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CANADA

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Report of the  
National Advisory Board  
on Science and Technology

# PRIVATE SECTOR CHALLENGE COMMITTEE

Presented to the  
Prime Minister of Canada

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Report of the Private Sector Commission  
Member of the National Advisory Board on

**Keeping Canada Competitive:  
The Innovation Imperative**

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**Report of the Private Sector Challenge  
Committee of the National Advisory Board on  
Science and Technology**

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**May 15, 1989**

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## **1. EXECUTIVE SUMMARY — THE CHALLENGE**

### **1.1 What Is the Challenge?**

In the face of fierce international competition, the private sector must take the lead in making Canada a winner in global markets and, in this way, ensure that our country maintains one of the highest standards of living in the world.

### **1.2 Why the Challenge?**

In a changing world increasingly dependent on knowledge-intensive technologies, Canada is a nation at risk. There are no national boundaries in the new age. Capital and markets move freely and the world is increasingly open for business. As world traders prepare for head-on confrontation, we in Canada are ill-prepared to meet the competitiveness challenge. We must be realistic in assessing where we stand on the elements of competitiveness.

#### **1.2.1 Where Do We Stand Compared to Other Nations?**

The World Economic Forum compares twenty-two countries on a number of competitiveness criteria. In 1987, although the competitiveness scoreboard ranked Canada sixth, corporate executives considered our prospects to be worse and ranked Canada eighth. This scoreboard rank is well behind the two leaders, Japan and Switzerland, and lags behind the United States, Germany, and Finland. Canada ranked eighteenth out of twenty-two on productivity trends, fourteenth on the acceptance of labour-saving technologies, and fourteenth on how sufficiently and appropriately automation is utilized.

#### **1.2.2 Where Do We Stand — Fading Nation or Trading Nation?**

The years of depending on our natural resources to maintain our standard of living have past. Along with this has gone the luxury of being able to fight amongst ourselves. We need a common front to meet global competition. Entrenched adversarial relationships — federal vs. provincial governments, business vs. governments, management vs. labour, hard sciences vs. soft sciences and domestic companies vs. domestic companies — must yield to common resolve and cooperative initiatives.

#### **1.2.3 Where Do We Stand in Areas of Traditional Strength?**

Although our gross domestic product (GDP) has sustained an annual growth rate of 2.6 percent in recent times, there are signs that our traditional strengths are under attack.

Canada's traditional manufacturing and resource bases no longer guarantee a strong position in a knowledge-based global economy. In addition to materials substitution for our natural resources, on the manufacturing front, the rate of growth in value-added manufacturing in newly industrializing countries is racing past that of traditional leaders. In the period from 1970-83, the rate of growth for newly industrialized countries, such as South Korea, Hong Kong and Brazil, rose between 5.9 and 13.8 percent. It ranged from 0 to 7.1 percent in industrialized countries.

#### 1.2.4 Where Do We Stand in Future Prospects in Emerging Markets?

From 1983 to 1987, Canada saw its trade deficit in R&D-intensive products rise from \$5.1 billion to \$7.2 billion, a change of 41.2 percent over four years. Similarly, the deficit in technology-based services — including professional services; R&D; royalties; patents and trademarks; insurance; other financial services; computer services; and communications — rose 92.4 percent between 1977 and 1985.

These deficits can be explained in part by our under-investment in R&D and by our low numbers of highly qualified researchers. Based on 1985 figures from the Organization for Economic Cooperation and Development (OECD), Japan had 79 researchers per 10 000 workforce participants, the United States had 65, Germany had 52, Iceland had 44, while Canada was well down in the group with 30 researchers.

#### 1.2.5 Where Do We Stand in Human Resource Development?

The ability of a country to compete in world markets is determined in large part by the creativity, skills and motivation of its work force. While Canada's per capita spending on education is one of the highest in the world, the Report on International Competitiveness of the World Economic Forum indicates that we are not getting good value for our money. For example, while we rank second only to Sweden in the percentage of Gross National Product (GNP) dedicated to education, our post-secondary institutions are in desperate need of revitalization. In the area of apprenticeable trades training, Canada is fourteenth out of the twenty-two countries in OECD comparisons. Certainly, a country wanting to fully meet the competition cannot afford the productive loss of one in four citizens to functional illiteracy. Fragmentation, duplication and waste must be eliminated. While the Prime Minister and provincial premiers need to come together on a national Human-Resource-Development strategy, there is much that the private sector can do to address this critical element in competitiveness.

### 1.2.6 Where Do We Stand in R&D?

Canada invests much less than our main trading partners in R&D. We spend only 1.37 percent of GDP on R&D. Japan spends 2.81 percent and the United States 2.77 percent. Our instruments for both tapping foreign technology and exploiting existing research are also deficient. While increasing the percentage of GDP spent on R&D is essential, we must be careful that the money is well spent. We cannot afford similar inefficiencies to those we have experienced in education investment.

### 1.2.7 Where Do We Stand with Respect to Our Attitudes Towards Competitiveness?

The major danger facing Canada at this critical juncture is the failure to read the warning signs. Short-sightedness and complacency based on the continuing strength of our GDP threaten our long-term existence as a serious competitor. We cannot let this happen. Canada must pursue new markets and global opportunities aggressively. We must reshape our economy, our capacity to innovate and our ability to compete. The competition is stiff. Nothing short of our best will suffice.

## 1.3 **How Can the Private Sector Meet the Competitiveness Challenge?**

### 1.3.1 The Private Sector Must Assume the Lead.

The private sector must lead Canada in this effort. While governments and the educational community can help create a competitive environment, only the private sector can innovate and compete in world markets.

The future calls for concerted private sector leadership to develop consensus on a national competitiveness strategy. For that purpose, NABST believes the Prime Minister should ask a cadre of business and labour "eagles" to mobilize a major response to the Private-Sector Challenge.

Individual firms are challenged to think globally and seek out "winnable" niches. They must enhance the quality of product and customer service, and improve the firm's ability to generate in-house innovation. They must recognize the importance of worker participation, encourage joint labour-management efforts and organize themselves to maximize innovation efforts. Firms should become innovators and make innovation part of the company's team spirit. They should recognize technological champions and persuade all employees to develop to their fullest potential. Closer skills development and research linkages with educational institutions should occur. Lastly, firms must work with other firms in support of industry self-help and strategic alliances to promote innovation.

In addition to the above requirements, firms in the financial community should promote means to finance technology-intensive ventures and to lower the cost of capital.

### **1.3.2 The Private Sector Must Precipitate Self-Help Action.**

The private sector can no longer afford to work in isolation and wait for government direction and assistance. Firms must work together. The collective buying power of a group of firms is much greater than that of its individual members. There are many areas where pre-competitive collective efforts potentially put a whole industry at an advantage.

Industry alliances are asked to precipitate industry self-help actions in pre-competitive research and skills development consortia. They should pool the resources of individual companies in catalyzing procurement, market intelligence, technology transfer and skills development initiatives. Industry alliances have a major role in speaking for industry, creating an innovation culture and monitoring our achievements by international standards.

### **1.3.3 Labour and Management Must Join Forces to Manage Change and Share the Benefits.**

Improved productivity, the introduction of new technologies, reorganization of work, industrial restructuring and the sharing of the benefits of increased competitiveness, demand new labour-management partnerships.

Worker involvement is central in developing strategies to manage workplace change. Any benefits that accrue through increased innovation and competitiveness must be shared. Workplace disruptions must be managed. We cannot let workers become victims of technological, market and workplace change. Workers must share equal responsibility with management for catalyzing skills development and positive adjustment programs from the shop floor to the national level.

One of the most important areas, requiring the full commitment of the private sector, is human resource development. As the beneficiaries of a motivated and well-trained labour force, management must work with labour to improve employee training and education programs. Labour and management must put aside adversarial stances, and work together to share the benefits of increased competitiveness and to manage workplace transitions.

## **1.4 What Support Is Required to Create the Competitive Environment? Supporting the Challenge**

While the private sector must assume the lead, governments, educational institutions and individual citizens must ensure the environment for innovation to thrive. Governments must provide sound intelligence on the elements of innovation and monitor our domestic and international progress. They should actively promote innovation through a positive tax,



financing, procurement and regulatory environment. All governments and the educational community must work with the private sector to ensure a comprehensive national approach to innovation, skills development and workplace transitions. Every man and woman in the work force is challenged to commit their energies to creating an innovation culture and making Canada competitive.

### **1.5 When Should the Challenge Be Issued? The Urgent Call to Action**

The continuing strength of Canada's GDP is little cause for complacency. Canada's tenuous competitive position demands an immediate call to action.

The competition will not wait. In other countries, competing firms are banding together in a national resolve to defeat the international competition. Canada must do the same. The call is urgent. Our future is at stake. Inaction for Canada augurs the beginning of the downward economic spiral. To act means becoming a winner and a trading nation of world stature.

## **2. THE INNOVATION IMPERATIVE**

### **2.1 Fading Nation or Trading Nation? Canada is a Nation at Risk**

Canada, with her traditional resource and manufacturing base, is challenged by major changes in the global economy. In meeting the new realities, we must find innovative ways to remain competitive. Survival as a prosperous nation depends on innovation driven by science and technology.

### **2.2 Innovation, as Much as Natural Resources, Drives the Global Economy**

Within the last generation, there has been an extremely rapid change in what an advanced economy must do to generate income. Long-term economic growth is no longer based solely on natural resource endowments or on an established manufacturing base, but rather on knowledge. World trade now occurs in a global economy in which science, engineering and technological know-how interweave to improve the comparative advantages and prosperity of nations.

### **2.3 Our Quality of Life Depends on Canada's Ability to Compete in the Global Economy**

There is a strong link between a country's long-term economic prosperity and its quality of life. The segments of the economy which produce tradeable goods and services generate the employment and income necessary for our quality of life — child care, health care, education, housing and leisure. Unless the revenue generating segment of Canada's economy remains healthy, our social benefits will suffer. If the revenue generating area is undermined, an economic downward spiral will begin.

### **2.4 A Competitive Economy Demands Private Sector Leadership**

The private sector must lead in building an increased capacity for industrial innovation in Canada and in creating an internationally competitive economy. Each and every worker, manager and executive officer in individual firms, the financial community, industrial alliances and organized labour must rally to this call.

### **2.5 The Ability to Generate Income Depends on a Supportive Environment**

The private sector must make its innovation and competitiveness agenda known. Governments, educational institutions and individual citizens must work with the private sector to create an environment that supports this agenda and one where innovation can thrive.

**2.6 A Nation Together: Political Leadership, National Will, Forged Consensus and Dedication to Action**

The strength and commitment of our political leadership, national will and dedication to action will determine Canada's capacity to meet the global competitiveness challenge. Consensus, cooperation and collaboration among all segments of the economy must emerge as hallmarks in our quest for a prosperous future.

### **3. MEETING THE INNOVATION IMPERATIVE**

#### **3.1 A Vision for Canada**

We believe Canadians must work together, within our traditions of economic and social justice, towards an innovative and competitive economy that will support one of the highest standards of living in the world.

#### **3.2 Innovation Must Become a Way of Life**

We must make innovation part of the mainstream of our economy. This calls for three forms of innovation:

- 3.2.1 Product Innovation, which involves a continuous effort to improve the quality of goods and services, to lower their unit prices, and to meet customers' current and potential requirements;
- 3.2.2 Process Innovation, which seeks productivity gains through better organization and more efficient manufacturing technologies and systems; and
- 3.2.3 Institutional Innovation, which involves more responsive and supportive attitudes, policies and practices on the part of business, labour, governments, and educational and financial institutions.

#### **3.3 We Can Build on Our Strengths**

As difficult as the job will be, we have much reason for optimism. In our private sector, our governments, our education systems and our people, we have many of the strengths we will need for the job:

- 3.3.1 Canada enjoys a long-standing and enviable tradition of stable, democratic, representative government that is frequently cited internationally as one of our major strengths.
- 3.3.2 Canadian traditions of economic and social justice are much admired around the world.

- 3.3.3 The political will to improve Canada's science and technology- (S&T) based innovation performance now exists and is demonstrated by numerous actions, including the Prime Minister establishing his own National Advisory Board on Science and Technology (NABST).
- 3.3.4 Together with a rich natural resource and energy endowment, we have a well-established industrial base and the infrastructure to support international trade relations.
- 3.3.5 In the private sector, we have proven technological champions and world leaders in certain fields to catalyze industry leadership and self-help initiatives.
- 3.3.6 While their numbers are limited, the quality of our engineering and scientific talent is world class.

#### **3.4 We Must Overcome the Traditional Barriers to Innovation in Canada**

While we have many strengths, we cannot ignore our very real resistance to change and the often ingrained practices and attitudes that inhibit S&T innovation in Canada.

- 3.4.1 Unfortunately, we are encumbered with entrenched adversarial relationships: federal vs. provincial governments; business vs. government; management vs. labour; and traditional hard sciences vs. soft social sciences. We lack the attitudes, institutions and mechanisms for consensus building that can defuse conflict and establish common ground for action.
- 3.4.2 As individual citizens and firms, we tend to work in isolation from one another. We have not developed the kinds of integrated institutions, networks and mechanisms used in other leading industrial nations to promote and support consensus building and cooperative initiatives, to increase the development and application of S&T innovation, and to ensure smooth transitions.
- 3.4.3 There is a perceived lack of willingness on the part of the private sector to assume a leadership role in promoting innovation.
- 3.4.4 Governments often establish priorities by themselves, lack integrated, long-term vision; resist change; and follow their own agendas in isolation.
- 3.4.5 The constraints of an economy that is peripheral, by global standards, mean that Canada is too often hampered by a limited vision, parochial attitudes and problems of both scale and scope. Much time and energy are lost playing catch-up and responding to the agenda and pace of those nations that are world industrial leaders.

- 3.4.6 The political leadership in our country has not yet come together to address national concerns about education and training, one of the most critical elements in innovation and competitiveness.
- 3.4.7 While Canada's per capita spending on education is one of the world's highest, our post secondary institutions are experiencing malaise and disrepair. In the past ten years, there has been a 30 percent increase in university enrollments, and budgets have gone up a mere 1.6 percent.
- 3.4.8 Although we have an established base of capable scientists and engineers, there are insufficient numbers to expand our innovative capacity.
- 3.4.9 Although Canada continues to be plagued by high unemployment, there is a growing mismatch between required skills and available jobs. In 1988, Statistics Canada reported that 14% of manufacturers claimed that their production was impeded by the lack of skilled labour. This was up from 2 percent in 1985. At the same time, the World Economic Forum ranked Canada fourteenth of twenty-two on the apprenticeable trades training element of competitiveness.
- 3.4.10 The level of government support for R&D in Canada pales in comparison to most developed countries. Canada's corporate spending on R&D and employee training is very low.
- 3.4.11 The lack of public awareness and understanding of the importance of science and technology to our economic and social prosperity has adversely affected the level of support for national action.

### **3.5 Overcoming Traditional Barriers, Building on Our Natural Strengths and Meeting the Innovation Imperative Calls for Action on Four Fronts**

Forging Consensus  
Building Commitment  
Improving Climate  
Strengthening Capacity

#### **3.5.1 Forging Consensus**

We must build consensus at all levels on common goals, priorities, strategies and actions, including the way we resolve the inevitable conflicts and trade-offs.

In a knowledge-based economy, Canada's abundant natural resources no longer ensure national wealth. Within the context of a large number of diverse interests, including high economic, social and environmental stakes, and the limited financial and technical resources of our small

economy by world standards, new priorities must be developed to ensure a prosperous future for Canada. Our country can no longer afford vested self-interest and adversarial wrangling. We must learn to work together towards forging consensus on our collective future.

Consensus emerges as the force that pulls together all actions. Isolated strands must be woven into the fabric of our national vision. There is substantial scope for individual citizens and firms to take the initiative in many areas. However, the pursuit of an innovation culture in Canada can only come about if, at the same time, we also develop new ways to combine our ideas, resources and skills within our strategic focus.

While other developed countries — such as Japan, Germany, the United Kingdom, and Sweden — have developed consensus-building mechanisms, they have done so in a fashion suitable to their own circumstances. Canada should benefit from their experience. Utilizing the best, Canada should develop a consensus machinery unique to our own circumstances with the potential to become a world model.

Canada's consensus-building requires the commitment of business, labour, educational institutions and governments. It means the adoption at all levels — from workplaces to the federal Cabinet — of active and timely approaches to open communication, participation, and the sharing of benefits from the secure and progressive management of change. It means working together to build commitment, to improve the climate for innovation and competitiveness in Canada, and to strengthen capacity.

We must recognize the benefits of working together through associations and strategic alliances. Pooling of resources and expertise in pre-competitive research consortia, training associations, and joint commercial ventures maximizes individual contributions.

Finally, and perhaps most importantly, forging consensus on innovation goals and strategies in Canada means the development of new institutional arrangements for cooperation at all levels. We must develop innovative mechanisms to help business, labour, governments and educational institutions find the common ground among conflicting views and values, share concerns and ideas, and build a joint commitment to collaborative actions, consensus and national vision.

### 3.5.2 Building Commitment

We must build the individual and collective commitment to establishing an innovation culture in Canada.

Creating an innovation culture will challenge conventional Canadian attitudes and practices. It will lead to some disruptions which must be appropriately addressed. However, over the long term, it will create a vibrant economy and new opportunities for those willing to seize them.

Fuelled by a greater awareness and understanding of Canada's challenges in meeting the global competition, the commitment to the task of creating an innovation culture must be immediate and powerful. Canadians must develop a new understanding of the role that science and technology-based innovation plays in building a nation's competitive edge, and, in turn, its long-term economic prosperity and social welfare.

Central to building commitment must be the active participation of all Canadians. A narrow commitment is no commitment. This broadly based participation should be anchored in open and non-threatening discussion, and in the understanding that transitions will be planned and subsequent benefits shared.

A third component in building the necessary commitment is the recognition and acceptance of joint, as well as individual, responsibility for actions. Just as the problem is all of Canada's and not that of one company or one industry, so too must solutions come from all segments of the economy. There can be no opting out.

### 3.5.3 Improving the Climate

We must establish at all levels a more favourable climate to encourage and reward innovation.

Consensus and commitment can only go so far. S&T innovation takes place in a complex mix of economic and social policies and attitudes. Employees and firms must be able to count on functioning within a fair, consistent and reliable environment that encourages and rewards innovation. This environment should promote pride in workmanship and stress quality in customer service.

Governments have a major role in determining the kind of climate in which an innovation culture operates. Governments must ensure a level playing field. Tax and financing systems must recognize the need for S&T innovation, particularly the critical role of tax incentives in encouraging R&D activities and the availability and cost of capital for long-term industrial investments.

The regulatory system must foster innovation rather than stifle the emergence of world class innovative industry. Regulatory environments must be stable, consistent and rational. This does not mean eliminating all regulations; it simply means ensuring that they are fair, practical, well-understood and not in conflict with innovation priorities. The mandate of regulatory agencies should include promoting the international competitiveness of Canadian industry. Better mechanisms are also required to facilitate the decision-making process where jurisdictions overlap.

A third component of a favourable climate is a nation's trade relations. Efforts to promote expanded, long-term access to world markets are an extremely important factor in nurturing innovation in Canada.



Responsibility for creating the proper climate for innovation does not rest with governments alone. The private sector must assume its responsibility. For example, a responsive financial community must assume responsibility for taking creative ideas through to commercialization. The private sector can also generate the capital and business know-how to commercialize viable university and government research, and can prevent our up-front investment in ideas being developed elsewhere. Individual firms can foster innovation within their own organizations by sharing benefits and providing incentives and rewards.

Finally, one of the most critical components in improving the climate for S&T innovation in Canada is competitive procurement policies and practices. The National Advisory Board on Science and Technology, believing that public and private sector procurement of Canadian goods, services and processes is a fundamental element in a competitiveness strategy, struck a committee on government procurement last year to provide the Prime Minister with advice. The report of this committee fully details the requirements to utilize government procurement as a lever for industrial innovation.

#### 3.5.4 Strengthening Capacity

We must strengthen the capacity of individuals, enterprises and institutions to emerge as innovators.

After consensus, commitment and climate comes capacity. Even with the best of intentions, we cannot improve our S&T innovation record until we put in place the kinds of resources, creativity, skills, abilities and mechanisms that allow innovation to develop and thrive.

A first step in strengthening capacity is increasing R&D efforts, which are the very genesis of S&T innovation. Our competitive position depends on increased R&D investment, particularly in industry-based research and in the application of technology. Especially within industry, expanded research efforts and stronger links between basic and applied research will provide the foundation for more dynamic innovation in products, processes and institutions.

Next, our education system at all levels must help Canadians develop the skills, experiences and technical understanding demanded by an innovation culture. Canadian per capita spending on education is one of the highest in the world. We should expect educational quality and excellence, beginning at the primary levels and continuing through into our post-secondary institutions.

We must work together to ensure that our human resource development dollars are well spent. We cannot afford to waste a single mind to illiteracy. Our colleges and universities must be guaranteed adequate resources and the flexibility to generate income. Canada's private sector contributes only one quarter of the amount given by the private sector in the United States and should therefore be tapped more fully.

The importance in the school curriculum of science, engineering, communication and change management must be elevated. Competent and effective teachers are central to this process.

We must overcome our fear of change and instead cooperatively seize potential opportunities. In the race for economic position, Canada can no longer afford reactive positions. Rather, we must anticipate change, manage transitions and actively shape our collective future. In the highly competitive global economy, technical skills become quickly outdated. Workers and managers must respond to the challenges in R&D, organizational structure, human resource development, financing and marketing inherent in a changing economy. Individuals need the capacity to recognize and understand the impacts of change and move swiftly to acquire the necessary skills through continuous learning and retraining.

The dynamism and flexibility of the financial sector are pivotal to national economic growth. Financial institutions must become more innovative and greater risk takers. Investment in the financial capacity of smaller enterprises to innovate deserves special mention. Of particular importance is the lack of investment funding to take a successful R&D project to full-scale commercialization.

Finally, strengthening capacity requires forging new strategic alliances to support cooperative action on innovation. Whether it is industry associations carving out new roles as information networks, small firms seeking financing and marketing assistance from larger ones or domestic enterprises establishing international links, we must overcome traditional tendencies to work in isolation.

### **3.6 In Summary**

All segments of both the private and public sectors must work together to make Canada a country of innovators. We must forge consensus on competitive directions, build commitment to achieving an innovation culture, improve the climate for industrial innovation in Canada and strengthen our capacity to compete in world markets.

In the next section of this report, the elements of the private sector challenge are outlined for individual firms, financial institutions, industry alliances and the work force. Each of these groups is ultimately accountable for their own actions.

#### 4. THE PRIVATE SECTOR CHALLENGE

The engine for S&T innovation in Canada has been primed in the public realm. The Council of Science and Technology Ministers has recently been established. Provincial and federal science and technology ministers meet frequently to achieve consensus on strategic national directions. While this forum still requires fine tuning to make it more effective and action-oriented, both levels of government deserve strong commendation for this worthy beginning.

In the private sector, firms, the financial community, industrial alliances, organized labour and the educational sector should be challenged to catalyze effective forums for achieving consensus on strategic directions. This Private sector Challenge Committee benefitted greatly from such collective wisdom through the private sector industry association Consensus Committee. We believe that Canadians can no longer afford to work in isolation. Our ability to exploit fully our potential to innovate and succeed in world markets depends largely on our ability to work as part of a team.

In this spirit, the fundamental challenge for the private sector is to organize itself behind its leadership to make Canada competitive. The private sector has the opportunity and responsibility to lead in an unprecedented transformation of Canada. Indeed, the task of making innovation part of the mainstream of our economy will not and cannot be accomplished without consensus, leadership and cooperative action from all levels of the private sector.

Just as every corporation has a board of directors to set short and long-term priorities and directions, Canada critically needs a strong body to catalyze private sector actions in science-based innovation and competitiveness. There are two very recent international examples of the creation of such bodies. Under the aegis of the Prime Minister's Advisory Council on Science and Technology in the United Kingdom, the private sector organized and partially funded the establishment of the Centre for Exploitation of Science and Technology. In the United States, the President's Commission on Competitiveness set the stage for the creation of the Council on Competitiveness, which was spawned and funded by the private sector. The linchpins for the activities of these bodies are the following:

- consensus on priorities;
- strategic choices for action; and
- pooling resources to initiate programs and projects.

Drawing on this international experience, we believe that Canada's most powerful private sector leaders should in a common resolve. The private sector should catalyze action based on the following five-pronged mission to:

- a) come together help forge consensus among private sector leaders on the pragmatic steps required for Canadian competitiveness;

- b) build public awareness of the magnitude, ramifications and importance of the competitiveness challenge;
- c) precipitate the development of industry self-help mechanisms such as, pre-competitive research and skills development consortia, procurement, and the pooling of risk capital;
- d) promote and stimulate the development of a comprehensive, Canada-wide, rational approach to skills development and labour adjustment, in response to the emerging competitiveness agenda, and initiate the pooling of resources in sectoral training programs; and
- e) monitor collective progress in becoming innovative and competitive.

While the designated private sector leaders should help determine how to catalyze private sector action, responsibility for movement falls to each and every player. Each segment of the private sector must build the on-going consensus, commitment, climate, and capacity to make Canada an innovative and internationally competitive nation.

The targetted challenges follow.

#### **4.1 The Challenge to Individual Firms**

Creating an innovative culture begins with individuals who may be workers, managers, CEOs or owners in their own workplaces. S&T innovation can enter the mainstream of the Canadian economy only when all employees of a firm see the opportunities and take up the challenge to work together in a spirit of joint responsibility and benefit.

##### **4.1.1 Think Globally**

Successful, innovative firms in Canada have global horizons. They understand their competitors and are constantly aware of changing developments in global and domestic market places. Firms should link up with world leaders in pre-competitive research consortia and production and marketing alliances. They should make strategic planning their standard practice, covering not only operational and financial areas, but also innovation and Human Resource Development strategies. Exploitation of technology for innovations in process, as well as in products, is central to success.

#### 4.1.2 Seek Out Winnable Niches

Firms should aggressively seek out and capture market niches. Recognizing that these niches will not necessarily be yours for long, keep looking for new ones appropriate to your strengths. High value-added considerations such as design, services, packaging, quality, reliability and customer-specific needs should be considered as critical to firm rejuvenation and success.

#### 4.1.3 Enhance the Firm's Quality of Product and Customer Service

To be financially rewarding, the focus on innovation for a firm must be to improve the product quality and increase the satisfaction of its customers. Specifically, the firm must ensure that innovation enhances its capacity to better serve and be flexible and responsive to the changing demands of customers.

#### 4.1.4 Improve the Firm's Ability to Generate In-House Innovation

Increasing the amount of in-house R&D improves the firm's capacity to apply technology and innovate. This is the very genesis of innovation and long-term survival in the new economy. Innovation depends on the skills, creativity and experience of a firm's employees, especially the base of scientific, engineering and management talent.

#### 4.1.5 Participate in Joint Labour-Management Efforts to Improve Innovation and Competitiveness

Productivity, the prerequisite to competitiveness, depends on the firm's capacity to innovate. In the past, innovation in product, process and work organization often meant job losses. Meaningful labour-management efforts to improve productivity and competitiveness require open discussion, full information, total participation, employment security and the expectation of shared benefit. When change does mean job loss, carefully planned adjustment measures and support should be forthcoming in order to help individuals continue to be productive contributors to society.

#### 4.1.6 Organize the Company to Maximize the Potential for Innovation

The climate for S&T innovation within a firm is greatly affected by the company's organizational structure. Highly innovative firms in Canada are flexible and less hierarchical in nature, and tend to spawn smaller spin-off firms. Their staff is deployed in creative ways, such as establishing work teams whose leadership varies depending on the particular demands of the team's task.

#### 4.1.7 Encourage Worker Participation in Major Changes within the Firm

Whether the change is a productivity enhancing measure involved in automating a production line or the downsizing of a traditional manufacturing enterprise, the focus should be on employment stability, not job security; on transition, not reaction; and on participation, not unilateral decision-making. Human resource planning should assume importance at least equal to that of other elements of planning such as capital investment. Early planning for change gives everyone the time to prepare and adjust. In addition, firms should ensure that their employees are fully informed of, and consulted on, the changes that affect their work.

#### 4.1.8 Demand Innovation from Yourself and Others

Owners and senior management must make it clear that they expect and will welcome innovation from their employees. Staff should understand where the company is going. Opportunities should be communicated as well as risks. "Success comes in cans, not in can'ts."

#### 4.1.9 Make Innovation Part of the Company's Team Spirit

The firm can create the right climate for innovation by directly encouraging and rewarding the creative ideas of its employees. Within the team environment, individuals must be properly rewarded for their creativity. This will mean different forms of compensation. Rewards can be monetary, such as bonuses and equity participation in marketable ideas. They can also be non-monetary, in terms of greater recognition, career enrichment and peer recognition.

#### 4.1.10 Use Technological Champions

Many firms have technological champions of world rank. These individuals — leading CEOs and shop workers alike — have a unique opportunity to use their credibility and visibility within the private sector to champion the innovation cause. This can apply within their own firm and across the entire private sector. Success stories and advice should be offered to those who need it. A broadly based commitment for action should be built.

#### 4.1.11 Accept that Technological Change is a Way of Life and Aggressively Look for Ways to Improve Career Planning

Lifelong learning is a way of life. Companies and workers who see the opportunities inherent in change will be the future winners. A commitment to innovation is a commitment to the future of employees and owners alike. All employees — whether members of support, technical or professional staff or management — must take greater responsibility for keeping up with the changing skill demands of a competitive economy.

#### 4.1.12 Put Tomorrow's Skills in Place Today

A work force or management team must have up-to-date skills to remain competitive. Owners and managers must work with employees to establish career and skills development plans and programs at all levels. Firms should undertake significant investments in training. Designated counsellors, personnel officers, trainers and work education delegates should help workers make career and learning decisions.

Fellowships and exchanges with universities and governments can help employees and managers upgrade their skills. A strong, visible one-to-one relationship with educational providers, such as technology management schools, provides flexible continuing education opportunities for the firm's employees. The education of today's and tomorrow's leaders of the private sector calls for the innovative cross-fertilization between the educational providers and firms. Adopt-a-school programs, chair sponsorship and career-mentoring are examples of such interaction.

#### 4.1.13 Establish Closer Links with Educational and Research Institutions

Closer links between basic and applied research provide for the application and development of new and existing products. Where feasible, an established firm can contribute to the university's basic research needs, and in return, help commercialize viable products arising from the research.

#### 4.1.14 Work with Others to Find the Best Way to Provide Retraining

Innovation can bring unexpected change and disruption to a workplace if not properly introduced. Individuals must help build consensus among fellow employees and establish the right climate to encourage and reward innovation. Managers and employees must work together to determine the best ways to provide the upgrading and retraining within the firm. Many firms have tried and succeeded. Everyone should learn from their experience.

#### 4.1.15 Actively Support the Initiatives Undertaken by Industry Alliances to Promote Innovation

Industry alliances must have the support of all their members if their efforts to promote innovation are to be successful. Unity of ideas and a common resolve to implement them are the key to success. Industry self-help measures require the strength of many firms to be successful.

#### 4.1.16 Forge Strategic Alliances to Give or Get Help

Enterprises frequently need financing, export marketing or training resources and expertise in order to carry an innovative idea through to commercialization. Such firms can seek out larger firms among their suppliers and customers to act as mentors. Large established firms, in turn, must be open to these opportunities, particularly in the area of procurement from smaller Canadian companies.

#### 4.2 **The Challenge to the Financial Community**

Banks, trust and insurance companies, venture capitalists and other financial firms must not only meet the challenge to individual firms but also reach into the future to become the financiers of risk and science and technology-based innovation.

Financing innovation is frequently cited as the single greatest barrier to the enterprise. Traditionally, only a small portion of Canada's financial community has invested in the relatively high risk area of firm-level innovation. If more Canadian firms, particularly smaller enterprises, are to carry innovative ideas through to the critical commercialization stage, then the whole Canadian financial community must become more familiar with the opportunities of an innovation culture and, in particular, the needs of the country's innovating firms and individuals. To do this, the financial community must take the following actions:

##### 4.2.1 Advocate Financial Instruments that Are Responsive to the Requirements for Innovation

Articulation of the relationships between various financial instruments and the ability of firms to innovate is required. Innovative financing mechanisms to support technology-intensive ventures must be promoted.

##### 4.2.2 Work with the Business Community and Governments to Reduce the Cost of Capital

Promotion entails lowering the cost of capital, especially in the financing of long-term, high risk ventures. This is a critical element in Canada's capacity to compete in world markets. We propose that a committee consider this topic in the 1989 deliberations of NABST.

##### 4.2.3 Educate Employees on the Necessity of Innovation Success

Employees of financial institutions must be made aware that their own profitability and the quality of life of Canadians depend upon the success of innovating firms.



4.2.4 Adopt Financing Strategies that Reflect the Needs of the Innovative Company

Investors and lenders must look beyond their usual balance-sheet accounts and return and payment terms.

4.2.5 Develop the Expertise to Respond to the Needs of Innovating Firms

Science and technology analysts must be designated and trained to support financial services for innovative firms and to ensure that managers and front-line contact personnel are aware of and use such expertise.

4.2.6 Assign Accounts of Innovative Firms to Capable and Flexible Account Managers

Innovative firms require responsive account management due to the volatility of their environment. Capable financial support from investors and bankers is critical.

**4.3 The Challenge to Industry Alliances**

The private sector can and must lead Canada in the creation of an innovation culture. Many of the necessary actions must originate with the individual firm and its employees. However, industry alliances should play a pivotal role in a number of key self-help initiatives. Industry alliances should take the following actions:

4.3.1 Rally Behind the “Eagles” of Industry to Speak with a Common Voice and Move with Concerted Action on the Canadian Competitiveness Agenda

In the new vision, industry must assume the lead and set itself into action. It should establish its own priorities for a competitive Canada.

4.3.2 Provide, by Sector, Intelligence on International Competition and Set Reasonable Goals for Comparable Attainment

Gather and distribute information on international competitors and provide detailed information on the status of Canadian industry in areas such as research, development, education, training, and technology adoption and transfer. Canadian enterprise must be equipped with the benchmarks to measure their progress towards established goals for an innovative and competitive economy. The alliances should build the necessary bridges among firms. This challenge echoes a similar recommendation in the recent annual report of the Economic Council of Canada.

#### 4.3.3 Build the Networks to Coordinate Industry Self-Help Actions

Help individual firms to pool risks and resources to provide specialized services in areas such as marketing intelligence, financing, training and procurement. Forge the sectoral, firm-to-firm linkages and involvement in pre-competitive research. Also, help channel the buying power of industry to nurture small and innovative Canadian firms.

#### 4.3.4 Coordinate and Initiate Specific Private Sector Self-Help Actions

Industry alliances should catalyze the establishment of pre-competitive research consortia, by sector, such as those recently conceived by the forestry, steel and plastics industries. Such alliances should also collectively address firm level training, retraining and other transitional issues associated with workplace changes.

#### 4.3.5 Build Commitment to Innovation within Your Own Memberships

Encourage your membership to become product, process and organizational innovators.

#### 4.3.6 Work with Educational Institutions to Build Industry-Wide Training Programs

It would be helpful to establish a system of interchanges, co-operative programs, internships, research fellowships and mentoring initiatives. Identify leading experts in areas such as management and organizational development, as well as those with highly specialized technical skills, to become part of a nation-wide training network under the auspices of trade or industry associations.

#### 4.3.7 Raise the Profile of Science and Technology among Canada's Youth

Work with educational institutions and governments to inspire and encourage young people, both male and female, to develop careers in science and technology. Fund and support science fairs, field visits and cooperative education projects. Participate in discussions with governments and industry on broadly based topics and on specific cooperative initiatives such as those aimed at youth.

#### 4.3.8 Educate Potential Investors

The financial community should be aware of industry's S&T innovation ideas and needs. Associations are uniquely positioned to link investors and innovators.

#### 4.3.9 Facilitate Contact with Governments

Help firms understand government requirements and facilitate their contacts with appropriate government agencies.

#### 4.4 **The Challenge to the Work Force**

Management alone cannot assume responsibility for a firm's competitive position in international markets, nor can Canada afford deeply entrenched adversarial approaches. Earlier, we posed a challenge for management to work with labour. In return, we believe that both organized and non-organized labour must work with management to forge new and positive relationships to fashion change effectively. Jobs and wage levels depend on labour-management partnership, collaboration, trust, teamwork and joint rewards. We believe that Canadian workers must work together to develop, maintain, and enhance labour market policies and programs for the benefit of all.

To do this, labour must take the following actions:

##### 4.4.1 Welcome and Capture the Opportunities Inherent in Persistent and Accelerating Change

A positive approach to change and its inherent opportunities requires vision and leadership by organized labour and individual employees. New approaches to work organization, employment security, labour-management relations and smooth transitions necessitate a very substantial role for labour.

##### 4.4.2 In Cooperation with Business, Monitor the Effectiveness of Education and Training in Canada

The skills and creativity of employees are basic to S&T innovation and industry success. Federal and provincial disputes over educational territory have created a large gap in the capacity of the private sector to understand our skills development capabilities, to assess our strengths and weaknesses, to develop strategic directions, and to propose cooperative actions. Labour and business have a major role to play in filling this gap.

##### 4.4.3 Catalyze the Shift in National Perspectives

Since security without prosperity has little meaning, labour must develop, in cooperation with management, new approaches and programs to manage workplace transitions. These approaches should be based on the concept of employment stability, rather than job security. Programs to support smooth workplace transitions in response to technological change should

be established under the joint responsibility of management and labour. At the national level, labour must lead in the development of proactive, long-term transitional programs, rather than temporary reactive adjustment activities.

#### 4.4.4 Work to Increase Awareness of the Importance of S&T Innovation

Firms cannot be innovative without the participation, understanding and cooperation of their employees. Labour, thus, has a critical role in promoting an appreciation of innovation among employees and in helping their firms become innovative. Industry has been challenged to share the benefits of increased productivity. Labour, similarly, is called upon to invest in innovative Canadian ventures. The Canadian Federation of Labour (CFL) is currently exploring some innovative mechanisms for collective investment.

#### 4.4.5 Foster the Development of Employee Skills and Employment Readiness

Employees must recognize the on-going requirements for retraining and updating and act accordingly. Labour is challenged to work with management to develop innovative skill development programs and funding mechanisms.

Joint training funds, work education delegates, earned time-off for skills development, and the harmonization of interprovincial standards and certification are just some of the issues for labour-management attention.

#### 4.4.6 Become Networks to Support Self-Help Actions

Just as industrial alliances have been challenged to meet the collective needs of firms, organized labour should plan for those of workers. Self-help efforts should be encouraged. In order to keep itself fully abreast of the latest trends in science, technology and related adjustment issues, labour should keep informed of new developments in workplace issues at the regional, national and international levels.

## **5. SUPPORTING THE CHALLENGE**

While the private sector must assume the lead in the quest for a competitive economy, governments, educational institutions and individual citizens must ensure the environment for innovation to thrive. Achieving consensus on the competitive priorities for Canada will begin to set the agenda for support. However, there are several major areas that clearly must be addressed if Canada is to develop an innovation culture.

### **5.1 The Commitment of Governments**

To create a competitive environment, governments should take the following actions:

#### **5.1.1 Drive S&T Innovation to the Top of the National Agenda**

Governments should support the private sector in its efforts to take the lead in revitalizing Canada's economy. The advice sought from the private sector, including NABST, should be translated into action. Spending should reflect the unified direction achieved through consensus.

#### **5.1.2 Forge National Consensus**

Governments must respond quickly to a changing competitive environment. Bureaucratic rigidity must yield to the release of individual enterprise. A symbiosis between the public and private sectors must emerge and precipitate co-operative national action. The interface between the private sector and government surrounding the negotiation of the Canada-U.S. Free Trade Agreement is an example of consensus building at the national level.

#### **5.1.3 Monitor Progress**

Industry has been challenged to organize itself to set an agenda for S&T innovation and national competitiveness. Benchmark information and the on going analysis of progress are basic to encouraging this progress. Government agencies — such as the Science Council of Canada; Statistics Canada; Industry, Science and Technology Canada; and Employment and Immigration Canada — should provide that support. If firms are aware of where they stand on innovation, how they compare with their international competitors and how they can progress over time, reasonable goals for improvement in areas such as; education, training, research and development, and technology adoption will be measurable.

#### 5.1.4 Promote Innovation

The instruments of finance, whether private or public, must be geared to long-term investments.

Government tax, procurement and investment policies are essential ingredients in creating a favourable climate for innovation in Canada. Industry still has many concerns about the effectiveness of policies in these areas. To address these concerns, we believe that the following action should be taken:

- a) Government policies must be formulated to support innovation.
- b) Governments should encourage investment by a taxation policy that reduces the risk to investors. Recently, the risk/reward ratio for investors has increasingly discouraged investing in innovation. For example, the newly implemented “related to business” rules, the treatment of limited partners with regard to the investment tax credit and the reduction in capital gains exemption have all been detrimental to investment.
- c) While the R&D investment tax credit has been very beneficial in reducing the costs to industry of risky R&D projects, the tax treatment of R&D still needs improvement. One example of an incentive program worthy of serious consideration or adaptation is a Swedish program that allows firms a percentage of tax-free profits for ongoing innovation and adjustment requirements.

In addition, the issue of the high cost of capital is critical to Canadian industry and merits intensive study.

#### 5.1.5 Adopt Strategic Procurement Policies and Practices

Procurement is a critical tool used by all Canada’s major trading partners in developing and nurturing their industries. Within the current competitive trade context, it is imperative that our governments adopt strategic procurement policies and practices to enhance the international competitiveness of Canadian industry. In this context, urgent government action is required to implement the recommendations of the 1987 NABST Government Procurement Committee Report.

#### 5.1.6 Support a Comprehensive National Human Resource Development Strategy

In response to private sector advice, federal and provincial governments should set aside jurisdictional disputes and develop a national skills development strategy. On the demand side, the private sector is challenged to train its own employees, to make known its human resource development requirements and to assess the effectiveness of the education system in meeting its on going personnel requirements. On the supply side, Canada can no longer afford the fragmentation, duplication and waste inherent in the existing educational system. Our

economic future depends on the development of an efficient, national human resource development strategy. The Prime Minister, in collaboration with the First Ministers Council, should take the first step by initiating exemplary co-operative action in the area of education.

#### 5.1.7 Ensure Effective Work Force Transition Mechanisms

Innovation, competitiveness and a changing trade environment will mean some old jobs will be lost as new jobs are created. A critical shortage of qualified personnel looms on the horizon at the same time as long-term unemployment stubbornly persists. Canada cannot afford the dead-weight cost and human tragedy associated with long spells of unemployment, bottlenecks in production caused by skill shortages, and the high cost of unproductive income support for the unemployed.

Adjustment mechanisms that ensure income stability, while at the same time promoting individual entrepreneurship and initiative, are required. We must shift from reactive support programs for the unemployed to positive human resource and enterprise development programs for smooth career and job transitions.

While most employees are exposed to the threat of unemployment at various times throughout their careers, for some, the impact is lessened. A substantial number of companies now provide lump sum severance payments and benefits. These, in turn, are often used for retraining, start-up companies and/or job searches.

Employees now change jobs and even careers many times during their working lives. Governments must develop support programs to ensure smooth transitions and the continuing productivity of citizens.

#### 5.1.8 Develop a Harmonious, Consistent, Stable and Fair Regulatory Environment

As part of their mandates, all regulatory agencies must recognize the importance of their roles in keeping Canada competitive. Our regulatory environment should be consistent, stable and fair in design, development, implementation and application from one jurisdiction to another. As well, the regulatory environment should be established with a clear understanding of the views of and implications for the private sector. Regulations should not put Canadian based firms at a disadvantage compared to their major competitors. To ensure this, an industry impact statement should be prepared whenever a regulatory decision is taken.

#### 5.1.9 Ensure Coherent, Government-Wide Support for Industry

Regardless of where the interface between the private sector and government departments occurs, government involvement must reflect a coherent and supportive government-wide approach.

Canada's private sector has high hopes for the new department of Industry, Science and Technology (ISTC). Directions based on private sector leadership and public sector support should set the agenda for policy development and decision making within the new department. S&T innovation must be considered as its top priority.

In addition, ISTC should assume responsibility for Canada's trade portfolio, and serve as industry's window into the federal government, i.e., monitoring industry's views on strategies, markets, tax and financial issues while, at the same time, providing a coherent, government-wide response to industry requirements for information, advice and service.

## **5.2 The Commitment of Educational Institutions**

Canada must have a labour force ready for world competition. This requires a rational approach to skill development that links learner needs with educational service. Education, training and continuous learning require new and innovative approaches at all levels by educational institutions and providers. To do this, educators must take the following action:

### **5.2.1 Support the Formulation of a National Skills Development Strategy**

Business and labour have been challenged to advise on the development of a national strategy for skills development. This requires the supportive action by governments, at both the federal and provincial levels, as well as by Canada's educational institutions and providers.

### **5.2.2 Ensure Educational Excellence and Responsiveness**

Educational institutions should work with industry and labour alliances to establish a rational approach to educational priorities and service. Cross fertilization through mechanisms such as interchanges, co-operative programs, internships, research fellowships, mentoring and adopt-a-school programs should become routine.

### **5.2.3 Overcome Barriers to Learner Participation, Especially for Adult Part-Time Students**

To serve the country and to survive the impacts of major change, we must move towards a system that supports lifelong learning. If working adults are to participate in continuous learning, they will require special provisions such as transferability and portability of credentials, recognition of experience, counselling and information, linkages between work and learning, special scheduling, financing, recognition of learning needs, and off-site educational support.



#### 5.2.4 Ensure that We Meet the Educational Requirements for Innovation

Educational institutions should improve scientific literacy and promote business education at all levels. They should also respond more quickly to the changing educational requirements of an innovative, competing economy, particularly in the areas of management training, entrepreneurship, foreign languages and cultures, human relations, and communications. Specifically, more courses on technology management should be developed and made accessible to small and medium-sized enterprises.

#### 5.2.5 Foster Closer Links between Basic and Applied Research

Scientific research activities take place in both industrial and educational settings. Unfortunately, the links between R&D have often not been in place in the past. The benefits of Canadian research have often been realized offshore or not at all. Canadian educational institutions should ensure that appropriate mechanisms and linkages are in place to develop ideas, to commercialize products and to transfer technology.

#### 5.2.6 Develop Innovative Methods for Teaching Science

Creative ideas are central to an innovative culture. The role of science teachers at all levels is very important in achieving this end.

### **5.3 The Commitment of Individual Citizens**

The pace of change is accelerating. Our competitors are responding rapidly and we must do the same. Each and every citizen must make a commitment to making Canada a world leader in innovation and the capturing of world markets. We must begin with the creation of an innovation culture — a culture which will become part of our national fabric and our future. To achieve this end, each individual must take the following action:

#### 5.3.1 Demand Strong Educational Offerings

Individual citizens should consider the kind of education their children are receiving. In particular, they should insist that their children are being prepared for the competitive world of tomorrow. To achieve this objective, science and technology must be made a critical part of children's education.

5.3.2 Assume Responsibility for Lifelong Learning

Each citizen should assume responsibility for his or her contribution to our economic growth and innovative capacity. Skills development for both ourselves and our children should be considered as a prerequisite for our competitive future.

5.3.3 Understand the Importance of Innovation

Commitment begins with understanding. Individual citizens should develop an appreciation of the importance of S&T innovation to Canada's economic future by keeping themselves informed of current domestic and international developments in this area.

5.3.4 Rally to the Innovation Challenge

The total commitment of each person to excellence in work, learning, participation and consensus solutions should be the essential ingredient of an innovative and competitive economy.

5.3.5 Make a Commitment to Working as Part of a Team to Produce Quality Goods and Services

To make Canada a world leader in innovation and competitiveness, individual citizens from all walks of life should strive for excellence in their work. Specifically, customer service and satisfaction must be the focus of individual efforts.

5.3.6 Promote Public Awareness

Individual citizens have numerous opportunities to promote the importance of S&T innovation. For example, they can raise issues during election campaigns and debates, through voluntary and community associations, and in their own workplaces.

## **6. IN CONCLUSION — CREATING A COMPETITIVE CANADA**

There is a clear message from the advice of the 1988 National and Regional Conferences on Technology and Innovation; the recent Science Council of Canada Report Gearing Up for Global Markets: From Industry Challenge to Industry Commitment; the Premier's Council in Ontario; and similar S&T advisory groups in other provinces; and the 1987 and 1988 deliberations of the NABST. The message is that we must work together to create an innovative and competitive Canada.

Every man and woman in the work force should be challenged equally, and to his or her fullest potential, to help create an innovative and competitive Canada. Together, we will become a formidable competitor. Divided, the country will begin its economic decline.

New solutions, based on strategic partnering and consensus, are required. The private sector must mobilize to make Canada a world leader in S&T innovation and competitiveness. Governments, educational institutions and individual citizens must fully commit to creating a competitive environment and the context for change.

In this report to the Prime Minister, we have defined the private sector challenge. Among the various actions proposed, the following should be priorities for the private sector.

### **6.1 Catalyze Private sector Action**

The private sector in Canada should quickly respond and organize itself to catalyze action. A group of "industry eagles" should lead a five-pronged mission:

- 6.1.1 to help forge consensus among private sector leaders on the pragmatic steps required for Canadian competitiveness;
- 6.1.2 to build public awareness of the magnitude, ramifications and importance of the competitiveness challenge;
- 6.1.3 to precipitate the development of industry self-help mechanisms such as pre-competitive research consortia, procurement and the pooling of risk capital;
- 6.1.4 to promote and stimulate the development of a comprehensive, rational approach to transitional requirements for skills development and labour adjustment in response to the emerging competitiveness agenda and to initiate sector-specific training programs; and
- 6.1.5 to monitor collective progress towards creating an innovation culture.

## **6.2 Precipitate Private sector Self-Help**

Private sector self-help must occur in a number of strategic areas. What seems to be a formidable task for a single firm can be an effective initiative for strategic alliances. Pre-competitive and skills development consortia, and collective private sector programs supporting adjustment, procurement, marketing, venture capital and innovation intelligence, should be undertaken by strategic partners and industrial alliances.

## **6.3 Develop an Innovation Culture Based on Capturing New World Opportunities within a Secure and Positive Environment for Change**

The only constant in a knowledge-based economy is change itself. Labour and management must forge new partnerships to anticipate and plan for change. Rather than reactive temporary adjustment programs, innovative transitional approaches to human resource development, entrepreneurial ventures and positive adjustment are required. There must be a clear understanding that there will be no victims and that the benefits of change will accrue to all.

At the same time as citizens fear job loss precipitated by change, the most critical element in the competitiveness of a knowledge-based economy is people. Their skills, creativity, and capacity to invent and manage shape a nation's ability to compete. While it is clear that education issues must be addressed at the highest levels by the Prime Minister and the First Ministers of the provinces, it is equally clear that the private sector must assume new responsibility for human resource development and transitions.

Finally, all private sector firms, the financial community, industry alliances and labour must rally to the competitive challenge. We must ensure that Canada becomes an innovative and competitive economy that supports one of the highest standards of living in the world. But the private sector cannot do this alone. It is only through total commitment on the part of all of Canada's strategic partners that we can achieve our fullest potential as a competitive nation and maintain the good and caring country we call home.

