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## **Harnessing Knowledge and Innovation: A Canadian Priorities Agenda**

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The IRPP's *Canadian Priorities Agenda* project is the inspiration for the capstone seminar in the Master's in Public Policy program of the School of Public Policy and Governance at the University of Toronto. Taught by Wendy Dobson and Carolyn Hughes Tuohy, two of the judges in the original IRPP project, and Mel Cappe, President of the IRPP, the course is offered in an intensive format as a core requirement in the final semester of the two-year program. The volume *A Canadian Priorities Agenda: Policy Choices to Improve Economic and Social Well-Being* is the basic text for the course, supplemented by readings chosen by the two instructors and guest presenters. The students take the role of judges; and the final assignment is the preparation of a 5,000-word paper, modelled on the judges' reports in the original project, making the case for an agenda comprising five policies selected from options presented in the course.

# **Harnessing Knowledge and Innovation: A Canadian Priorities Agenda**

## **CANADA AT A CROSSROADS**

At the conclusion of the first decade of the new millennium, it is clear that the economic structures and relationships of the twentieth century are shifting. The economic supremacy of the United States of America is being challenged by rapidly developing economies in China and India, and global communications continue to drive the ever-increasing interconnection of economic systems. Parallel to the economic renaissance in China and India is a growing international concern regarding environmental sustainability. Developed countries are reorienting their economic systems to deal with the reality of climate change mitigation and exerting pressure on reluctant developing economies to do the same. Canada is confronting a future where traditional economic relationships are weakened in the face of growing international competition, and environmental pressures limit the avenues for potential economic growth. Empty factories in Ontario and the emergence of wind turbines in the rural Prairies tell a similar story: conventional wisdom has changed, and Canada must be willing to change along with it.

## **AN ENGINE FOR INSPIRATION**

The policy package I propose is designed to complement a specific vision of the future of the Canadian economy. Long-term, sustainable economic growth will not be achieved with stop-gap measures intended to buttress inefficient industries and monopolies. Nor will it succeed through the continuing abdication of economic capacity to the developing economies. This package aims to initiate the process of orienting the Canadian economy toward a new “product”: knowledge and innovation. This is not to insinuate any form of planned economic restructuring. It is inevitable that many traditional sectors of the Canadian economy will continue to exist with only limited modification, while others may alter their processes without substantially changing the final product. What is intended is to foster the conditions that encourage Canadian businesses, investors and research institutions to continually dedicate a substantial proportion of their resources to investment in new ideas. The intention behind the package is to engender an environment where market forces are able to exert themselves in support of innovation. In the package, regulation creates new opportunity and limits undesired economic behaviour. It balances short- and long-term

outcomes, but the focus is on creating the foundation for an economy oriented toward knowledge and innovation.

I do not propose that innovation be a first step towards reclaiming dominance in physical goods production over developing economies. Instead, it is expected that Canadian innovators will endeavour to bring new innovations to market at a rapid pace across numerous sectors of the economy, with the implicit understanding that many firms will be unable to sustain domestic production in the face of global competition. The driving engine of the economy will be not physical production, but the creation and implementation of new ideas. The value of these innovations, in whole or in part, will enable Canada to “punch above its weight” in the international economy.

Economic competitiveness, which relies on a commitment to intensification and diversification, is a critical element of this approach. Although productivity growth is an elusive goal, it is generally agreed that better management and utilization of existing resources is essential. Some important first steps have already been taken, such as the acceleration of sales tax harmonization at the provincial level, which has removed disruptive taxes on physical capital investment (Drummond 2010, 16). The policies in this package are further steps toward better utilizing and managing human and physical capital in Canada. At the same time, they are intended to direct the Canadian economy away from traditional “safe harbours” in order to pursue new opportunities in underdeveloped sectors and emerging markets.

In these policies, environmental concerns and a commitment to economic development that is environmentally sustainable are a priority. The objective is to prepare Canada for economic growth throughout the coming century, not to maximize growth within a short time frame. If we do not address the dramatic consequences of unchecked climate change caused by greenhouse gas emissions, concern about long-term economic prosperity will be futile. By the same token, the global nature of the problem of climate change presents a tremendous opportunity for scientific and technological innovation with positive economic implications, and the policies in this package are intended to position the Canadian economy to assume a greater role in developing these emerging sectors.

## SELECTION CRITERIA

There were 42 policy options available for consideration in the context of this project. Prior to the final selection of five options, we examined all alternatives against five evaluating criteria. The purpose of this exercise was to ensure that the policies selected reflected the principal objectives of this package, and that they reflected practical political and institutional considerations.

First, the policies selected had to reflect a balance between economic growth and equity considerations. Policies that promote economic growth at the expense of equality of opportunity were rejected, as they would reinforce the underutilization of Canadian human capital. It was also undesirable that the chosen policies be committed to ensuring universal access, as the large associated costs are not consistent with the economic competition necessary for a highly innovative market environment. The policies selected must support an economic system that is growth-oriented yet committed to ensuring that equality of opportunity rewards merit and initiative, with the goal of maximizing human and physical capital.

The second criterion for the policies selected was they must support innovation and entrepreneurial pursuit. Entrepreneurs are defined as economic actors as well as those attempting to achieve breakthroughs through research and practical theory. The third criterion was that the policy must have a global orientation in economic development that is cognisant of long-term Canadian competitiveness. The impact of this criterion was it eliminated many policy options that had a solely domestic focus. While many such policies seek laudatory and desirable improvements in social conditions, I believe they would be financially unsustainable in the long-term without significant changes to the Canadian economic orientation.

This concern extends to the fourth criteria: that the selected policies be politically and administratively feasible in the current Canadian context. It is not constructive to recommend policies that cannot be implemented under present circumstances or that present challenges that are prohibitively complicated, when more practicable options are available. Finally, the policies selected must have flexibility so they can be adjusted to account for long-term changes. Policy options that commit the government to permanent, unalterable financial and policy burdens are not included. Policy options that lack a mechanism by which to adjust the terms as new challenges and opportunities arose would significantly limit the maximization of the

physical and human capital necessary to maintain an economic and social environment conducive to a high-performing knowledge and innovation-based economy.

## **THE POLICY PACKAGE**

My policy package incorporates five policy choices that together reflect the objective of orienting the Canadian economy toward a knowledge and innovation focus, while remaining committed to long-term economic growth and environmental sustainability. Here I will explore each of the policies: their structures, their relationships to the five criteria, and why I favoured them over other options that address similar issues. The five policy choices in my policy package are the following:

- Environmental sustainability: cap-and-trade system
- Trade diversification: new trade agreements with large emerging economies
- Human capital intensification: foreign credential recognition
- Resource management: natural capital plan and associated database
- Human capital development: merit-based scholarships for low-income students

### **1. Cap-and-trade system to mitigate greenhouse gas emissions (GHGs)**

Environmental sustainability is a key concern for the global economy. The economic impacts of climate change vary throughout the world, but they include natural disasters, damage to natural resources, lower agricultural productivity and increasing incidence of disease. If Canada does not introduce substantive national climate change reform, this will place it at odds with most developed economies and could lead to trade barriers with countries that do implement strong carbon pricing legislation.

Carbon pricing mechanisms require that all GHGs are priced at a rate that reflects the resulting environmental damage, with the costs incorporated into the economic decisions made by firms (Courchene and Allan 2008, 61). The intention is to “direct consumption away from carbon-intensive processes and products” (Courchene and Allan 2008, 61). The mechanism selected for this purpose is a cap-and-trade emissions-trading system. This method places an overall cap on emissions, and companies trade a controlled number of permits to allow them to emit their proportion of greenhouse gases (Courchene and

Allan 2008, 61). The overall cap is made stricter over time as firms shift towards less emissions-intensive means of production, and the price of permits determines the carbon price (Courchene and Allan 2008, 66). The initial cap should be carefully set according to accurate information about current national emissions. It is recommended that auction, rather than free allocation, be used for the initial distribution, because it would establish an initial market price for permits and provide income for additional government investment (Ellerman and Joskow 2008, 26; Courchene and Allan 2008, 66). Failure to comply with the permit system would result in substantial fines and/or criminal proceedings.

Cap-and-trade emissions-trading systems are already the preferred carbon-pricing mechanism throughout much of the developed world: the European Union implemented a transnational system in 2005, and serious discussions about a carbon-pricing mechanism are occurring in the United States at the federal and state levels. The implementation of a similar model in Canada would have the added benefit of creating the opportunity to develop an international market in emissions permits, and would lead to a common, global price on carbon (Courchene and Allan 2008, 63). The cap-and-trade system, by allowing market forces to shape production decisions within the restrictions of the overall cap, is an example of the culture of innovation that the package intends to create. There is inherently a large degree of flexibility within the cap-and-trade system, as the carbon price is constantly adjusted by the market price determined by permit trading. The government can adjust the cap on an annual basis, to take account of shifting priorities and the pace of innovation. Although there would be some cost in economic growth from implementing a cap-and-trade carbon pricing mechanism, it is estimated to only be equivalent to 1-2 years of lost economic growth distributed over a 40 year period (Jaccard 2007, 10).

Many economists favour an alternative method of carbon pricing: a tax on the emission of GHGs throughout the economy (Jaccard 2007, 22). The carbon tax is preferred because it would result in the lowest-cost emissions reduction being implemented first, while the rising level of the tax makes emission abatement more cost-effective for other economic activities (Jaccard 2007, 22). While a carbon tax would ensure a stable price on carbon, it would not guarantee that the ultimate goal of GHG emission reductions will be achieved, as emitters can continue to engage in carbon-intensive activity as long as the carbon tax is paid. It is likely that the initial level of the tax would be set at a relatively low level, and past experience shows that any effort to raise taxes will be highly contentious. A system of incremental increases in the carbon tax rate

would make the package much more difficult to pass in the short-term and it would eliminate the ability to easily adjust the formula to account for economic changes and disruptions.

There is significant resistance to the carbon tax from provinces that are dependent on high emissions-generating natural resource industries, such as Alberta and Saskatchewan (Jaccard 2007, 29). Several of these provinces have already begun to implement provincial and regional cap-and-trade mechanisms. A cap-and-trade system would have to be national to prevent emissions leakage between provinces, as out-of-province producers cannot be bound by in-province carbon prices (Courchene and Allan 2008, 63). It would be constitutionally acceptable under the *Canadian Environmental Protection Act* because of the cross-jurisdictional component of atmospheric pollution (Courchene and Allan 2008, 62). As well, a cap-and-trade system closely parallels the policy decision undertaken in the European Union and under consideration in the United States, and would thus keep Canada economically competitive by creating the conditions for a potential international emission trading system.

## **2. New trade agreements with large emerging economies**

The international economic system is changing. Economic growth is strongest in large emerging economies, such as China and India. It is unlikely that these emerging economies will supplant the United States as Canada's primary international trading partner, but there is tremendous opportunity to expand economic relationships with emerging economies. This policy choice advocates a general commitment to exploring mutually beneficial trade agreements with these countries, but emphasizes India. India is currently the 14<sup>th</sup> largest economy in the world, and its current growth rates indicate that it may be the largest by 2050 and beyond (Canadian Council of Chief Executives [CCCE] 2008, 4). In 2008, bilateral trade between Canada and India reached \$4.6 billion, up 22.5% from the previous year (Foreign Affairs and International Trade Canada 2009, 1). This was in line with bilateral trade increases throughout the last decade of approximately 20% per year (CCCE 2008, 7). There remains significant opportunity for trade expansion. Canada-India trade still represents only 10% of the value of Canada-China trade, and direct foreign investment in India from Canadian sources in 2006 was less than 1% of all Canadian investment abroad (CCCE 2008, 7). Therefore, the current economic situation demonstrates strong potential for Canadian business investment and innovative new economic relationships (Rao 2008, ii).



Wendy Dobson suggests that a services-only free trade agreement could be an achievable trade arrangement between Canada and India. Trade liberalization achieves gains when foreign goods and services exert competitive pressures on formerly sheltered industries, encouraging innovation or reallocating productive resources to more economically advantageous areas (Dobson 2006, 20). Canada and India both have comparative advantages in a number of sectors, but nascent Indian manufacturers would strongly resist a full free trade agreement (Dobson 2006, 22). In the services sector, both countries hold relative advantages that are desirable to the other party. Canadian firms are strong in financial, IT and engineering services, whereas India has demonstrated strength in software and IT services (Dobson 2006, 21). Some sectors in both countries rank high on the foreign restrictiveness index, but this has been overcome in recent trade negotiations between the Canadian government and both Chile and South Korea (Dobson 2006, 22). This option is quite feasible politically as the Canadian and Indian governments have already signed an agreement to examine the potential for a comprehensive economic partnership agreement. This would remove tariff and service barriers for Canadian businesses in India ahead of other competitors, and vice-versa (DFAIT 2008, 1).

Under my policy package, brokering a services-only or more comprehensive free trade agreement with India is preferable to expanding trade with traditional markets in the United States. There are few substantial opportunities to substantially expand trade with the United States, and in order to ensure long-term Canadian economic competitiveness it is essential that we engage more directly with emerging economic powers (Head 2007, 452). Doing so also sends a strong signal to the Canadian economy that innovation and knowledge are the products of the future for the Canadian economy, and it would be a precursor to a future trade agreement that would provide preferential access for the growing Indian manufacturing sector. Such an agreement would create substantial new opportunities for small and medium-sized Canadian businesses to engage with the Indian economy in ways not previously possible (Rao 2008, i). It would increase the demand by Indian manufacturers for Canadian natural resources, which would drive resource prices upwards. There would also be a need for a sound management strategy for natural capital (Rao 2008, ii).

### **3. Natural capital plan for long-term resource management**

New trade agreements with emerging economies will create significant opportunities for businesses invested in the extraction and exploitation of Canadian natural resources, but unsound and nonstrategic management of these resources will result in only short-term competitive advantages. Some renewable resources, such as water and biodiversity, could be irreparably damaged as a negative externality to the economic production process. Environment Canada is committed to the protection of Canadian natural capital to ensure both long-term economic competitiveness and environmental sustainability. Accomplishing this objective would require the development of a natural capital plan and database overseen by the Canadian government.

Natural capital includes a significant number of ecological goods and services that are fundamental to the Canadian economy, such as timber harvesting, natural gas extraction and aquaculture (Olewiler 2007, 126). Natural capital also includes a large number of environmental features, such as water sources, undeveloped lands, agricultural land and plant/animal species (Olewiler 2007, 127). Many forms of natural capital are only indirectly involved in the means of economic production, but nevertheless produce ecological goods and services that contribute to the Canadian economy and the well-being of society. Market failure occurs when ecological goods and services derived from natural capital do not have a well-established market price, leading to the overuse and other forms of abuse of these goods and services (Olewiler 2007, 133). The creation of a natural capital plan will identify priority areas of natural capital to be targeted, provide accurate data on the state of the stocks, and create a basis for their valuation.

The creation of the natural capital plan and its corresponding database of information are selected for this policy package in lieu of specific approaches to preserving natural capital because of the limitations of present information. In order to make informed decisions about natural capital preservation and relevant policy options, accurate information is essential. A natural capital plan would also provide the federal government with significant flexibility to determine the best method to protect a variety of natural capital types. Market-based solutions and public-private partnerships may be effective in some instances, whereas government regulation and intervention may be necessary in others. The plan would serve as the basis for a range of future policy decisions that would create greater equality of opportunity in accessing ecological

goods and services, support long-term economic competitiveness in the natural resources sector, and protect natural capital for its use in innovative ways.

#### **4. Remove barriers to foreign credential recognition**

In Canada, the unemployment rate is higher among the immigrant population than in the general population (Foot 2007, 199). This is despite higher educational attainment among the immigrant population, and an immigration system that rewards prospective migrants for their formal education and experience (Worswick 2004, 5). The result of this immigrant underemployment is an economic loss of approximately \$2 billion per year (Reitz 2004, 4). This is a substantial underuse of human capital that limits our economic competitiveness. It also creates barriers that prevent equality of opportunity for educated immigrants in the Canadian economy, stifling their potential contribution to knowledge and innovation. With Canada's low level of natural population increase, the continued flow of immigrant professionals and skilled workers is essential for maintaining a high level of human capital to contribute to productivity, especially if the economy is to increasingly rely upon knowledge and innovation as a core engine of growth (Reitz 2004, 5).

Much of this lost potential is the result of poor policies for recognition of foreign credentials. Educated immigrants with credentials comparable to their Canadian-born equivalents are frequently unable to get recognition for these credentials from professional licensing bodies in this country (Worswick 2004, 7). Although some foreign credentials are of inferior quality, most of the restrictions are the result of protectionism, and they force immigrants to make substantial investments in retraining before they can be employed in the fields for which were selected during the immigration process (Worswick 2004, 5).

My policy package includes a reform that requires all professional licensing authorities in Canada to provide a clear and timely certification process for immigrants with foreign professional credentials (Foot 2007, 200). This process would include a careful review the credentials of all immigrants, in order to discern those with high quality foreign qualifications and provide them with Canadian licensing. For immigrants whose credentials do not meet current Canadian standards, equivalency programs should be implemented to enable those who complete the process to rapidly qualify (Foot 2007, 200). These programs would include intensive apprenticeship and mentoring components intended to test knowledge and provide understanding of the Canadian system. In order to limit career dislocation, the length of such programs would be restricted

to one year. A trained Canadian professional should be able to accurately evaluate the abilities of a colleague in their field in this setting within this time frame. This expedited and nonprotectionist foreign credential recognition process would promote equality of opportunity for immigrant professionals and skilled workers, and thereby contribute to economic growth through improved use of human capital.

It has been suggested that a more effective reform would be to change the points system used in the immigrant selection process so that it better reflects human and social capital requirements. This may further improve the human capital within the immigrant cohorts, but without reforms to the professional accreditation process in Canada, there is little to guarantee that a greater proportion of immigrants with higher educational attainment will improve immigrant labour market performance (Worswick 2004, 4). The protectionist policies of professional licensing authorities have demonstrated that immigrant human capital is not intrinsically valued in the Canadian economy. Foreign credential recognition reform provides an avenue for immigrants to contribute their human capital to the Canadian economy in more effective ways by improving the likelihood of employment in the occupations they are trained for.

## **5. Assist low-income students with merit-based scholarships**

There is a marked disparity in the university participation rates of students from low-income backgrounds in comparison to middle/high-income students in Canada. The university participation rate of students from the highest income quartile was twice that of students from the lowest income quartile between 1993 and 1998 (Hemingway and McMullen 2004, 22-23). Concurrently, the returns from university education have increased relative to those from high school and college education, thus suggesting that the supply of university graduates is no longer keeping pace with the demand (Riddell 2007, 39). It is also anticipated that this demand will continue to increase (Riddell 2007, 39).

According to Riddell, “higher education is a tool for promoting equality of opportunity and social mobility” (Riddell 2007, 39). It is evident that many low-income families value the opportunity of higher education, as overall enrolment continues to increase in this segment of the population, despite increases in tuition fees (Riddell 2007, 39). Improving access to university education for all Canadians would contribute significantly to the quality of human capital, and it would provide the essential human component required for a knowledge and innovation based economy. As part of my policy package I recommend the establishment of

a scholarship program for low-income and middle-income students that is broad-based and has an achievable academic requirement (a B average, largely in line with minimum entrance averages) (Riddell 2007, 40). The monetary amounts of these merit-based scholarships would depend on family income, and could be modified to account for future changes in tuition fees and inflation. The scholarship program would provide a strong incentive for lower-income students to remain in school and strive for academic success, and, since they do not need to be repaid, would be more attractive for such students than loans (Gaskell 2007, 72). The federal government already has the capacity to act in this area through the precedent of the Canada Millennium Scholarship Foundation, although this does require cooperation with provincial infrastructure to distribute the funds to students (Gaskell 2007, 72). The federal government opted not to renew this program after its 10-year mandate was completed, and instead replaced it with a grant program that provides about half as much funding to more than twice as many students. Yet the basic principle remains the same, as the federal government continues to subsidize the educational costs of targeted students. Increasing federal spending on student assistance would probably be attractive to provincial governments, as long as there is no restriction on program choice for students.

There are also suggestions that corresponding increases in tuition should be permitted. This would place an additional financial burden upon students and the scholarship program, but it would eliminate the current subsidies for higher-income students in the form of regulated tuition fees. At the same time, increasing tuition fees would increase university funding more than would increased enrolment alone, and it would spur new investment in research and innovation (Riddell 2007, 40). The process of changing the tuition fee structure would involve complex negotiations with the provinces – there might be considerable resistance from some – so it might be more prudent to focus on the more politically feasible option of maximizing university participation.

## **FISCAL ANALYSIS**

Substantial economic and social reform does not come without expense, and this policy package would involve a number of initiatives that would entail new expenses for the Canadian government. In creating this package, I carefully considered the financial implications of each policy option and predicated my decisions regarding the inclusion of each policy on the feasibility of the final policy choices. The result is a

package that seeks to create conditions for long-term economic growth through a reorientation towards the creation of knowledge and innovation that can be exported to producers in the emerging economies.

Fundamental to the financial attainability of this package is the auction of all permits under the cap-and-trade system. This would immediately raise revenues for the Canadian government and set an initial price on carbon that will gradually rise as the overall cap on emissions is reduced (Jaccard 2007, 28). According to the National Roundtable on the Environment and the Economy, at an anticipated carbon price of roughly \$100 per tonne such a system would raise approximately \$18 billion in revenue annually. A small fraction of this annual revenue would be used for the administrative and investigative operations of the cap-and-trade agency. A substantial share would be redistributed to the provinces on an emissions-per-capita basis, with the understanding that it would ideally be invested in innovation funds to encourage the development of new technology to reduce GHG emissions.

The remainder of the auction revenue would be retained by the Canadian government for investment in a number of other initiatives. Several of these are included in this policy package. The natural capital plan and database would be fully funded by auction revenues, as it would not be a significant expense. Not included are future regulatory changes for preservation determined through the findings of the plan development process, as these would probably involve a mix of revenue streams from public and private sources. As previously mentioned, none of these potential preservation tools are included in this package due to the current lack of comprehensive information on natural capital stocks. Revenue from emissions-permit auctions would also be a large share of the funding required for improved foreign credential recognition. This would involve budgeting for improved research and information-gathering regarding foreign credentials, and supporting professional licensing authorities in providing qualification programs.

The financing for the merit-based scholarship program for low-income and some middle-income students would largely be paid for through adjustments to existing student aid programs. Ross Finnie suggests a number of programs would no longer be required if the scholarships were available. Canada currently spends upwards of \$1.7 billion per year in education tax credits that disproportionately benefit higher-income students, and they are ineffective as a means of paying for education because of the delayed receipt of benefits (Finnie and Usher 2004, 31). There are also extensive government-operated student debt remission programs that are overwhelmingly targeted towards low-income students, and reducing and

cutting these programs could save \$430 million per year (Finnie 2004, 31). The need for these remission programs would be greatly reduced by the availability of scholarship grants. The savings from reductions in these two areas would provide a substantial pool of long-term capital for use in the funding of the scholarship program.

The negotiation of bilateral and multilateral trade agreements with emerging economies, notably with India, would not involve substantial government expenditure. This regulatory undertaking would require some funding for administration and oversight, but the primary purpose would be to open new markets and increase trade through the removal of government trade barriers. Thus, it can be reasonably expected that any new costs involved would be in large part offset by savings achieved from the removal of government restrictions. In doing so, it can be anticipated that conditions for greater innovation and economic development would be created, and Indian business investment in Canada would earn its share of corporate tax revenues for the Canadian and provincial governments.

## **CONCLUSION**

The package outlined in this report consists of a series of policies that are intended to prepare Canada for a new economic future based on harnessing knowledge and innovation for economic growth. It is not the only strategy for ensuring the long-term economic development of Canada. Critics may be concerned about the preference for economic and environmental reforms rather than investment in other pressing issues, such as health care reform and early childhood education. The guiding focus of this process has been to create a fiscally responsible, mutually supportive package of policies that will enable Canada and its citizens to remain economically relevant in the 21<sup>st</sup> century by emphasizing our advantages. Without this focus, even maintaining our current social welfare system may prove to be untenable.

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