1] While an adjustment is inevitable, the question of timing and speed remains unresolved. The benign scenario involves a gradual depreciation of the U.S. dollar accompanied by high growth and buoyant fiscal revenues. This process would minimize any potential economic crises for either the United States or Canada.

A more severe adjustment (with rapid depreciation, economic turmoil and recession) would have more severe effects on Canada. With the United States consuming more than 25 per cent of our total output,[2] any prolonged U.S. economic slowdown would damage our economy as well. However, even if continued fiscal irresponsibility constrained U.S. policy options, the flexible U.S. dollar and the sheer size, domestic orientation and dynamism of the U.S. economy would allow it to recover quite quickly. Canada's integration with the domestic economic structure in the United States, as well as the flexibility of our own currency, would absorb some of the shock from U.S. adjustment. In addition, with a fiscal surplus and credible monetary policy, Canada would have some room to manoeuvre. Therefore, any adverse impact from U.S. macroeconomic imbalances and adjustments are likely to be transitory.

U.S. Border Policies

The adverse effect of U.S. border policy decisions is of greater concern to Canada. Economic difficulties could lead to rising protectionism in the United States, with Canada being directly targeted, or simply caught in the crossfire of other trade battles. More worryingly, U.S. security concerns about the movement of people, weapons and money into the United States could disrupt border operations. Canadians already face the threat of having U.S. security agencies review airline passenger manifests for flights across U.S. territory—even on Canadian domestic flights. Enhanced inspections would slow the movement of goods and people across the border, and would lead to disruptions in Canadian trade and business.

Managing the Relationship

The Canada–U.S. relationship needs to be a delicate balance between Canadians' desire to see ourselves as distinct and independent and the reality of our dependence on the U.S. market and security umbrella. The relationship is complex, multi-faceted and multi-leveled, with no one player being in total control. At the same time, Canada can no longer take for granted its preferred status as a neighbour and friend. In most respects, Canada is less strategically important to the United States than it was during the Cold War. But there are two notable exceptions. First, Canada is assuming an increasing importance as a supplier of energy. Second, U.S. homeland security depends on the security of North America as a whole.

In recent years, the Canada–U.S. relationship has been under strain, as many Canadians deeply distrust the current U.S. administration and the priorities of the two countries have been diverging. Canadians feeling slighted at what they perceive as high-handed treatment by the United States on trade issues has led to responses such as the recent talk of retaliation over the failure of the United States to respect the latest NAFTA panel ruling on the ongoing softwood lumber dispute. Conversely, many Americans no longer see Canada as a strong ally and they fear that their northern border could provide an easy entry for terrorists. In the future, successfully managing the relationship will require Canada to act with determination without overplaying its hand for domestic political consumption.

Despite the challenges, there are positive signs. The Security and Prosperity Partnership of North America, signed by the three NAFTA leaders earlier this year, has produced a comprehensive and practical work plan designed to facilitate continental trade and security cooperation. Consistent with NAFTA principles, the work plan envisages Canada and the United States working bilaterally on specific issues, where they choose to do so.

1 See, for example, Fred C. Bergsten and John Williamson, *Dollar Adjustment: How Far? Against What?* (Washington: Institute for International Economics, 2004).

2 Department of Foreign Affairs and International Trade, *State of Trade 2005* [online]. (Ottawa: DFAIT, 2005), [cited August 4, 2005]. <www.dfait-maeci.gc.ca/eet/pdf/Biling_tables-State_of_Trade-2005.pdf>, Table 1a, Indicators of Globalization.

Poverty and Government Policy

Chronic poverty persists in Canada. It continues to be concentrated in specific groups, despite targeted programs in education, childcare and employment. There is little consensus about how to define poverty in terms of income levels, and even less consensus about how (or which) governments should respond. Welfare recipients receive direct transfers of money, but their income remains well below government-defined poverty lines.[1] Some fear that increasing these transfers would be excessively costly. Transfers in kind, such as food vouchers, may help but are seen as stigmatizing.

There is no easy or obvious solution. If a solution exists at all, it will be multi-faceted—incorporating income transfers, incentive structures, regulatory changes, training, and services in critical areas such as health and education. Policies targeting these areas cut across various government jurisdictions and levels, making it difficult to commit to a comprehensive and coordinated approach.

1 National Council of Welfare, *Welfare Incomes 2004 Report* [online]. (Ottawa: National Council of Welfare, 2005), [cited August 4, 2005]. <www.ncwcnbes.net/htmdocument/reportWelfareIncomes2004/WI2004ENGLISH.pdf>.

may indeed fall along important social fault lines. Intergenerational conflict could occur—with older Canadians (the most rapidly growing demographic group) demanding improved health and "end of life" care, and younger Canadians and families with young children insisting on higher expenditures for education. Other divisions may follow ethnic lines, such as the need to alleviate the ravages of poverty experienced by Aboriginal Canadians, or the need to support new Canadians in accessing employment opportunities and community networks. Canadians have faced these conflicting demands before, although never to the same extent.

Integration will bring both security costs and benefits.

Infrastructure Integration

As Canada's economy becomes more closely tied with our continental and international partners, there will be an increased impetus for infrastructure integration. The most obvious need for enhanced infrastructure connections will be to move key exports and imports between the United States and ourselves. Integration will bring both security costs and benefits. (See box, "Canada–U.S. Infrastructure Integration.")

The export of resources or other essential products may raise concerns for a number of Canadians. Energy and bulk water exports seem to have received the most political attention from economic nationalists who argue that Canadians should not be denied preferred access to Canadian resources. (See Chapter 3.) While some might consider this a threat to our human security, it conflicts with traditional economics-based arguments of efficiency, and could be in violation of trade agreement obligations.

Technological Insecurity

According to Statistics Canada, nearly two-thirds of Canadians had Internet access at some location in 2003. Household Internet use in Canada reached nearly 55 per cent, while Internet sales went from CDN$5.6 billion in 2000 to CDN$28.3 billion in 2004.[68] Our high and ever-increasing levels of connectedness will also bring opportunities and risks.

The RCMP, for example, claims that investigations into hacking doubled in four years.[69] PhoneBusters Canadian National Call Centre received 7,629 identity theft complaints in 2002 (reporting total losses of more than CDN$8.5 million) and an additional 2,250 complaints in the first quarter of 2003 (reporting total losses of more than CDN$5.3 million). As well, two major Canadian credit bureaus, Equifax and Trans Union, receive approximately 1,400 to 1,800 Canadian identity theft complaints per month.[70] Of increasing concern is the victimization of children. Public Safety and Emergency Preparedness Canada claims that in 1998, more than 800 children in North America were "lured from home by predators they met on the Internet."[71] (See box, "Exploiting Vulnerable Groups Through Technology.")

Managing Uncertainty

Most Canadians will benefit from the opportunities presented by a globalized economy with diffused but integrated infrastructure and technology. This world, however, will be increasingly dynamic and complex. We will have to learn, as individuals and as a society, to manage the uncertainty and the risks that accompany

Exploiting Vulnerable Groups Through Technology

While access to the Internet broadens personal access to information and support, it also presents risks—such as Internet gambling and pornography—for certain groups of people. Internet pornography helps perpetuate the exploitation of vulnerable groups, most worryingly children. The Internet has also become a vehicle of choice for individuals wanting to lure children into exploitive or abusive situations. These activities are inherently difficult to regulate, which presents a serious challenge to governments.

Canada–U.S. Infrastructure Integration

Canada's critical infrastructure is already closely integrated with that of the United States, connecting our societies and our markets. As our economies grow and become more interconnected, we will need to enhance some of the current linkages to handle the increased flow of people and products.

How Connected Are We?

In the energy sector—where our primary market for oil and gas is and will remain, with the United States—four main oil pipelines and five main natural gas pipelines connect the two countries.[1] These systems are, in turn, connected to wider pipeline distribution systems on both sides of the border. Enhancing these pipeline connections, especially with proposed developments in the Arctic, will expand what the Energy Information Administration already describes as a "highly interconnected" system between the two countries.

Similarly, Natural Resources Canada calls the Canadian and American electricity grids "interdependent," citing a U.S. Department of Energy estimate of 51 electricity grid connections between the two countries.[2] Canada's National Research Council suggests that as demand increases warrant, Canada will be able to increase its generating capacity, which currently supplies about 2 per cent of total U.S. demand.

There are also significant sea, ground and air connections for transporting goods and people. However, unlike energy, goods and people need to check through established border points, which remain limited in number.

Enhancing our critical infrastructure integration will bring both benefits and risks.

The Benefits:

- *More reliable access to markets for producers.* This would reduce transportation delays and production schedule interruptions, and would facilitate the exploitation of additional opportunities in, for example, the energy sector.
- *Efficiency improvements.* Natural Resources Canada, for example, argues that electricity grid integration allows for more efficient load management across different peak consumption periods.[3]
- *Risk reduction.* Multiple generating stations feeding into the same system can ease problems if one of the stations is shut down. System integration also makes it easier to reroute energy or resources if internal linkages are interrupted.

The Risks:

- *Increased vulnerability due to systems failure.* As the August 2003 power system outage in much of Ontario and the eastern United States demonstrated, integration leaves the system vulnerable to complete collapse in the event of a single failure on either side of the border. A failure could be the result of an accident, a technical malfunction or an attack. The United States is a prime target for terrorist attacks on critical infrastructure, which puts Canada in harm's way. Sectors such as electricity also seem less reliable in the United States, because of their greater reliance on smaller private sector participants and multiple regulators. According to NUS Consulting, the average Canadian can expect two power outages, totalling two hours, over a year. In the United States, transmission failure blackouts occur every day, although most are local and limited in duration. Many are caused by human error and infrastructure failure, with additional difficulties arising from the different operating procedures for the 130 or more agencies involved in controlling the electricity transmission system.[4]
- *Increased vulnerability due to U.S.-based demand volatility.* By tying the Canadian market to its larger U.S. counterpart, the system's capacity is more likely to be overwhelmed by U.S.-based demand volatility than by fluctuations in Canada alone—especially since Canada tends to be a net exporter in these markets.
- *Increased reliance and dependence.* Canadians will become increasingly reliant on products moving across the U.S. border via linked transportation infrastructure. This increases the risks from disruptions to flow. (See box, "Canada–U.S. Economic Integration: Risky Business?")

1 Energy Information Administration, *Country Analysis Brief: Canada, February 2005* [online]. (Washington: EIA, February 2005), [cited August 4, 2005]. <www.eia.doe.gov/emeu/cabs/canada.html>.

2 Natural Resources Canada, *Canada–U.S. Electricity Facts–2003* [online]. (Ottawa: NRC, 2004), [cited August 4, 2005]. <www.nrcan-rncan.gc.ca/media/newsreleases/2003/2003106b_e.htm>.

3 Natural Resources Canada, *Canada–U.S. Electricity Facts–2003*.

4 NUS Consulting, *Electricity Blackouts: Roundtable Discussion* [online]. (NUS Consulting, 2003), [cited August 4, 2005]. <www.nusconsulting.com>.

both rapid change and increased complexity. Some might consider mere exposure to uncertainty too great a risk, but this ignores the opportunities that would be lost if we balk at integration. The more profound threats of a globalized and integrated economy will be felt in the skewed distributional effects and the reinforcement of current patterns of social marginalization. However, this too is a matter of choice, as redistributive social policies fall to national governments, and global integration can create the resources to support them. Thus, the most important determinant of the ultimate impact of globalization on human security will be public policy.

CONCLUSIONS AND POLICY IMPLICATIONS

Extrapolating from current trends leads us to the conclusion that the world in 2020 is likely to be a complex, dangerous and volatile place. The changes emanating from a growing global interconnectedness will bring both opportunities and threats. Just as goods and services will flow with greater ease across borders, so will diseases and crime. As personal and production networks stretch ever more widely, they also become potentially more vulnerable to system failures. It will be essential to manage this integration at both the national and international levels, enhancing surveillance and enforcement capacities to protect our partners and ourselves.

The dominant sources of risk for Canadians will stem from events and developments occurring outside our reach.

MOSTLY SHELTERED, MAINLY MARGINAL

Sheltered within our continent, protected for the most part by our proximity to the United States, Canada will be more secure than the rest of the world in the face of both traditional and emerging security challenges, and the uncertainty and volatility of integrated international markets. Yet our source of security will also be a distinct source of risk. This duality is most clearly visible in the area of traditional security threats such as war, or in emerging risks from terrorism. Our proximity will allow us to benefit from the massive U.S. military and security resources, but it will also place us at risk from deliberate or accidental attack.

In addition, we will remain heavily reliant on, and more closely integrated into, the United States' security and economic framework, intensifying the traditional Canadian quandary of how to coexist with a much larger and domineering neighbour. Demands for our participation in their systems for continental defence, for our cooperation on compatible regulatory structures, and for access to our resources will be difficult to resist. Failure to do so could jeopardize Canada's preferential access to the U.S. market.

On balance, however, our North American location enhances our security, since from a global perspective this is a very safe neighbourhood. Our distance from the major conflicts may allow us to sustain a misguided sense of complacency, but the world will still be a place rife with tension and dispute. These traditional security threats will be largely indirect, which is fortuitous given our limited and shrinking ability to manage and mitigate them. With respect to regions of more intense conflict and violence, we will be able to play a constructive, but largely marginal, role.

Whether in peacekeeping and peace building, improving non-proliferation regimes, expanding governance capacity in weak states, or creating a more development-friendly international system, we might contribute to a more durable and less conflict-prone world, but our potential for influence can be easily overstated. We will be able to leverage our capability through collective structures, but only if we are prepared to make a serious commitment and contribute substantial resources.

A PRECARIOUS BALANCE

The dominant sources of risk for Canadians will come from the less traditional threats to human security, many of which will stem from events and developments occurring outside our reach. (There are also risks that originate in Canada. For example, see box, "Implications of Quebec Sovereignty.") As we allocate resources to manage risks, we must weigh four considerations very carefully, and in combination:

- First, we need to recognize and invest in both prevention and containment. Preventing outbreaks of disease, for instance, will not be foolproof, so we will need to strengthen our domestic capacity to contain and treat disease, crime and other physical and social ills. In addition, successful prevention is often its own enemy. It is hard to justify expenditures to prevent terrorism in the absence of visible security breaches or successful bombings.
- Second, calls for efficiency cannot override needs for enough redundancy to keep us safe. Redundancy is essential for effective risk management. Critical infrastructure, for example, requires established backup systems to prevent isolated problems from cascading into catastrophe.
- Third, we need to find and be willing to strike the right balance between individual liberties and collective security. This will prove challenging, but will be achieved if risks are assessed realistically.
- Fourth, some investments in prevention, remediation and redundancy may be more effective if they target the international systems we rely on to safeguard

Implications of Quebec Sovereignty

Quebec sovereignty would create both concrete and intangible losses for Canada. For some people, the risk of Quebec's separation—and the associated divisive constitutional debates—is itself a source of insecurity and psychological anguish. Quebec sovereignty would also disrupt social and economic relationships, discourage investment and diminish government capacity to focus on other important policy issues. But separation itself, or the debate surrounding it, will not change the broad global trends shaping human security in Canada over the next 15 years.

our welfare and security. These investments cannot be unilateral; they must be determined cooperatively within an internationally negotiated framework. Markets are generally not well equipped to make these choices, and so governments must learn to make them, and make them well. This underscores a theme we have emphasized in previous editions of *Performance and Potential*: Canada's need to remain engaged in the world, through a well-conceived and well-executed set of international policies that recognize the opportunities where we can truly make a difference.[72]

Canada needs to remain engaged in the world through a set of international policies that recognize the opportunities where we can truly make a difference.

CONCENTRATED VULNERABILITY

There is some evidence that economic insecurity and poverty in Canada will be concentrated in distinct groups, particularly Aboriginal people and recent visible minority immigrants. The consequences of their vulnerabilities will generate wider social ills that will affect all Canadians. As a result, policies will have to target these vulnerable populations in a sustained and comprehensive manner. Such policies must move beyond mere financial assistance to address the fundamental barriers that prevent marginalized Canadians from participating fully in society. This would include improving the quality and accessibility of health care, education, employment, housing and other social services.

THE FIRST LINE OF DEFENCE

There is a final source of risk linked to globalization. States have leeway in deciding if, when, or how they deal with market failures, inequality and other threats to social welfare and human security. For epidemics, interstate conflict, terrorism and crime, government policy is the first line of defence and protection. Unfortunately, globalization is often perceived—incorrectly in our view—as reducing either the ability or the will of governments to act. In some cases, international agreements or treaties do constrain governments, though not always to the extent that critics imply. The transnational nature of risks to human security and welfare require stronger intergovernmental coordination, at a time when multilateral institutional arrangements are generally weak and the system of global governance increasingly strained. Consequently, the most serious threat to human security in Canada will likely be our diminished collective capacity (or inclination) to address those risks that do emerge. In the end, ongoing resource constraints mean that Canada will need to set priorities and become more deeply engaged in institutions that serve our interests while making a difference internationally.

1 See, for example, Charles A. Barrett and Anne Golden, *Will We Rise to the Challenge? Eight Mega Issues Facing Canada* (Ottawa: The Conference Board of Canada, February 2004).

2 See the following publications for further discussions about the global security trends that will affect the world and Canada: Government of Canada Privy Council Office, *Securing an Open Society: Canada's National Security Policy* [online]. (Ottawa: Privy Council Office, 2004), [cited August 4, 2005]. <www.pco-bcp.gc.ca/docs/Publications/NatSecurnat/natsecurnat_e.pdf>; United Nations, *Final Report of the Commission on Human Security* (New York: UN, 2003); National Intelligence Council, *Mapping the Global Future: Report of the National Intelligence Council's 2020 Project*. [online]. (Pittsburgh: NIC, 2004), [cited June 20, 2005]. <www.cia.gov/nic/NIC_globaltrend2020.html>.

3 To create a vivid image of what the world of 2020 may look like, we have written much of this chapter in the future tense. Readers should bear in mind that the outlook is, in fact, much less definitive than this style might suggest.

4 National Intelligence Council, *Mapping the Global Future*, p. 28.

5 Ibid., p. 49.

6 Christopher Patten, "Globalization: The Political Consequences for Today's Superpower and Tomorrow's," Donner Lecture: The Design Exchange, held at the Toronto Dominion Centre, September 6, 2005.

7 Rob Huebert, "Climate Change and Canadian Sovereignty in the Northwest Passage," *ISUMA* 2, 4 (Winter 2001); Peter Johnston and Michael Roi, *Future Security Environment 2025* [online]. (Ottawa: Canadian Department of National Defence, 2004), [cited June 15, 2005]. <www.vcds.forces.gc.ca/dgsp/pubs/rep-pub/ord/fse2025/intro_e.asp>.

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12 Andrew Chena and Thomas Siems, "The Effects of Terrorism on Global Capital Markets," *European Journal of Political Economy* 20 (2004), pp. 349–366.

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14 Robert Kagan, *Of Paradise and Power: America and Europe in the New World Order* (New York: Knopf, 2003).

15 See, for example, United Nations Secretary-General, *In Larger Freedom: Towards Development, Security and Human Rights for All* [online]. (New York: UN, 2005), [cited August 4, 2005]. <www.un.org/largerfreedom/contents.htm>; as well as the report on which it was based, United Nations, *A More Secure World: Our Shared Responsibility; Report of the Secretary-General's High-level Panel on Threats, Challenges and Change* [online]. (New York: UN, 2004) [cited July 11, 2005]. <www.un.org/secureworld/>.

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19 UN, *A More Secure World*.

20 National Intelligence Council, *Mapping the Global Future*.

21 Surjit Bhalla, *Imagine There's No Country: Poverty, Inequality, and Growth in the Era of Globalization* (Washington: Institute for International Economics, 2002), p.198.

22 United Nations, *UNAIDS, AIDS Epidemic Update 2004* [online]. (New York: UN, 2004) [cited July 11, 2005]. <www.unaids.org/wad2004/EPI_1204_pdf_en/Chapter3_subsaharan_africa_en.pdf>, Chapter 3.

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72 For a discussion of Canada's role in the world, see *Performance and Potential 2003–04: Defining the Canadian Advantage* (Ottawa: The Conference Board of Canada, October 2003), Chapter 4.

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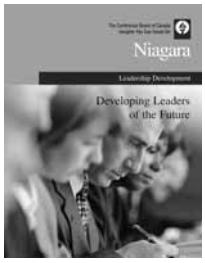

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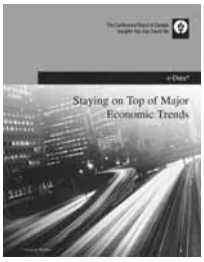

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