Québec
focus on jobs

Shaping an innovative economy

An Integrated Fiscal Strategy for the Knowledge-Based Economy

An economic development strategy for job creation

Gouvernement du Québec
Ministère des Finances

An Integrated Fiscal Strategy for the Knowledge-Based Economy

FOREWORD

By the Deputy Prime Minister and

Minister of State for the Economy and Finance

Since 1982 and The Technology Conversion*, Québec has turned resolutely to fiscal support for innovation, and with great success. Our system of fiscal support for R&D has become one of the most advantageous in the world, and the results achieved match the efforts we have made.*

As the government prepares to make public the paper Accelerating Research and Innovation*, the 1999-2000 Budget Speech provides an opportunity to take stock of the fiscal initiatives to date, to put them in perspective in relation to one another, and to announce immediately a comprehensive series of new measures to enhance support for innovation. This is the goal of* An Integrated Fiscal Strategy for the Knowledge-Based Economy.

The measures announced are three-pronged. The government is strengthening fiscal support for research and development, improving its support for the technological adaptation of businesses and, at the same time, broadening the initiatives now in place for businesses in the new economy.

The government will inject a total of $42 million in the first year alone, in the form of tax initiatives. The government's measures will mean further assistance of over $164 million over a full year for these businesses, owing to the impact of Québec's decisions on federal taxation. These measures are in addition to the approximately $475 million that the government devotes each year in the form of fiscal support for R&D and innovation.

The government is breaking new ground with this range of measures by providing certain advanced-knowledge technology sectors with specific support. Three years ago, it began to take particularly innovative steps to support businesses in the new economy by creating tax credits for the production of multimedia titles, establishing the Centres de développement des technologies de l'information (CDTIs) and, more recently, founding the Cité du multimédia in Montréal.

These initiatives, which have made Québec a real trailblazer in the field, have been remarkably successful. Our performance must be reprised, and broadened to embrace more than information technology and to encompass all Québec regions.

An Integrated Fiscal Strategy for the Knowledge-Based Economy *provides for the implementation of a Carrefour de la nouvelle technologie (CNE) in each Québec region that does not now have a CDTI. This will produce a critical mass for the development of the new economy in all regions. The CNEs will be established in close collaboration with each region concerned. The Québec government is also taking steps to ensure that the forms of support now proving successful reach every corner of the economy, and every Québec region.*

With An Integrated Fiscal Strategy for the Knowledge-Based Economy, *the government is pursuing and stepping up its fiscal intervention to buttress innovation from the comprehensive vantage point of the role that taxation can play in this regard.*

By making it possible to enter a new stage in the development of an innovative economy, this intervention is a direct extension of Focus on Jobs, *which the government made public in March 1998.*

I am certain that the initiatives of the Québec government will hasten Québec's transition to the knowledge-based economy. They will significantly increase its capacity to innovate, which will create wealth and jobs, facilitate our passage into the next millennium and provide young people with the future they deserve.

BERNARD LANDRY

SUMMARY

The Québec government has gradually implemented a tax system that favours innovation, encouraging research and development (R&D), technological adaptation and, more recently, businesses in the new economy.

❒ *Measurable results*

The various measures that have been successively defined have produced measurable results. In terms of R&D, the initial objectives have on the whole been achieved, and Québec has made significant progress in catching up to other industrialized countries with respect to investment. Tax measures favouring technological adaptation have also produced very positive results. The specific initiatives defined for the new economy have definitely been successful, making Québec a hub of development in the knowledge-based economy.

On the whole, Québec's economy has benefited directly from these successes. For the period from 1984 to 1997, almost half of net job creation is attributable to the emergence, in Québec, of the knowledge-based economy. In many sectors, Québec now boasts world-class businesses which have become new stars of its economy. The specific support measures for businesses of the new economy, such as the Centres de développement des technologies de l'information (CDTIs), or information technology development centres, the Cité du multimédia and the tax credit for the production of multimedia titles, have already had spectacular results, enabling thousands of jobs to be created much more quickly than anticipated.

❒ *The government's objectives*

These results are extremely encouraging, and prompt the government to unambiguously reaffirm its policy stance and to act even more energetically. The government confirms its support for research and development and more generally for innovation, and its determination to use taxation to this end. Its initiatives must be strengthened, improved and incorporated into a comprehensive vision of taxation as an incentive for innovation. *An Integrated Fiscal Strategy for the Knowledge-Based Economy* seeks to achieve these objectives. It will consolidate the progress made, improve existing fiscal tools and help implement new initiatives.

❒ *Three fields of intervention*

An Integrated Fiscal Strategy for the Knowledge-Based Economy includes three fields of intervention:

— The first confirms and strengthens the tax system applicable to R&D, which remains one of the cornerstones of Québec's policy in support of innovation.

— The second specifically concerns the technological adaptation of businesses, which must be further supported and encouraged.

— Through the third field of intervention, the government will broaden its initiatives to foster the development of advanced-knowledge businesses and sectors.

The government will announce major initiatives for each of these fields of intervention.

❒ *Measures favouring R&D*

The government will implement three measures concerning the tax system applicable to R&D.

— Québec will offer businesses the option of claiming a super-deduction for their R&D expenditures, as an alternative to the current refundable tax credit. This super-deduction will not cost the Québec government anything, but will enable Québec businesses to claim all the federal tax assistance they are entitled to. It is estimated that businesses will gain $54 million over a full year.

— Québec is improving its tax assistance for supplementary R&D, which will be of benefit to small and medium-sized enterprises (SMEs). For a five-year period, businesses with assets of less than $25 million will enjoy a higher rate for their additional R&D expenditures. This measure will result in an injection of $24 million over a full year. It will directly benefit some 1 500 businesses, which play an active part in strengthening Québec's industrial fabric.

— Québec is improving the tax holiday for foreign R&D researchers by extending it from two to five years, and broadening it to other foreign experts dedicated to R&D projects. This measure will significantly increase the number of foreign R&D researchers and experts, while raising the proportion of those who remain permanently in Québec. This measure will represent assistance of $4 million over a full year for strategic workers employed by businesses.

❒ *Measures supporting technological adaptation*

For businesses, technological adaptation is another way to innovate, independently of R&D. To encourage businesses to invest in this sense, the government is announcing the following measures:

— The government is implementing a new refundable tax credit for technological adaptation services. This tax credit will have two components focusing respectively on business information, and liaison and transfer. With this tax credit, businesses will be able, among other things, to improve their knowledge and technology watch activities, and more quickly acquire and capitalize on such knowledge and technology. This tax credit will result in an injection of $5 million over a full year for businesses.

— The government is extending the enhanced accelerated depreciation measure that applied to certain investments linked to technological adaptation. This very generous measure covered investments carried out before January 1, 1999. The enhancement is extended until March 31, 2000. For the next two fiscal years, the measure will provide tax assistance of some $30 million a year.

❒ *Strengthening of measures in favour of businesses in the new economy*

Tax assistance for innovation has featured some particularly imaginative measures over the last three years in favour of information and communications technologies in designated locations. The government is expanding these measures, both in terms of the technologies involved and the regions where designated sites are defined. In addition, the administration of these measures will be simplified.

More specifically, the government is undertaking three major initiatives:

— The government will set up Carrefours de la nouvelle économie (CNEs), or new economy centres, using tax measures to stimulate the start-up and development of businesses in the new economy, in designated buildings. Corporations that carry out their activities in such buildings may claim a refundable tax credit of 40%, calculated on wage expenditures.

  Compared with the CDTIs and the Cité du multimédia, CNEs will not be limited to information and communications technologies. The concept is extended to all general application new technologies recognized as developmental technologies. Apart from information and communications technologies, CNEs may house businesses operating in production technologies, bio-technology, materials technology, and scientific and technological services.

  The CNE concept will apply throughout Québec since 12 CNEs will be created: one in each region that currently does not have a CDTI.

  Québec's regions will have a central role in implementing the CNEs. They will decide the policy directions of these economic development instruments.

  Essentially, the tax assistance for CNEs will be similar to the tax support provided for the Cité du multimédia. The tax assistance as part of the CNEs will reach $30 million over a full year.

— The government is creating the Centre national des nouvelles technologies de Québec (CNNTQ). The CNNTQ will group businesses focusing on new information and communications technologies applied in particular to the arts and culture sector. Once the CNNTQ is fully operational, the corresponding tax assistance will reach $12 million annually.

— Lastly, the government is significantly simplifying the administration of tax assistance measures for advanced-knowledge businesses by creating a one-stop centre for businesses in the new economy. The Bureau de développement de la nouvelle économie (BDNE), an integral part of the ministère des Finances, will replace the Bureau des Centres de développement des technologies de l'information (BCDTI).

The BDNE will administer all the specific tax measures available for businesses of the new economy, namely the tax credit for the production of multimedia titles and the measures concerning CDTIs, the Cité du multimédia, CNEs and the CNNTQ. The BDNE will have the leeway needed to promote these measures, inform targeted businesses, study projects submitted and make proposals to these businesses concerning the most attractive offer among the applicable tax measures. The BDNE may grant loan guarantees to secure interim financing for measures targeting businesses of the new economy.

The application details of these measures are fully described in the document entitled "Additional Information on the Budgetary Measures".

❒ *Significant measures, a comprehensive vision*

Overall, *An Integrated Fiscal Strategy for the Knowledge-Based Economy* will add $42 million starting next fiscal year to the funds directly injected each year by the Québec government, in the form of tax support for innovation. These measures will provide businesses with additional assistance of more than $164 million over a full year, as a result of the impact of Québec's decisions on federal taxation. This is in addition to the roughly $475 million Québec injects each year for innovation in the form of tax support.

These tax measures will support Québec's upcoming scientific research policy. The measures defined by the Québec government mark a new stage in the development of a pace-setting economy. They will help strengthen the innovative capacity of Québec's economy and thus sustain one of the keys to its growth.

FINANCIAL IMPACT OF TAX MEASURES IN FAVOUR OF INNOVATION AND THE KNOWLEDGE-BASED ECONOMY
(in millions of dollars)

Tax measures	Full year	1999-2000	2000-2001
Strengthening the tax system applicable to R&D			
- Super-deduction[1]	-54	-3	-54
- Improved tax assistance for additional R&D	-24	-1	-24
- Tax holiday for foreign experts[2]	-4	-1	-2
Sub-total	**-82**	**-5**	**-80**
Technological adaptation of companies			
- Tax credit for technological adaptation services	-5	-3	-5
- Accelerated depreciation (15 months)	-34	-34	-28
Sub-total	**-39**	**-37**	**-33**
Specific measures for the new economy			
- Carrefours de la nouvelle économie	-30	-1	-9
- Centre national des nouvelles technologies de Québec	-12	-1	-5
- Tax holiday for foreign training instructors (CDTI)[2]	-1	-1	-1
Sub-total	**-43**	**-3**	**-15**
All measures	**-164**	**-45**	**-128**

1 Gain for Québec businesses resulting from the application of the federal tax system. No cost to the Québec government.
2 Reduction in the personal income tax burden.

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INTRODUCTION

The Québec government has gradually developed a favourable tax system for innovation that encourages research and development (R&D), technological adaptation and, more recently, businesses in the knowledge-based economy – also called the "new economy". By publishing *An Integrated Fiscal Strategy for the Knowledge-Based Economy*, the government seeks to both assess the measures that have been put in place to date, and strengthen and improve these measures with a package of new interrelated and complementary initiatives which reinforce each other.

The knowledge-based economy is built from investments by businesses in the field of R&D, but also through the technologies they acquire. Advanced-knowledge sectors have specific features which require adapted support. *An Integrated Fiscal Strategy for the Knowledge-Based Economy* targets each of the government's three key fields of intervention. In its integrated fiscal strategy, the government has defined measures concerning R&D, technological adaptation and advanced-knowledge sectors.

These measures enhance, improve and supplement existing provisions, taking account of their effects, as far as they can be measured at present. *An Integrated Fiscal Strategy for the Knowledge-Based Economy* accordingly includes an analysis of the existing tax system and a description of the new measures. The document consists of two sections:

— The first section describes the tax measures used to date to encourage innovation and the positive economic impact they have had on investments and the emergence of a knowledge-based economy. This section also assesses the existing tax system, in terms of competitiveness compared with other jurisdictions, and according to new business requirements.

— The second section presents the new measures the government has decided to introduce, the logic on which they are based and how they will be implemented. It provides a concrete definition of the components of the integrated fiscal strategy the government has implemented.

Before beginning the analysis of the existing tax system and the new measures, the features of the knowledge-based economy must be pinpointed. The initiatives announced by the government stem directly from them.

❒ *Definition of the knowledge-based economy*

The knowledge-based economy, or the new economy, can be defined as the economy of knowledge, information and innovation. Modern economies have become knowledge-based economies because of market demands in terms of innovation. In the new economy, to meet market demands, businesses that want to survive must constantly offer new products, provide new services and make use of increasingly efficient technological processes.

The ability to innovate is accordingly the key to survival for businesses that must compete on a permanent basis. But the ability to innovate is also the best way to create and maintain large numbers of well-paid jobs. While innovation does entail rationalizations, above all it creates new sources of activity, producing wealth and increasing hiring. Overall, innovative businesses create many more jobs than they eliminate.

In the knowledge-based economy, innovations result from the company's R&D efforts, but also from the acquisition of new technologies perfected outside the company, whether in Québec or elsewhere. Advanced-knowledge sectors, in which R&D is concentrated, are the spearhead of the knowledge-based economy.

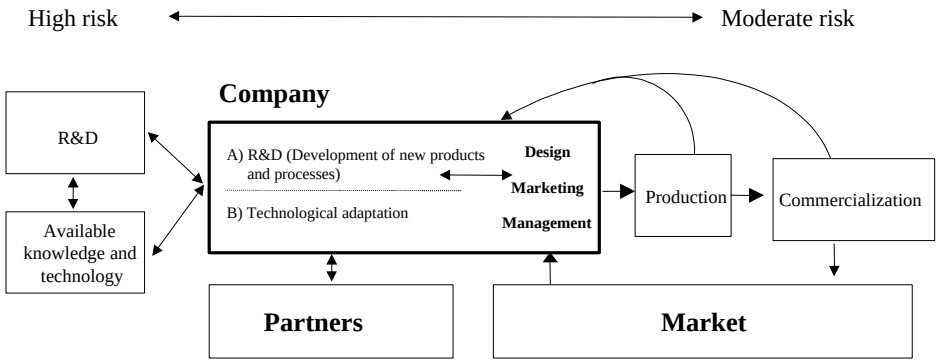
❒ *Sources of innovation: R&D and technological adaptation*

Innovation is a broader concept than R&D. R&D is one of the two sources of innovation, the other being technological adaptation. A company can innovate by carrying out an R&D program, but also by acquiring innovations developed by other companies, in Québec or elsewhere. Value is then added to innovation, either by commercializing the resulting new product or by making use of the resulting new process.

Diagram 1 below illustrates the innovation process. The two types of innovation are at the centre of the diagram. The diagram shows a concept of innovation which has gradually taken hold in most industrialized countries. This concept has replaced a so-called linear approach, which described the innovation process as a series of steps taken in sequence, namely basic research, applied research, development, production and commercialization.

DIAGRAM 1

FACTORS OF INNOVATION AND PLAYERS IN THE SYSTEM



Sources: Conseil de la science et de la technologie, *Pour une politique québécoise de l'innovation*, 1997, and ministère des Finances.

The shift from one concept to another is of more than theoretical interest. The new vision of the innovation process has major implications for our understanding of innovation and, by the same token, on ways to sustain innovative businesses.

— The modern concept of innovation means that if a company wants to succeed, it must make use of the resources of the innovation system and intensify its relations with the players in this system. Accordingly, it must establish links with partner businesses, universities, public laboratories, venture capital corporations and governments.

— The fact that technological adaptation, as well as R&D, is a source of innovation means that a company must allocate resources to certain specific activities other than R&D. In particular, these include technowatch, training, identifying technology, and assessment of commercial potential.

The diagram underscores the role of the market as a catalyst of innovative projects. A company's internal functions – design, marketing, management, production and commercialization – must be inter-connected. Lastly, the financial risk incurred by the company declines from upstream to downstream, as the scientific, technological and commercial assumptions of the innovative project are validated and value is added to them.

❒ *Innovation is the major factor of economic development*

Innovations, whether they result from R&D or continuous technological adaptation, determine the long-term economic growth of industrialized countries and are the source of wealth creation. These innovations have a pronounced impact on the performance of businesses and market transformation. In addition, and as has already been pointed out, the creation and deployment of new technologies create many more jobs than they eliminate, in the medium and long term.

However, innovation resulting from continuous technological adaptation is of particular importance in a small open economy like that of Québec. Québec must acquire technology developed elsewhere if it is to sustain productivity growth in various branches of industry. Such acquisition has undeniably become a race, at the international level, to capitalize, starting from innovation, on major benefits which last a few years, or even just a few months.

❒ *Advanced-knowledge sectors and fields*

Innovative companies exist in all sectors. However, they are particularly concentrated in so-called high-technology or advanced-knowledge sectors. The major advanced-knowledge fields in Québec are aerospace, the pharmaceutical industry, information technologies, telecommunications, optics-photonics, engineering services and electrical energy.

The companies in these sectors are characterized by a strong commitment to R&D, substantial use of technological adaptation and highly skilled labour. They usually compete with a limited number of international-class companies to serve specific niches of the world market.

❒ *The most highly developmental technologies*

Some advanced-knowledge sectors play an even more important role because of the very nature of the technologies involved. These are so-called general application technologies, which, as the name indicates, are widely used outside the sector in which they are designed and developed. For such sectors, they are a strategic input, since they enable the latter to significantly improve their competitiveness and productivity. In a sense, these technologies extend beyond their original sector, and spread into other sectors of activity which eventually make significant gains as a result. They are referred to as technologies with a major developmental effect for the economy as a whole.

Information technologies are an example of such developmental technologies which are widely used outside their sector of origin. It is generally agreed that, as well as information technologies, general application technologies include production technologies, bio-technology, new materials technology, and scientific and technological services or so-called intelligence services.

❒ *Using taxation in support of innovation*

All industrialized countries support innovation. The assistance provided by governments concerns R&D as well as technological adaptation. Such assistance takes all kinds of forms, can be budgetary or fiscal in nature, and targets the development of skills as well as the innovation process itself.

The reason for this assistance is easy to understand: it is justified by the spin-offs of innovation for the entire economy and if it were not provided, companies would invest less, because of the significant risk involved, than what is required in the interest of the community as a whole.[1]

Among the range of means at its disposal to support innovation, the Québec government has made growing use of fiscal instruments since the early 1980s. The tax cost of these measures, which stood at $12 million in 1983, currently amounts to $475 million a year.

This rapid increase in the cost of tax measures to spur innovation is due to the very interest of these fiscal instruments. Tax measures are an effective way to help businesses, requiring minimum intervention and

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[1] Studies carried out over the last 20 years show that R&D investments have rates of "private return" between 10% and 40%, depending on the sector. The yields are even higher when spin-offs in other businesses or sectors are included. This is referred to as the "social return", which can range from 15% to 80%.

allowing businesses maximum freedom. This fiscal instrument allows the market to play its natural role. Tax measures can be adapted as the needs and priorities of businesses change.

From the standpoint of businesses, tax measures have the advantage of offering economic players automatic rather than discretionary support which can be rapidly mobilized. Businesses appreciate this form of support, and generally react to it very positively, compared with other forms of government intervention.

❒ *The government's choice: increased tax assistance, applying to various sources of innovation*

The evolution Québec has engineered over the last 20 years is far from having run its course. Quite the contrary, the government's intention is that tax measures play an increasing role in innovation and the move to a knowledge-based economy. *An Integrated Fiscal Strategy for the Knowledge-Based Economy* is the practical expression of this policy stance.

The government goes further. Until recently, and as in the great majority of industrialized countries, Québec's tax system strongly emphasized support for R&D. Assistance for technological adaptation was relatively limited, at the fiscal level, and no measure specifically targeted advanced-knowledge businesses. This situation has changed since 1996: the government has implemented measures concerning many advanced-knowledge sectors, with particular emphasis on those where activities develop mainly downstream from R&D. The government has accordingly formulated new fiscal instruments, with the introduction of a tax credit for the production of multimedia titles, the creation of the Centres de développement des technologies de l'information (CDTIs), and the Cité du multimédia.

An Integrated Fiscal Strategy for the Knowledge-Based Economy confirms and strengthens the effort in this sense. The new forms of support will be opened to more technologies and in every region. Overall, the tax system will be used increasingly to support R&D, encourage technological adaptation and assist the development of the advanced-knowledge sectors that are most highly developmental for the economy as a whole.

1 *The existing tax system*

1. THE EXISTING TAX SYSTEM

1.1 Measures favouring R&D, technological adaptation and the new economy

Three series of tax measures have been defined in Québec's tax system to stimulate investments in innovation:

— An initial set of measures was designed to support scientific research and experimental development.

— A second series of measures was implemented specifically to support technology transfers to enable Québec businesses to benefit from R&D they were not able to do themselves.

— Lastly, and quite recently, a third set of measures was introduced to support advanced-knowledge businesses in the information and communications technologies sector.

A good understanding of the main features of these various measures, as they currently apply, is necessary. However, to begin with, we must review the reasons which prompted the government to use the tax system to encourage innovation and the move to the knowledge-based economy.

❒ *Taxation, an efficient and adapted instrument*

The basic reasons that prompted the government to make use of the tax system to support innovation have already been noted: tax measures are an efficient way to help businesses, requiring minimum intervention and allowing businesses maximum freedom and flexibility. They are applied from predefined rules and accordingly, for the businesses that benefit from them, they represent automatic and non-discretionary support.

The tax system also has other advantages:

— Concerning R&D, tax credits act as a catalyst that sparks the energy of the private sector, which is left to select the best projects. The government thus minimizes its intervention in the decision-making process of businesses, while supporting the efforts of entrepreneurs.

— In the new economy, the tax system is a sufficiently flexible instrument to provide these emerging sectors of activity with support that is relevant. For instance, prior analysis of projects of businesses and the issuing of eligibility certificates, which will be considered later, have met the needs of businesses. It was possible to implement this procedure relatively easily, as part of a fiscal intervention.

Various procedures are involved in the use of the tax instrument, including the interim financing of tax credits. Since businesses generally cannot benefit from tax credits before they file their tax return, the government has also provided for loan guarantee programs to facilitate their short-term financing.

1.1.1 Tax measures to promote R&D

Tax measures to promote R&D were the first tax measures that the Québec government implemented to support innovation. The Québec government recognized in the early 1980s the key role of R&D investments in ensuring sustained economic growth. Since 1983, Québec has encouraged R&D development by using taxation as a central element in its support policy.

❒ ***History of the tax system promoting R&D***

The tax system promoting R&D has changed considerably since it was established. Initially consisting of a refundable tax credit of 10% on the salaries paid in Québec, tax support promoting R&D has been improved several times. Four significant improvements have gradually been made:

— The refundable tax credit rate has been raised to the point where the tax system for R&D assistance now provides for tax credit rates of up to 40% on salaries for research conducted in-house by businesses.

— The tax credit has been extended to university research contracts and to certain specific projects, at rates of up to 40% of almost all expenditure.

— A personal income tax holiday has been introduced for foreign researchers.

— The tax system of assistance for R&D, certain components of which were initially implemented temporarily, has become a permanent system.

❒ *The current operation of the Québec tax system of assistance for R&D*

Once these changes had been made, the current system of tax assistance for R&D was defined on the basis of a number of specific rules:

— In accordance with international standards established by the OECD, the financial assistance granted for R&D applies to pure research, applied research or experimental development, and support work that, collectively, meet three criteria, i.e. the advancement of science or technology, the clarification of scientific or technological uncertainty and additions to the body of scientific and technical knowledge.

— Refundable tax credits, calculated on the basis of the salaries paid in Québec or R&D expenditures made in Québec,[2] are granted as part of the tax assistance for R&D according to the type of research conducted and the size of the company. In addition, to provide greater incentives, all tax credits are fully refundable, and may therefore exceed the tax payable.

— In general, the tax credit is equal to 40% of the salaries paid for R&D activities carried out in-house by SMEs. For large corporations with assets over $50 million, the tax credit is 20% of the salaries paid. Specific tax credits, equal to 40% of virtually all expenditures, are also available when the R&D work is carried out by a university entity, a public research centre or a consortium, or as part of a pre-competitive research project.

— Furthermore, R&D expenses, both salaries and capital expenditures, are deductible in calculating business income. However, the expenditures must be reduced by the amount of the federal tax credit granted the business.

Other specific measures supplement the tax system of assistance for R&D, including a personal income tax holiday for a period of two years for specialized foreign researchers conducting research activities for a business carrying on R&D in Québec.

[2] The refundable tax credit for salaries is also granted to businesses that carry out research on behalf of a third party not residing in Canada and not operating a business here.

TABLE 1

THE CURRENT TAX SYSTEM IN QUÉBEC PERTAINING TO R&D

	SME[1]	**Large corporation**
Deduction	All R&D expenditures are deductible in calculating business income. Expenditures are reduced by the federal tax credit granted for expenditures made.	
Refundable tax credits by type of research		
In-house research[2]	Tax credit of 40% applicable to the first $2 million in eligible salaries	Tax credit of 20% on eligible salaries
Research carried out by a university entity or a public research centres	Tax credit of 40% of an amount equal to 80% of the eligible R&D expenditure	
Research carried out by a research consortium		
Pre-competitive research[3]	Tax credit of 40% of the eligible R&D expenditure	
Tax holiday for foreign researchers	Exemption from personal income tax for two years for specialized foreign researchers	

1 An SME is a company with assets of less than $25 million.

2 For companies that conduct R&D in-house and whose assets are between $25 million and $50 million, the 40% rate decreases linearly until it reaches 20%.

3 This concept refers to a group of usually competing businesses. The R&D is of common interest to the businesses from a technological standpoint and may be useful in meeting each of their needs. The project may consist in basic research, applied research and, in certain cases, development.

Note: Special rules apply to eligible expenditures when R&D is carried out by a third party and to general expenses in the case of university research contracts or contacts with a public research centre.

Procedure for claiming R&D tax credits

The procedure for obtaining R&D tax credits is based on a set of concepts defined in the tax legislation. By its very nature, the definition of R&D is quite strict, and the procedure for claiming a tax credit involves a level of uncertainty:

— A business that wishes to benefit from R&D tax credits must provide, in its income tax return, all information relevant to its claim. In addition, it must describe the research project, being sure to indicate the components of the scientific research and experimental development work it is conducting.

— The tax credits and deductions claimed are then analysed by the tax authorities, which confirm the claim and pay the amounts involved, or reject it.

— However, following the auditing and review of cases, the tax authorities may revise the amount of the tax benefits allowed. Such revision usually occurs within a period of three years.

❒ *Co-habitation with the federal tax system*

Businesses established in Québec that wish to benefit from assistance for R&D must comply with the features of the Québec tax system and those of the federal tax system.

The principles underlying the measures to support R&D defined in the framework of each of the two systems are quite similar. However, the parameters of assistance differ substantially. The main features of the federal tax system for R&D are given below.

The federal tax system applicable to R&D

On the whole, federal tax assistance for R&D has remained unchanged since 1983. It provides for the deductibility of R&D expenditures, and for a tax credit of 20% for large corporations and of 35% for SMEs.

These tax credits are not refundable for large corporations. However, the credits paid to SMEs are fully refundable for current expenditures and refundable in part, i.e. 40%, for capital expenditures.

Québec's R&D tax credits are considered government assistance, and therefore reduce deductible expenditures and the tax credit for federal purposes.

FEDERAL TAX ASSISTANCE FOR R&D

	SME[1]	Large corporation
Tax credit rate	35%	20%
Refundable tax credit for:		
▪ Current expenditures	100%	0%
▪ Capital expenditures	40%	0%

1 In general, these are Canadian-controlled private corporations (CCPCs) that, the preceding year, had taxable profits below $400 000 and capital used in Canada of less than $15 million. The amount of R&D expenditures giving entitlement to the credit at the higher rate is generally limited to $2 million for CCPCs with taxable profits of $200 000 or less the preceding year. This amount is reduced according to a formula when the taxable profits of the previous year are between $200 000 and $400 000 $ or the taxable capital used is between $10 million and $15 million.

❒ *The competitiveness of Québec's tax system*

The Québec tax system applicable to R&D is one of the most competitive in the world, as shown by a variety of indicators:

— The tax system's competitiveness can first be assessed by calculating the net after-tax cost of an R&D expenditure. This net cost is the outlay net of taxes needed to carry out the investment.

  Table 2 below shows that an R&D wage expenditure of $100 made by a small enterprise costs only $27, once the Québec and federal government tax systems are taken into consideration. Québec's share of financing is equal to $47 and that of the federal government, $26.

— A second indicator is the break-even point of the R&D expenditure, i.e. the pre-tax profit the corporation must make to turn a profit on this expenditure.[3] This is an even more revealing indicator of competitiveness, since it takes account of taxation of income produced by the R&D investment. The higher the taxation level, the higher the break-even point for the R&D investment. In Québec, for an expenditure of $100 in R&D salaries made by an SME, this point amounts to $35.

[3] Present value of pre-tax income needed to cover the cost of the initial R&D investment. The break-even point is calculated using the following formula: net after-tax cost of an R&D expenditure/(1-tax rate on corporate profits).

TABLE 2

CALCULATION OF THE AFTER-TAX COST OF A $100 R&D WAGE EXPENDITURE MADE IN QUÉBEC
(in dollars)

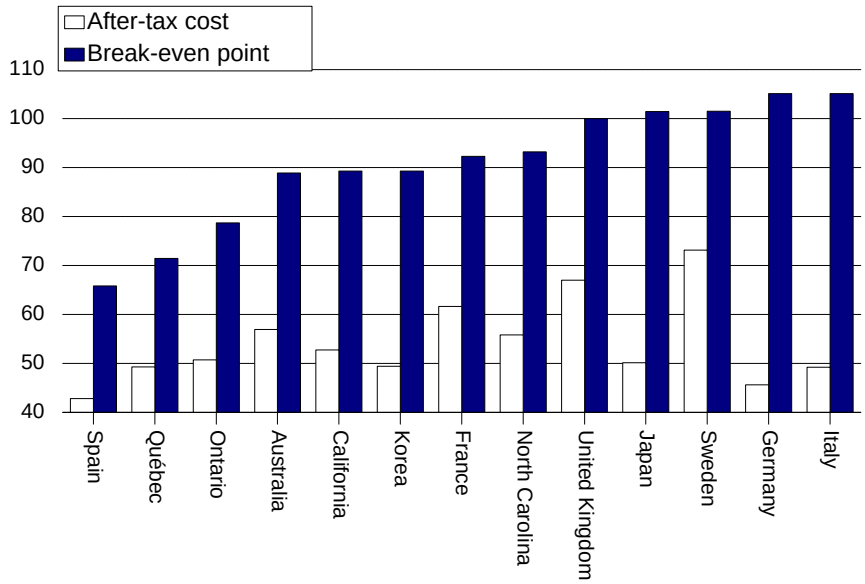
	Case of an SME
R&D expenditures	100
Tax credits:[1]	
▪ Québec tax credit $100 x 40%	-40
▪ Federal tax credit ($100 - $40) x 35%	-21
Deductions:[2]	
▪ Québec tax reduction ($100 - $21) x 8.9%[3]	-7
▪ Federal tax reduction ($100 - $40 - $21) x 13.12%[4]	-5
After-tax cost	**27**
Break-even point	
▪ ($27)/1-(.089[3] + .1312[4])	**35**

1 The Québec tax credit is 40% of salaries paid. The federal tax credit is 35% and applies to the R&D expenditure reduced by the Québec tax credit.
2 The expenditure allowable as a deduction in Québec is equal to the R&D expenditure less the federal tax credit. The expenditure allowable under the federal tax system is equal to the R&D expenditure less the Québec tax credit and the federal tax credit.
3 SME income tax rate applicable under the Québec tax system (as of July 1, 1999).
4 SME income tax rate applicable under the federal tax system.

Each of these two indicators leads to the same conclusion: Québec's tax system supporting R&D compares very favourably with that of most of the major industrial states. For the purposes of the exercise, a comparison was made of the after-tax cost and the break-even point of a $100 R&D expenditure made by a large manufacturing corporation in Québec, with those of major industrialized countries. The results of the comparison are shown in Graph 1: the after-tax cost of an R&D expenditure in Québec is lower than the cost in most industrialized countries. As for the break-even point, Graph 1 indicates that Québec has the second most favourable tax system for R&D, just behind Spain.

GRAPH 1

COMPARISON OF AFTER-TAX COST AND BREAK-EVEN POINT OF A $100 R&D EXPENDITURE IN CERTAIN JURISDICTIONS,[1] 1995-1996
(in dollars)



1 For Québec and Ontario, the net cost and break-even point are for a large manufacturing corporation.

Source: Conference Board of Canada, *R&D Tax Incentives in OECD Countries: How Canada Compares*.

1.1.2 Tax measures promoting technological adaptation

With regard to technological adaptation, the government allows businesses to take advantage of accelerated depreciation of 100% for two main categories of investment:

— Firstly, to encourage investment in new technologies, and the establishment of new technologies in Québec businesses, such businesses can take advantage of this favourable tax treatment when they acquire new goods used in Québec for the manufacture and processing of merchandise, and when they acquire certain new goods, including computers and computer supplies.

— Secondly, this measure covers the cost of acquiring certain intangible assets, i.e. expenditures a business incurs to acquire, in the framework of a technology transfer, a patent, licence, permit, know-how or trade secret.

TABLE 3

TAX MEASURE FOR TECHNOLOGICAL ADAPTATION

Accelerated depreciation	Deduction of 100%, the first year, of the cost of acquiring the following capital goods: ▪ New goods used for manufacturing and processing; ▪ New goods such as computers and other computer supplies; ▪ Intangible goods acquired in a technology transfer (patents, licences, permits, know-how and trade secrets).

This measure was improved in the wake of a recommendation by the Commission on Taxation and the Financing of Public Services, which recognized the effectiveness of this measure. The rate of deduction for depreciation was increased to 125%,[4] in the 1997-1998 Budget Speech, to provide further support for Québec businesses dealing with technological change. However, the improvement ended on December 31, 1998.

This tax measure is specific to Québec. In general, the federal system provides for depreciation rates ranging from 20% to 30%, for investments that encourage the technological adaptation of businesses (the purchase of computer equipment and so on).

The measure just described provides substantial assistance for businesses that invest in technological adaptation. It significantly reduces the cost of the investments that businesses must make for this purpose. Québec businesses are thereby supported in their efforts to modernize, which increases their competitiveness, in a context where the liberalization of markets means they face greater competition.

[4] This is, in fact, a supplementary deduction equal to 25% of the deduction for accelerated depreciation, and it raises the total deduction to 125%.

1.1.3 Specific tax measures for the new economy

Tax assistance for R&D was designed to support businesses in the innovation stage upstream from production, i.e. the phase in which businesses must overcome a scientific and technological risk.[5] In addition, this tax assistance was administered using the "self-assessment" system, under which businesses themselves determine the amount of the tax credit, and an audit is carried out afterward.

❒ ***Terms of the tax credit for R&D are less well-adapted to the needs of the new economy***

On these two points, the terms of the tax assistance for R&D proved less well-adapted to the specific needs of the new economy:

— Firstly, under the tax assistance for R&D, not all innovation activities inherent in the new economy could be supported, since most often they were situated too far downstream from the innovation process. The investments made by businesses in the new economy – in practice, businesses in the field of new information and communications technologies – were, in many cases, not eligible for R&D tax credits because the activities were too remote from scientific research and experimental development in the strict sense.

— Secondly, the "self-assessment" system proved to be much too uncertain for businesses in the new economy. The new economy is a sector undergoing great change, in which the innovation process and procedures are not necessarily those of traditional R&D operations. The "self-assessment" system involves subsequent auditing, a source of uncertainty for businesses. Hence, prior authorization was required. It took the form of the issuing of a certificate, after which the businesses could make their investments with the certainty that the tax support would indeed be granted them.

[5] Reference is mainly made in this regard to basic, pure or applied research, development aimed at technological progress, the creation of materials, the invention of new devices, products or processes, operational research, mathematical analysis and programming.

❒ *Innovative initiatives that made Québec a trailblazer*

In the 1996-1997 Budget Speech, Québec therefore created an initial form of tax support for businesses in the new economy by introducing the tax credit for the production of multimedia titles. A true trailblazer in this regard in North America, Québec instituted a tax credit the definition and administration of which met the needs of businesses investing in information and communications technologies.

This first innovation was followed rapidly by a second initiative, even more original, aimed at prompting advanced-knowledge businesses to come together at designated sites. The Commission on Taxation and the Financing of Public Services had recommended in 1996 that the government examine the possibility of setting up pilot projects to encourage the development of specialized activities likely to attract foreign investment and located in duty free zones. It was in part in the wake of this recommendation that the government announced, in the 1997-1998 Budget Speech, the creation of the Centres de développement des technologies de l'information (CDTI).

— This concept was reserved for businesses with innovative projects in the field of the new information and communications technologies.

— The tax assistance granted companies established in a CDTI was defined on the basis of conditions similar to those for the tax credit for the production of multimedia titles, in terms of the type of activities supported and the prior authorization process.

— As we will see, the support was specifically geared to job creation, particularly for young people, who were offered training opportunities.

— Above all, this tax credit could only apply in precisely defined sites, the goal being to encourage the grouping of businesses in this sector in order to maximize the benefits of synergy.

The creation of the Cité du multimédia, which was announced on June 15, 1998, is a direct extension of this strategy. The purpose of this initiative was to confirm Montréal's position as a key centre for new information and communications technologies. As in the case of the CDTIs, the originality of the tax supports implemented by the Québec government for the new economy resides in three features: support for investments downstream from R&D, a prior authorization process and the restriction of benefits to a designated site in order to prompt businesses to locate there, near to one another.

Table 4 below contains a summary of the various measures related to the knowledge-based economy, and these measures are compared to the rules for R&D. The measures require a few explanations.

The tax credit for the production of multimedia titles

The features that differentiate the tax credit for the production of multimedia titles from tax support for R&D have just been discussed. In fact, the tax credit for the production of multimedia titles was first created to enhance support for culture and to stimulate multimedia productions[6] in French. Since then, it has undergone many changes and now focuses on a much more diversified clientele, geared more to industry.

The tax credit for the production of multimedia titles now has the following features:

— The tax credit is refundable.

— It is calculated on the basis of the labour expenditures incurred directly in the post-R&D stages, related more specifically to the production of multimedia titles, or on the basis of the cost of sub-contracts carried out in Québec.

— The tax credit may represent up to 50% of the salaries paid by the enterprise, when additional assistance of 10% granted to encourage the use of the French language is included.

[6] A multimedia title must have the following characteristics: it must be published in an electronic media (for example, on a CD-ROM) and run on software allowing interactivity and containing text, sound and images (still frames and animated images).

TABLE 4
TAX MEASURES FOR R&D AND THE KNOWLEDGE-BASED ECONOMY: A COMPARISON OF COMPONENTS

	R&D	Production of multimedia titles	CDTI	Cité du multimédia
Level of tax assistance	<u>In-house research</u> Tax credit applicable to salaries: ▪ 40% for SMEs ▪ 20% for others <u>Research by a third party</u> Tax credit of 40% applicable to amount of eligible R&D expenditure No ceiling Tax holiday of two years for foreign researchers	Tax credit of 40% of salary paid in regard to the production of multimedia titles destined for distribution to general public; increase in tax credit of 10% of salary paid for products eligible for the bonus for French language productions Tax credit of 35% of salary paid in regard to other titles No ceiling	Tax credit of 60% of salary paid by June 15, 1999 (a maximum of $25 000) Tax credit of 40% of salary paid after June 15, 1999 but before January 1, 2009 (a maximum of $15 000) Tax credit of 40% of cost of specialized equipment for three years Tax holiday of five years: ▪ income tax ▪ tax on capital ▪ contribution to HSF Tax holiday of two years for foreign instructors	Tax credit of 60% of salary paid by June 15, 1999 (a maximum of $25 000) Tax credit of 40% of salary paid after June 15, 1999 but before January 1, 2009 (a maximum of $15 000)
Targeted sectors	All sectors	Multimedia	New information and communications technologies and multimedia	New information and communications technologies and multimedia
Eligible activities	Pure or applied research and experimental development	Production of multimedia titles	Innovation process (from R&D to production of goods and services)	Innovation process (from R&D to production of goods and services)
Specific criteria	Research and development protocol: ▪ advancement of science or technology ▪ scientific or technological uncertainty ▪ scientific and technical content	Interactive content with text, sound and images	Innovative project	Expansion and job creation project
Interim financing	Investissement-Québec	SODEC[1]	Investissement-Québec	Investissement-Québec
Manager	Ministère du Revenu	SODEC	Ministère des Finances	Ministère des Finances

1 Société de développement des entreprises culturelles.
Source: Ministère des Finances.

The tax credit for the production of multimedia titles has two components. The first is intended for companies whose activities are totally or almost totally devoted to the production of multimedia titles, and the second is intended for other companies. A simplified certification mechanism for companies contemplated by the first component facilitates the administration of the tax credit.

The tax credit for the production of multimedia titles swiftly assumed a key role in the development of the new information and communications technologies by enabling the producers concerned to reduce the risk associated with their investments and thereby meet the international competition.

Tax credit for CDTIs

The concept of the CDTI, the Centres de développement des technologies de l'information, has already been explained. They are designated sites for businesses where they can take advantage of specific tax benefits, granted for the development of an innovation activity involving a significant proportion of R&D.

In creating CDTIs, the government was pursuing the following objectives:

— First, it sought to encourage the start-up of new businesses and, more comprehensively, favour the rapid emergence of the new technologies sector. As stressed above, the spin-off from the development of this sector is felt throughout the economy, because of the general application of these technologies.

— Second, the objective in defining designated sites was to prompt these businesses to locate near each other, which could facilitate collaboration and synergy.

— Third, from the start the CDTI concept had a training component, since the assistance provided encouraged the businesses to see that their employees acquired specialized skills in an emerging sector.

The CDTIs were initially set up as a pilot project in three Québec cities. CDTIs are now located in Québec City, Montréal, Hull, Laval and Sherbrooke.

A variety of tax benefits are offered:

— The businesses authorized to operate in a CDTI benefit from a five-year exemption from income tax, the tax on capital and the employer's contribution to the Health Services Fund (HSF).

— These businesses enjoy benefits in the form of refundable tax credits for a period of up to 10 years on the salaries of specialized workers and for three years on high-technology equipment required for their activities.

  The tax credit applicable to salaries is equal to 60% of labour expenditures, up to a maximum of $25 000 per job, until June 15, 1999. The tax assistance will then be 40% of labour expenditures, up to a maximum of $15 000 per job, for the following nine years.

  Specialized equipment give entitlement to a tax credit of 40% for the first three years, calculated on the basis of the cost of acquiring or leasing the equipment.

Tax credit for the Cité du multimédia

After the success of the CDTIs, the government entered a new stage with the creation of the tax credit for businesses operating in the Cité du multimédia. The Cité du multimédia formula is even more flexible than the CDTI formula.

Briefly, the rules defining the tax credit for the Cité du multimédia are as follows:

— The activities giving entitlement to the tax credit are, in particular, E-commerce, Internet service provision, data processing services, security and identification systems, databanks, office automation and fibre optics or satellite communications.

— Businesses that have chosen the Cité du multimédia as the site of their operations benefit from a tax credit applicable to labour expenditures.

— These businesses need not submit an innovative project to benefit from the tax assistance. However, they must demonstrate that the tax assistance granted will enable them to create or accelerate the creation of several jobs.

The tax credit for the Cité du multimédia is aimed at rapidly developing a critical mass of businesses bringing together specialized manpower and likely to promote exchanges, synergy and partnership opportunities with supplies. This concentration of businesses at a single site that offers infrastructure tailored to specific needs also enables these businesses to pool specialized services and ensures enhanced visibility.

Once it is fully developed, the Cité du multimédia should bring together more than 10 000 workers in this sector of activity.

Tax credits related to CDTIs and the Cité du multimédia

Since enterprises in the new economy are developing in a changing environment, the government felt it was necessary to adapt the tax assistance for the knowledge-based economy to:

— increase the level of certainty that the assistance will be granted, by issuing prior certificates for projects submitted;

— allow more flexibility in granting tax assistance, by having more flexible analysis criteria.

Businesses taking advantage of the tax credits related to CDTIs and the Cité du multimédia now benefit from an advance certification process for the tax assistance.

— By submitting beforehand the information relevant to the tax credit application, these businesses obtain confirmation of the available tax assistance. In normal circumstances, this stage makes it possible to certify for the tax authorities the validity of the amount of the tax credits claimed by the business, which reduces the level of uncertainty often associated with auditing operations initiated by the tax authorities.

— The sectors contemplated and the criteria used in analysing projects are not defined in the tax legislation. These criteria, which serve to determine the main principles of the measure, are kept to a minimum, which provides enormous flexibility in the management of the tax measures, while reducing paperwork and ensuring better harmonization with other technology support programs.

1.2 Results obtained

Since the early 1980s, the Québec government has implemented major tax support for innovation. After defining assistance for R&D, which as become one of the most advantageous system in industrialized countries, the government has instituted particularly innovative formulas to encourage the new economy, with special support provided for technological adaptation.

In all, as underscored above, the tax assistance for innovation today represents the injection of funds by the Québec government of roughly $475 million a year. As Table 5 shows, the R&D assistance system and the support given to technological adaptation constitute 69% and 23% of this funding, respectively.

TABLE 5

COST TO THE GOVERNMENT OF TAX MEASURES IN FAVOUR OF INNOVATION AND THE KNOWLEDGE-BASED ECONOMY
(in millions of dollars)

Tax measures	**1998-1999[e]**
R&D tax system	
- R&D tax credit	326
- Tax credit for foreign researchers	2
Technological adaptation of businesses	
- Accelerated depreciation	108
Specific measures for the new economy	
- CDTIs	17
- Cité du multimédia[(1)]	10
- Multimedia titles	9
Total measures	**472**

e: Estimate of the ministère des Finances.

1 This amount represents the sum of the tax credits earned by businesses having indicated their intention to set up operations in the Cité du multimédia.

Specific measures for the new economy represent support of about $36 million annually, or 8% of total assistance for innovation. Even though these measures are very recent, they are beginning to represent a significant proportion of government support for innovation in the form of tax assistance.

Of course, we should ask whether this considerable effort has been worthwhile. It seems that it has:

— The tax system supporting innovation was *necessary* if Québec was to make up for the lag in its R&D expenditures compared with the other industrialized countries.

— This tax system was *effective*, given that it stimulated research and development, and more generally innovation.

— The system proved, above all, to be *far-reaching*, as it contributed directly to the growth and development of the Québec economy as a whole.

Data now available show that it is indeed a necessary, effective and far-reaching tax system.

1.2.1 The tax system supporting innovation was necessary

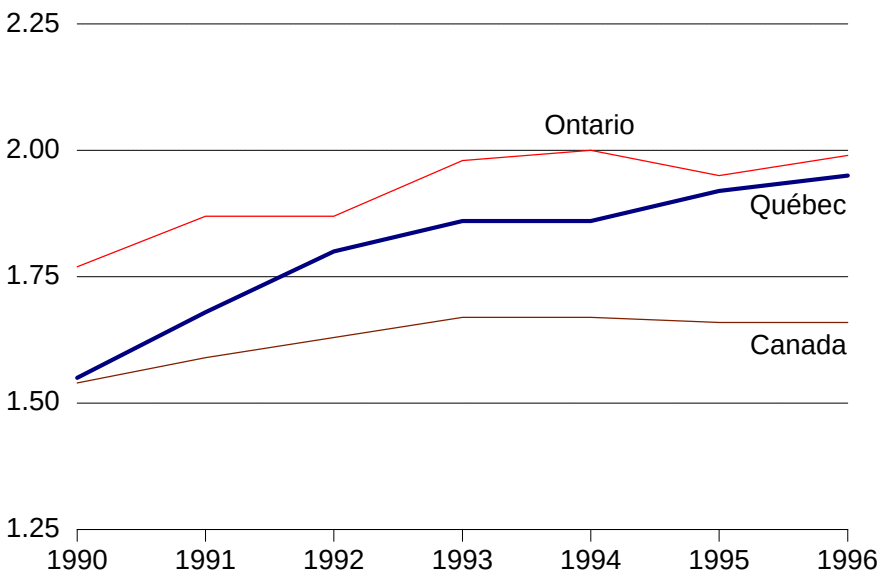
In the early 1980s, when the first tax assistance for R&D was implemented, the government's initiatives resulted from a very disturbing observation: the investments devoted to R&D in Québec lagged significantly behind those of the other industrialized countries. Québec was running the risk of missing the boat in *The Technology Conversion* if the situation did not rapidly improve. An objective was targeted: R&D expenses had to increase significantly, to 2% of GDP, compared with 1.38% in 1988.

❒ *Québec has caught up with the other industrialized countries*

This objective has almost been achieved. As Graph 2 illustrates, the share of R&D in Québec's GDP has been increasing at a sustained pace. In the last six years, the increase has been more rapid than that observed in Ontario and in Canada as a whole. In 1996, domestic R&D expenditures represented 1.95% of Québec's GDP, compared with 1.66% for Canada as a whole and 1.99% for Ontario. Québec had surpassed Canada as a whole and had almost caught up with Ontario in terms of the proportion of GDP devoted to R&D expenditures.

GRAPH 2

DOMESTIC R&D EXPENDITURES AS A PERCENTAGE OF GDP
QUÉBEC, ONTARIO AND CANADA, 1990 TO 1996
(as a percentage)

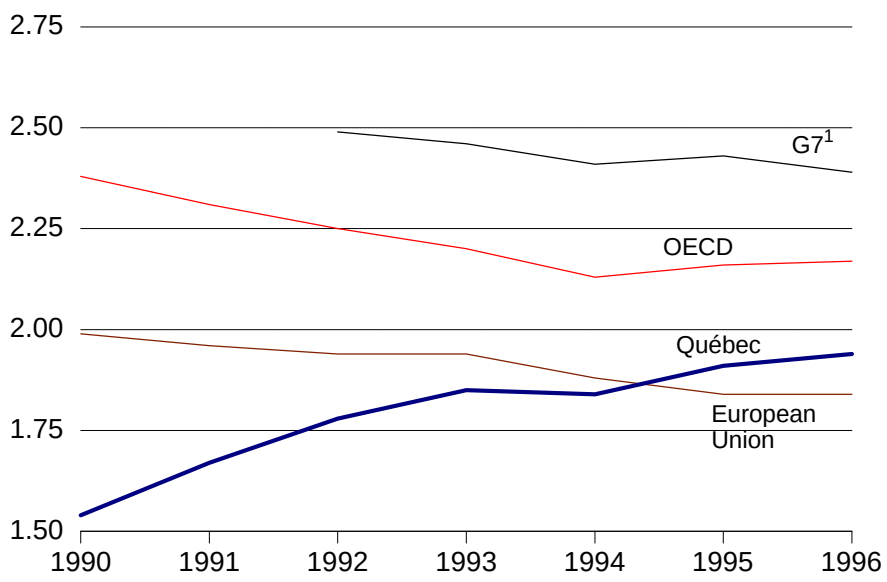


Source: Bureau de la statistique du Québec.

Graph 3 provides a similar comparison with the main industrialized countries. Québec has made up for lost time in a spectacular manner. In 1996, the proportion of domestic R&D expenditures in GDP was higher in Québec than in the European Union, and Québec had considerably reduced its disparity with the OECD countries. It had also caught up to the G7 countries.

GRAPH 3

DOMESTIC R&D EXPENDITURES AS A PERCENTAGE OF GDP QUÉBEC AND OTHER JURISDICTIONS, 1990 TO 1996
(as a percentage)



1 Data prior to 1992 not available on a comparable basis.

Source: Bureau de la statistique du Québec.

❒ *Very rapid growth in R&D activities*

The catching-up that Québec has done in terms of its share of GDP devoted to R&D is explained, first and foremost, by the very rapid growth in the R&D activities of businesses.

As Table 6 shows, the R&D expenditures of businesses have increased much more rapidly in Québec than in Canada or in Ontario. Between 1988 and 1996, these expenditures almost doubled in Québec, whereas they rose by 70% in Canada and by 57% in Ontario.

Furthermore, the number of businesses investing in R&D more than tripled over the 10-year period from 1988 to 1998, from 1 232 to 3 900, (see Table 7).

TABLE 6

CHANGE IN R&D EXPENDITURES OF COMMERCIAL ENTERPRISES – QUÉBEC, ONTARIO AND CANADA, 1988 TO 1996
(in millions of dollars)

						Change (10%)
Jurisdictions	**1988**	**1990**	**1992**	**1994**	**1996**	**1988-1996**
Québec	**1 162**	**1 415**	**1 648**	**1 925**	**2 288**	**96.9**
Ontario	2 703	2 842	3 126	3 841	4 231	**56.5**
Canada	4 624	5 169	5 749	6 996	7 836	**69.5**

Source: Bureau de la statistique du Québec.

The objectives set when the tax system supporting innovation was implemented have been achieved, for the most part. The R&D expenditures made by Québec businesses have increased very rapidly, enabling Québec to eliminate its lag in this regard compared with many other industrialized countries.

Far from slowing down, this rapid growth has continued in recent years. It can be anticipated that, if the current trend continues, Québec will, in the very short term, surpass its main partners in terms of the share of GDP devoted to R&D.

1.2.2 The tax system supporting innovation is effective

These spectacular results are directly attributable to the highly advantageous tax credits for R&D. The tax system of assistance for innovation, which was necessary, has proved extremely effective in terms of the use that businesses make of it.

❒ *The effectiveness of tax assistance for R&D*

The Conseil de la science et de la technologie has assessed the effectiveness of the R&D tax system of the Québec and federal governments as regards additional R&D investment.[7]

In its study, it concludes that, between 1981 and 1993, nearly two thirds of the catching-up achieved by Québec compared with the OECD countries is attributable to the impact of R&D tax credits.[8] Far from financing R&D activities that would have been carried on in any case, the tax assistance triggered new investments that would not otherwise have been made – at least not in Québec.

Hence, the R&D tax credit is, by far, the most important developmental initiative that the Québec government has taken. The statistics given in Table 7 show the popularity of the system.

TABLE 7

CHANGE IN NUMBER OF BUSINESSES AND AMOUNTS GRANTED IN R&D CREDITS 1988 TO 1998

Components	1988	1990	1992	1994	1995	1998[e]
Number of businesses	1 232	1 534	2 133	3 448	3 586	3 900
R&D tax credits ($'000)						
- salaries	—	—	190 790	251 078	264 052	302 256
- university research [1]	—	—	76 479	20 027	18 560	19 414
- consortia	—	—	64	2 675	2 801	2 930
- other [2]	—	—	15 656	29 253	24 910	—
- Total [3]	**98 122**	**149 896**	**282 989**	**303 033**	**310 323**	**324 600**

e: Estimate of the ministère des Finances.

1 The reduction in tax credits for university research contracts between 1992 and 1994 is explained mainly by the government's elimination of the external financing mechanism in 1993-1994.

2 These measures were eliminated in 1996. They were catalyst projects and innovation technology projects in the environmental sector.

3 For the years 1988 to 1990, the data breakdown for the tax credits is not available.

Sources: Ministère du Revenu and ministère des Finances.

7 The criterion used in this regard is the cost-effectiveness ratio. The tax assistance is considered effective when the ratio between additional R&D and tax receipts sacrificed is equal to or greater than one. The studies conducted on behalf of the Conseil de la science et de la technologie indicate that this ratio approaches one. The federal government has an estimated ratio, which it calls the profitability ratio, of 1.38.

8 Conseil de la science et de la technologie, *L'aide fiscale à la R&D: un outil important pour le développement des entreprises du Québec*, brief presented to the Commission on Taxation and the Financing of Public Services, September 1996.

The following phenomena in particular have been observed:

— From 1988 to 1998, the number of businesses claiming an R&D tax credit has more than tripled, from 1 232 to roughly 3 900.

— For the same period, the value of the tax credits granted rose from $98 million to $325 million.

— In 1998, over 90 % of total tax credits corresponded to R&D expenditures made in-house.

❒ *The effectiveness of specific measures of assistance for the new economy*

The enterprises targeted have also made rapid use of the assistance measures implemented for the new economy. As Table 8 indicates, nearly a hundred businesses have benefited until now from the three programs defined by the government – tax credits related to the CDTIs, the Cité du multimédia and the production of multimedia titles. More than 5 000 jobs have been created or will soon be created in the wake of this tax assistance, even if these programs have been in place only for a short time.

TABLE 8

SPECIFIC TAX MEASURES FOR THE NEW ECONOMY RESULTS, MARCH 1999

Program	Enterprises certified	Jobs created[1]
CDTIs	28	1 519
Cité du multimédia	12	3 332
Multimedia titles	63	510
Total	**103**	**5 361**

1 Estimate of the number of jobs created and to be created in the next three years in regard to the CDTIs and the Cité du multimédia. Estimate for the jobs created or supported in 1998-1999 in regard to the tax credit for the production of multimedia titles.

Sources: Ministère des Finances and SODEC.

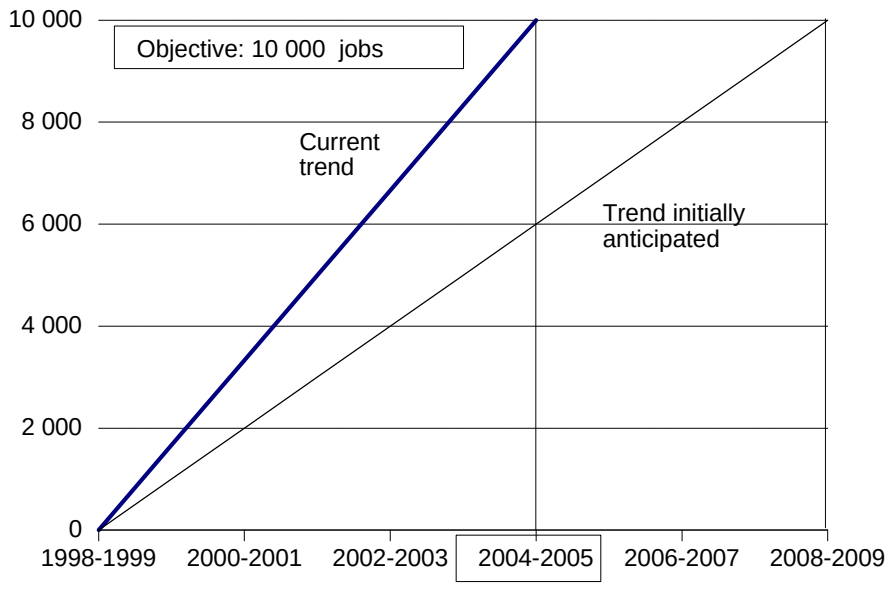
The CDTIs and the Cité du multimédia have been spectacularly successful. The objectives set at the start, in terms of job creation, were ambitious. They are being achieved more rapidly than anticipated.

— Since the Cité du multimédia was announced in June 1998, 12 businesses have made a commitment to establish operations there. They will create more than 3 300 jobs in the coming years, representing nearly 35% of the objective of 10 000 jobs that was set.

— The results are equally impressive in regard to the CDTIs. The Montréal and Québec City CDTIs are nearly full, and the Hull CDTI, which just opened, is accommodating 10 businesses. Originally announced with the objective of creating about a thousand jobs, the CDTIs will help create over 1 500 jobs in the next three years.

GRAPH 4

CITÉ DU MULTIMÉDIA
ILLUSTRATION OF THE PACE OF JOB CREATION
(number of jobs)



Source: Ministère des Finances.

1.2.3 The tax system supporting innovation is far-reaching

The tax system supporting innovation, which is both necessary and efficient, has been very far-reaching, as it has had direct spin-offs on the economy as a whole and has accelerated the emergence in Québec of the knowledge-based economy.

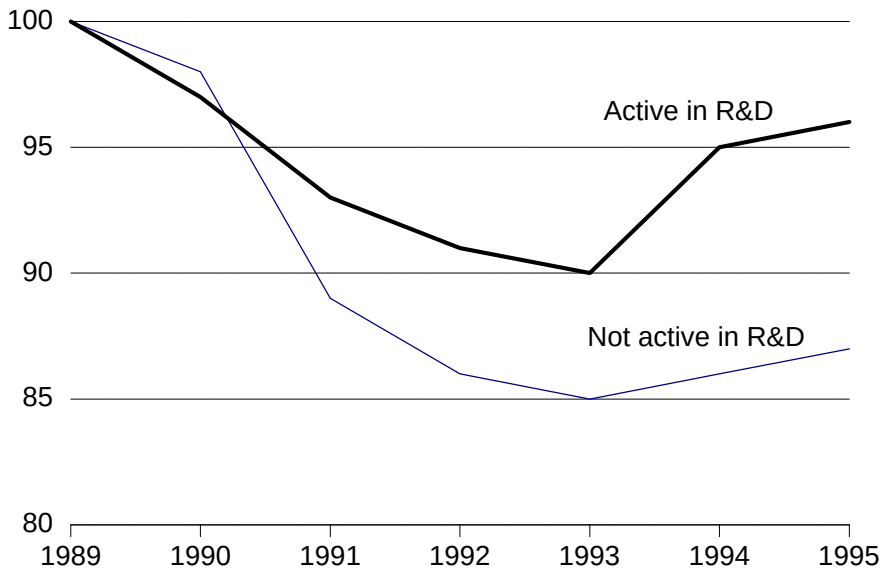
Data show the impact, on the Québec economy of investments devoted by businesses to R&D and technological adaptation. They also show the performance of so-called advanced-knowledge businesses, which constitute the core of the new economy.

❒ ***The performance of businesses active in R&D***

The Québec businesses that have conducted or commissioned R&D have had better results than other businesses. As Graph 5 shows, these businesses have performed better in terms of employment.

GRAPH 5

CHANGE IN THE NUMBER OF JOBS IN QUÉBEC'S MANUFACTURING ENTERPRISES ACTIVE OR NOT IN R&D, 1989 TO 1995
(1989 = 100)



Source: Statistics Canada; special compilation of the Bureau de la statistique du Québec.

Other statistics, not published here, confirm that the same applies to value added, average salaries paid and international exports.

❒ *Progress in terms of technological adaptation*

Much progress has also been made by Québec businesses in regard to technological adaptation. For example, in the manufacturing sector, as Table 9 illustrates, there has been a rapid increase in the rate of use of cutting-edge technologies.

TABLE 9

RATE OF USE OF CUTTING-EDGE TECHNOLOGIES IN QUÉBEC'S MANUFACTURING SECTOR
(as a percentage)

Number of technologies	1989	1992	1994
0	64.5	49.0	15.3
1	23.2	22.8	18.2
2	6.6	11.5	16.7
3 et +	5.7	16.7	49.8

Source: J.B. Carrière and P.-A. Julien, *Profil technologique de la PME manufacturière québécoise*, Association des manufacturiers du Québec, June 1995.

This technological adaptation has had an impact on economic performance, the extent of which can be assessed.

— First, sectors that make intensive use of capital and technology have seen their proportion of manufacturing shipments rise from 19.6% to 29.9% between 1975 and 1997, whereas sectors making greater use of manpower and those using capital and resources saw their share of these manufacturing shipments decrease.[9]

— Second, by extrapolating from the figures for Québec, we note that the sectors in Canada making intensive use of information and communications technologies increased their output and employment levels between 1986 and 1995. In these sectors, output grew by 24.2% and employment, by 12.5%. In sectors making only slight use of information and communications technologies, output grew by 11.0%, while employment decreased by 8.9%.[10]

[9] Statistics Canada and ministère des Finances.
[10] Statistics Canada and the Conference Board du Canada.

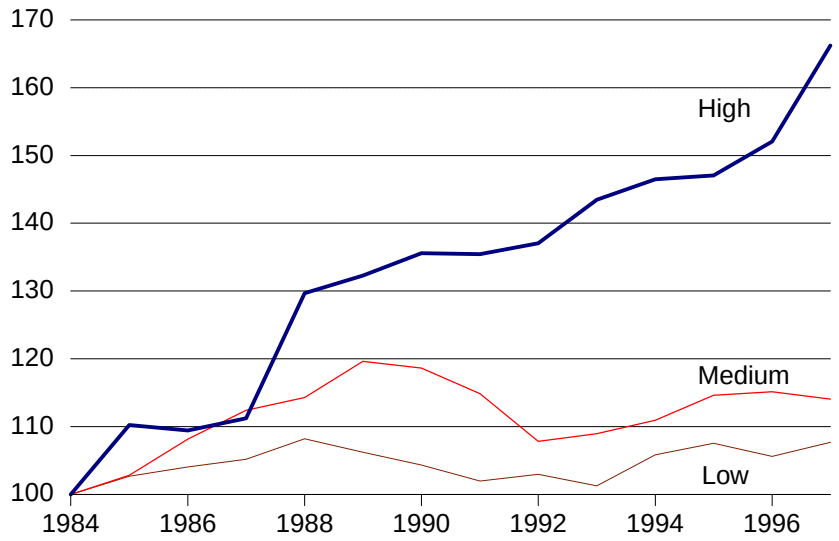
❒ *The performance of advanced-knowledge businesses*

Hence, R&D investments have had a very positive effect on the economy and employment. The usefulness to economic activity as a whole of tax measures supporting innovation is even more evident from an analysis of the performances of advanced-knowledge businesses, the creation and development of which testifies to the emergence of a new economy.

Results in the various sectors that make up the new economy are clearly much better than those for the economy as a whole.

GRAPH 6

CHANGE IN EMPLOYMENT ACCORDING TO THE LEVEL OF KNOWLEDGE, 1984 TO 1997
(1984 = 100)



Sources: Statistics Canada, Bureau de la statistique du Québec and ministère de l'Industrie, du Commerce, de la Science et de la Technologie.

From 1984 to 1997, sectors with a high degree of advanced-knowledge, which account for less than 20% of total current employment, created a 186 300 net jobs, or nearly 50% of total net job creation.[11] These sectors of economic activity achieved good results, even when the economic situation was not good: their behaviour was counter-cyclical during the economic recession of the early 1990s.

It should be pointed out, however, that in regard to jobs created by the new economy, the performance recorded by Québec places it in front of Ontario and Canada as a whole. For this same period, the annual average growth rate of employment in sectors with a high degree of advanced knowledge reached 4.0% in Québec, compared with 2.9% in Ontario and 3.5% in Canada.

The economic vitality displayed by the advanced-knowledge businesses operating in Québec may be concretely illustrated by a range of often spectacular sectoral and technological successes.

The box below describes some of these successes in the aerospace and hydroelectricity sectors, and in information and communications technology, biotechnology, scientific and technological services, so-called intelligence services. In the latter four cases, the successes achieved have been particularly important, given their developmental effect on the economy as a whole. As was underscored in the introduction, these technologies are called “general application technologies”, as they serve as strategic inputs for the economy as a whole.[12]

In the case of information and communications technologies, the remarkable results obtained are attributable in part, as regards the most recent among them, to the innovative tax measures implemented by the government, i.e. the tax credits for the production of multimedia titles, the CDTIs and the Cité du multimédia.

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[11] Ministère de l’Industrie, du Commerce, de la Science et de la Technologie, *Bulletin d’information économique, Actualités conjoncturelles,* November 1998, Vol. 8, No. 5.

[12] Production technologies and new materials technologies, the developmental effect of which is also acknowledged, are not included, because of a lack of statistics. These technologies are developed in several sectors, but no figures are available for them.

Advanced knowledge sectors: Some success stories

❒ ***Aerospace***

Québec accounts for more than 60% of Canadian aerospace exports. The Greater Montréal area is recognized as one of the five top aerospace centres in the world and ranks third in the civil aviation sector. Montréal is home to seven of the ten largest companies in the Canadian industry and to a number of international organizations. Lastly, the Montréal area is the only place in the world where all the components required to manufacture an airplane can be found within a 30 km radius.

❒ ***Hydroelectricity***

Québec is the third largest producer of hydroelectricity in the world. The size of its hydroelectric dams and its many technological breakthroughs have enabled Québec to acquire know-how that clearly sets it apart from the competition in terms of the design, development and manufacture of electricity-related products.

❒ ***The new information and communications technologies and multimedia***

The new information and communications technologies (NICT) cover products and services in the data processing and telecommunications sectors, including those related to the Internet. Multimedia concerns more specifically products related to the publishing, audiovisual and game sectors.

The NICT industry has a sales figure of $20 billion in 1997 and employed 80 000 people. Its goods, which represent 40% of industry revenues, are largely exported. For several years now, these exports have been growing more rapidly that in Canada as a whole.

Advanced knowledge sectors: Some success stories (cont.)

❒ ***Biotechnologies***

Montréal is the tenth largest biotechnology centre in the world. Biotechnology development has been based on the presence of research centres of international caliber that have succeeded in developing expertise in human and animal health, agri-food, forestry and the environment.

Most of the world's major pharmaceutical companies, which profit from the development of health biotechnology, have establishments in Québec, where more than 35% of jobs in this sector in Canada are located.

❒ ***Intelligence services***

Half of all consulting engineering jobs in Canada are concentrated in Québec and contribute directly to Canada's ranking as the world's third largest exporter of consulting engineering services, after the United States and the United Kingdom.

The intelligence services sector is closely tied to business services, which are part of the tertiary actuators sector. Apart from computing and related services, which are generally associated with information technologies, this field includes engineering and scientific offices. Intelligence services are special in that they support the integration and true appropriation of all the other technologies, whether they are produced in Québec or abroad.

1.3 New needs

The different tax measures implemented by the government to support innovation have yielded highly positive results. They were required so that Québec could catch up to the other industrialized countries. They were, in fact, used by the businesses targeted, and they contributed directly to the growth of the economy as a whole.

This very encouraging result does not mean that these tax measures need no improvement or reinforcement. The government's objective in preparing *An Integrated Fiscal Strategy for the Knowledge-Based Economy* was precisely to strengthen its support for innovation in order to accelerate the process already begun to transform the economy.

These improvements and reinforcements have, as their starting point, the most complete identification possible of the needs to be covered, whether they are derived from the analysis of results presented earlier or from comments made by the enterprises concerned. It is these needs that will be at the heart of the government's new initiatives. They will be analysed in respect of each of the three types of support provided by the Québec government, i.e. R&D assistance, support for technological adaptation, and specific tax assistance for the new economy.

1.3.1 The tax system supporting R&D

From the standpoint of R&D assistance, the tax system raises five types of comments, examined below.

— First, considering the results already achieved, the very principle of tax assistance for R&D appears to rally a very broad consensus, which leads us to confirm and strengthen measures supporting R&D.

— Second, enterprises insist on the need to extend downstream the field of application of the existing tax system to cover not only R&D activities but also other activities related to technological innovation.

— Third, the existing tax system does not make provision for incentives designed to ensure that R&D generates a maximum of economic spin-off in Québec, especially as regards the commercial development of the results obtained.

— Fourth, one observation must be made concerning recourse to R&D assistance measures: the proportion of enterprises conducting R&D is higher among big companies than among small ones. We must ask ourselves whether investment in R&D should not involve an even greater number of SMEs.

— Fifth, enterprises have made a number of suggestions aimed at enhancing R&D assistance. These suggestions should serve as the basis for improving assistance application procedures.

❐ *Confirmation and reinforcement of tax assistance for R&D*

As we saw earlier, Québec has succeeded in significantly reducing its lag in relation to other industrialized countries from the standpoint of the amount of investment devoted to R&D. These encouraging results are attributable, to a large extent, to a tax system that is among the most advantageous available to businesses in the world.

The principle of tax assistance for R&D must be clearly reconfirmed. This method of support has proven itself and it must continue to form the core support offered by the government to the efforts of businesses to innovate.

While the maintenance of tax assistance for R&D is not in doubt, its reinforcement also seems necessary, despite the extent of the assistance now available. The Québec government regards such reinforcement as being linked to the very nature of R&D and the fields it affects. The technologies in question are changing constantly and the challenges to be met are forever being renewed. It would be risky for Québec to curb its initiatives under the pretext of the good results achieved until now.

In the realm of innovation, nothing can be taken for granted and enterprises must be able to constantly mobilize new means to adapt to an environment that is strikingly changing and competitive. For this reason, tax assistance for R&D must be enhanced to ensure that Québec enterprises benefit from adequate support when they invest in innovation.

❒ *Extend the current system to other innovation activities*

A number of representatives of the industrial milieu consulted by the ministère du Revenu du Québec in conjunction with the tax force on the R&D tax credit program,[13] tax assistance for R&D is not as well suited to the needs of enterprises in certain contexts and sectors. Enterprises must be able to quickly develop innovative products and services and the investment required does not always fit the definitions giving entitlement to tax assistance. For these enterprises, technological innovation situated farther downstream from R&D activities should also be eligible for tax assistance.

The problems thus pinpointed are not new and the Québec government has already responded to them by creating the tax credit for the production of multimedia titles, the CDTIs and the Cité du multimédia. Instead of contemplating a change in the objective of tax assistance for R&D, with the risk of distortion that would result in relation to the federal tax system, it is preferable to focus on new fiscal instruments, specifically designed to cover needs not satisfied by tax assistance for R&D. This is the approach that Québec has emphasized in recent years.

❒ *Make tax assistance for R&D more profitable for the economy as a whole*

Tax assistance for R&D has had a direct, spectacular effect on investment by enterprises in this field. Broadly speaking, the enterprises that invest in R&D are also the enterprises that achieve the best results in terms of growth and employment. However, despite one of the most competitive taxation rates on profits in North America, the existing tax assistance program does not sufficiently encourage innovative enterprises to develop in Québec the results of their investments in research.

Table 10 below reveals that the proportion of enterprises that benefited from tax assistance for R&D and declared no taxable income stood at 56.3% in 1995.

[13] The joint task force was made up of nine participants from the industry as well as participants from the ministère du Revenu, the ministère de l'Industrie, du Commerce, de la Science et de la Technologie and the Conseil de la science et de la technologie.

This observation points to the elaboration of specific measures to ensure that innovative enterprises are encouraged to produce and commercialize the products of their research in Québec. This would allow the Québec economy to benefit more extensively from spin-off from R&D investments that the government partly finances through tax assistance.

TABLE 10

BREAKDOWN OF R&D CREDITS ACCORDING TO TAXABLE INCOME, 1995

Taxable income	Number	As a % of total	Amount ($000)	As a % of total
$0	2 001	55.8	173 156	56.3
$1 - $50 000	365	10.2	7 958	2.6
$50 001 - $100 000	231	6.4	7 306	2.4
$100 001 - $200 000	299	8.3	8 188	2.7
$200 001 - $500 000	191	5.3	11 176	3.6
$500 001 - $1 000 000	135	3.8	6 947	2.3
$1 000 001 and more	364	10.2	92 790	30.2
Total	3 586	100.0	307 521	100.0

Source: Ministère du Revenu.

❒ *The need to increase SME participation in R&D*

Relatively speaking, fewer SMEs invest in R&D than large corporations, although they make a greater effort than the latter. The beneficial effects of R&D would be even greater if more enterprises engaged in it, especially SMEs.

As Table 11 shows, available tax statistics reveal the following points:

— Small enterprises, i.e. those with assets under $5 million, account for 75.2% of the enterprises actively engaged in R&D.

— Only 1.1% of small enterprises are active in R&D, compared with 11.6% of large corporations, i.e. those with assets in excess of $50 million.

— Overall, small enterprises make a relatively greater effort than large corporations. The tax credits of enterprises with assets of under $5 million account for 3.4% of their assets, as against 0.1% in the case of large corporations.

TABLE 11

BREAKDOWN OF THE NUMBER OF BUSINESSES ACTIVE IN R&D AND R&D CREDITS ACCORDING TO ASSETS, 1995

Assets	Number of enterprises active in R&D	As a % of enterprises active in R&D	As a % of all enterprises	R&D credits ($000)	As a % of all R&D credits	As a % of total assets
$0 - $5 M	2 697	75.2	1.1	104 634	34.0	3.4
$5 M - $15 M	403	11.2	7.7	44 868	14.6	1.3
$15 M - $25 M	113	3.2	9.8	10 350	3.4	0.5
$25 M - $50 M	97	2.7	8.4	20 673	6.7	0.6
$50 M and over	254	7.1	11.6	125 948	41.0	0.1
Not available	22	0.6	—	1 048	0.3	—
Total	3 586	100.0	1.4	307 521	100.0	0.1

Sources: Ministère du Revenu and ministère des Finances.

The relatively small proportion of SMEs engaging in R&D is attributable to several factors. Most often, SMEs do not have a department devoted exclusively to R&D; they have limited resources; SMEs engage in small-scale projects, in which they cannot achieve economies of scale; and because of the limited scope of their research projects, SMEs must support relatively higher observation costs.

These reasons explain the difficulty for SMEs to invest in R&D. Tax assistance for R&D could be used to encourage SMEs to make the effort necessary to establish partnerships for this purpose with research institutions or in partnership with other enterprises. It is essential to act in this manner, given the place occupied by SMEs in Québec's industrial fabric. Such tax assistance would be put to good use: it would help small enterprises cover their risks, which are very high.

❒ *Administrative improvements*

While the R&D tax assistance system is generally highly appreciated by industry, business associations contacted the ministère des Finances and the ministère du Revenu du Québec and their federal counterparts to submit a number of demands of an administrative nature. These demands focus primarily on the application and administrative practices of government authorities with respect to existing R&D tax assistance.

These remarks concern, by and large, the following points:

— a number of criteria pertaining to eligible R&D activities have been tightened up;

— enterprises are subject to audit and more stringent requirements;

— as a result of the foregoing factors, the obtaining of R&D tax credits has become more uncertain and such uncertainty is hampering the mobilization of investments.

In response to these demands from industry, in May 1998 Minister of Revenue Rita Dionne-Marsolais set up a joint task force[14] to examine the question. The task force formulated a number of recommendations, presented in the box below. In light of these recommendations, the ministère du Revenu made public in February 1999 the enhancements that the department wishes to adopt and which are discussed in the second part of this paper.

[14] *Ibid*, footnote 13.

Fiscal and scientific audit of the R&D tax credit program

Recommendations of the joint task force on the R&D tax credit program

— Ensure that all activities eligible for the R&D tax credit program are considered as such by the end of the scientific audit, since they are an integral part of the definitions recognized by the OECD and Québec enterprises deem them to be important from the standpoint of the industrial research and development process.

— Review the methods of the ministère du Revenu as regards the administration of the R&D tax credit program in order to foster a client-centred approach that takes into account the program's incentives.

1.3.2 Support for technological adaptation

As indicated in Section 1.2.3, significant progress has been achieved with respect to technological adaptation and has produced favourable economic results. Accelerated depreciation on tangible and intangible assets has contributed to the attainment of these results.

However, certain problems mean that an excessively high proportion of enterprises, especially SMEs, are still lagging behind with respect to the accelerated pace of technological change.

— First, as indicated in *Focus on Jobs*, enterprises should have at their disposal strategic information on existing technologies and market development. In a rapidly changing economic environment, it is essential for enterprises to anticipate change and seize promising business opportunities, which they cannot do without this strategic information. Enterprises and, in particular, SMEs, do not have the human and financial resources necessary to set up the necessary watch systems.

— Second, partner enterprises and the external collaborators of an enterprise are assets or resources that should be regarded as key components of the enterprise, in the same manner as employees. Relations with universities, public laboratories, venture capital companies and governments come to mind. The choice of partners, and the nature and quality of collaborative ties are of the utmost importance.

These partnerships represent, for the enterprise, a veritable innovation network. Too little effort and too few resources are now devoted by enterprises to establishing such networks, adapted to their specific needs. The ability to invest more extensively in innovative initiatives such as watching, training and the establishment of collaborative links could gradually encourage enterprises to better adapt to technological change and increase over time their R&D capabilities.

— Third, accelerating technological change the world over means that we must ensure that enterprises have incentives to foster technological adaptation. To this end, the accelerated depreciation measure allows enterprises to reduce the cost of acquiring certain tangible and intangible assets.

This measure is appreciated and effective in supporting investment and the dissemination of technologies. The Commission on Taxation and the Financing of Public Services expressed the opinion that it is an economic intervention measure that plays an important role.

That is why the government announced the enhancement of the accelerated depreciation deduction to 125% two years ago. The 25% enhancement ended on December 31, 1998. Since then, several associations have recommended to the government that it prolong the measure.

1.3.3 Specific support for the new economy

As we have seen, tax measures specific to the new economy have produced excellent results, whose scope we can already measure, even if the tax assistance implemented is, by and large, quite recent.

However, certain improvements are possible and focus specifically on three points:

— broaden the scope of the measures by expanding the number of technologies covered;

— make the measures accessible in the regions;

— change the administration of tax assistance.

❒ ***The scope of the assistance measures for the new economy***

We explained earlier why the tax measures for the new economy were designed initially for the new information and communications technologies. The objective was to support the development of highly promising technologies that were also subject to general application and which have a developmental effect on the entire economy.

As we emphasized in the introduction, the information and communications technologies are not the only technologies of this nature. This category also includes production technologies, biotechnology, new materials technologies, and scientific and technological services or so-called intelligence services. As is the case with the information and communications technologies, these general application technologies should benefit from specific tax assistance, defined according to analogous procedures.

❒ ***Broadening of assistance measures to encompass all regions***

A second way in which the measures should be broadened concerns the location of sites that allow enterprises to benefit from tax assistance. Support for enterprises in the new economy applies, from the standpoint of the CDTIs and the Cité du multimédia, through the sites defined earlier. A growing number of regions wish to be able to benefit from various development tools, which can be decisive in confirming the shift made by these regions to certain specific technologies. Changes to existing assistance, according to a formula adapted to the regions, would confirm and support the regions' technological vocation.

❒ *Simplified administration of assistance*

Enterprises wishing to benefit from the tax credits pertaining to multimedia titles, the CDTIs and the Cité du multimédia must generally go through two steps to obtain financial assistance:

— they must obtain a certificate of eligibility that confirms their full compliance with the conditions under which they may benefit from the tax credit in question;

— they usually benefit form a loan guarantee allowing them to ensure the interim financing of the tax credits, since the amounts they may claim will be not paid until the tax return that entitles them to the tax credit has been processed.

Table 12 below summarizes various administrative responsibilities concerning the issuing of eligibility certificates and interim financing.

— Responsibility for the certificates is shared by the ministère des Finances du Québec (MFQ) and SODEC. The MFQ, through the Bureau des Centres de développement des technologies de l'information (BCDTI), is responsible for issuing visas for the CDTI program and the Cité du multimédia, while SODEC is responsible for issuing certificates in respect of the measure covering multimedia titles.

— As for interim financing, this measure enables the enterprise to obtain a loan equivalent to a portion of the amount of the credit to which it is entitled, if the enterprise so desires. The loan usually represents 75% of the tax credit and the government guarantees 80% of the loan granted.

  The actual guarantees are provided by two different organizations. In the case of multimedia titles, SODEC grants the guarantees. As for the tax credits under the CDTI and Cité du multimédia programs, Investissement-Québec is responsible for them.

TABLE 12

ORGANIZATIONS RESPONSIBLE FOR THE ADMINISTRATION OF TAX MEASURES FOR BUSINESSES IN THE NEW ECONOMY

	Issuing of certificates of eligibility			Interim financing		
Tax measures	**SODEC**	**MFQ (BCDTI)**	**Investissement-Québec**	**SODEC**	**MFQ (BCDTI)**	**Investissement-Québec**
Multimedia titles	X			X		
Cité du multimédia		X				X
CDTI		X				X

Experience acquired in the administration of assistance measures for the new economy has led to the following observations:

— Intervention by more than one organization prevents optimization of the service offered to enterprises. Better coordination between enterprises would make it possible to avoid confusion and uncertainty:

  - the interpretation of the level of tax assistance available would be clearer;
  - consequently, numerous delays in handling applications would be avoided;
  - delays between the issuing of the certificate of eligibility for the tax credit and confirmation of eligibility for interim financing would be reduced to a minimum.

— It is hard, because there are several interveners, to monitor as closely as necessary changes in the application of tax measures and make the necessary adaptations.

— Intervention by a single organization would make it possible to put at the disposal of enterprises in the new economy an integrated financial and fiscal assistance package.

The Québec government believes that *An Integrated Fiscal Strategy for the Knowledge-Based Economy* affords an opportunity to satisfactorily respond to these concerns.

2 *Toward an adapted, better integrated fiscal strategy*

2. TOWARD AN ADAPTED, BETTER INTEGRATED FISCAL STRATEGY

The Québec government has gradually implemented one of the most advantageous tax systems, to bolster innovation. The results are extremely encouraging and have led the government to intensify its efforts still further.

An Integrated Fiscal Strategy for a Knowledge-Based Economy seeks both to confirm the government's determination to use fiscal measures to support innovation and to implement further initiatives. The government is convinced that the measures that have been successfully applied must be strengthened, improved and integrated into a comprehensive vision of the tax system designed to promote innovation. The different measures discussed below have been developed for this purpose.

❒ *Three fields of intervention*

These measures follow directly from the preceding analysis. For each of the three types of tax support offered by the Québec government, needs have been identified, and remedial measures seem to be called for.

The three fields of intervention in the strategy defined by the government correspond to each of these types of support:

— The first confirms and strengthens the tax system applicable to R&D, which remains one of the cornerstones of Québec's policy of support for innovation.

— The second specifically concerns the technological adaptation of businesses, which must be further supported and encouraged.

— Lastly, under the third field of intervention, the government will broaden its initiatives to group advanced-knowledge businesses in designated buildings. Existing measures for new information and communications technologies will be applied to other technologies and extended to all of Québec's regions. Furthermore, a one-stop centre will be created to make these measures more accessible to businesses.

❒ *An integrated fiscal strategy*

The government's fiscal strategy is "integrated" in that it was developed to make use of different tax instruments which, overall, stimulate the various facets of innovation, thereby maximizing the impact on economic development.

— The integrated fiscal strategy covers the three key components of the knowledge-based economy, namely R&D, technological adaptation, and advanced-knowledge businesses. While the measures related to them may target specific objectives, they nevertheless constitute a coherent whole, complementing and reinforcing one another.

— Common rules apply to these different measures. For example, the amount of tax assistance granted is a function of the risk related to the innovation process.

— Since businesses will be able to choose from among these different measures, the integrated fiscal strategy offers them a flexible set of tax-support measures that they can use to best advantage, in keeping with their needs and objectives.

— Lastly, the integrated fiscal strategy was defined with a view to allowing all Québec regions to benefit from the support measures it offers. Some measures are universally applicable, while those defined for designated locations will henceforth apply to each region.

The terms and conditions governing the application of these measures are explained in detail in the document "Additional Information on the Budgetary Measures".

2.1 Field of intervention 1: Confirm and strengthen the tax system applicable to R&D

The first field of intervention of the integrated fiscal strategy concerns the tax system applicable to R&D. Its explicit objectives are as follows:

— The tax system implemented to promote R&D will be confirmed and made even more advantageous so that, in 2006-2010, Québec will devote the same share of its GDP to R&D as the G7 nations. The most recent data available estimate this share at close to 2.4%.

— Incentive measures have been implemented to encourage companies to increasingly generate and market R&D findings in Québec. The new measures should maximize the economic spin-offs of R&D in terms of the commercial use of these findings.

— Incentives are being offered to encourage small and medium-sized enterprises (SMEs) to become increasingly involved in R&D.

— Specific measures will be selected to ensure that Québec has a sufficiently large pool of R&D experts and instructors of international caliber.

Very concretely, in the context of the integrated fiscal strategy, the government:

— offers businesses the opportunity to claim a super-deduction or increased deduction for R&D expenditures as an alternative to the current tax credit;

— awards increased tax assistance to SMEs that intensify their R&D activities;

— increases the tax holiday for specialized foreign researchers and extends its scope.

Moreover, the ministère du Revenu is formulating an action plan in order to meet the demand for administrative improvements to the R&D tax assistance system.

2.1.1 A super-deduction, as an alternative to the refundable tax credit

❒ ***Québec had opted for the refundable tax credit***

To promote R&D, the Québec government had opted for the refundable tax credit, since it enables all businesses to benefit from assistance which is fully refundable. Small businesses, often unable to generate extensive revenues in the initial phases of their development, have found this type of tax assistance to be particularly advantageous.

The government could have chosen a different means of offering the same assistance, for example, by granting a deduction in the income calculation, as Ontario did.

The choice of a given approach is not neutral with regard to the federal tax system. Federal tax treatment of R&D assistance differs depending on whether a refundable tax credit or a deduction is applied, so that Québec businesses are at a disadvantage compared with their Ontario counterparts.

Consequently, the government has decided to maintain the refundable tax credit but also to offer Québec businesses access to an alternative in the form of a super-deduction. Henceforth, businesses conducting R&D may choose, according to their situation, between the super-deduction when calculating their income, and the current refundable tax credits pertaining to their R&D activities.

The option of claiming a super-deduction will improve the tax system of support for R&D in two ways:

— It will encourage businesses to concentrate, in Québec, the production activities resulting from R&D findings in Québec. For businesses turning a profit, the super-deduction will be more advantageous than the refundable tax credit.

— It will enable Québec businesses to substantially lower the net cost of R&D conducted in Québec, by taking advantage of the increased assistance resulting from the application of the federal tax system (this situation is explained in the box below). Thanks to this Québec government initiative, Québec businesses will be on an even footing with their Ontario counterparts and may, should they so desire, benefit from the same tax treatment.

The federal government's tax treatment of R&D assistance

The Québec government participates in R&D financing, mainly through fiscal measures in the form of a deduction (100% of current expenditures) and a refundable tax credit (20%-40% of the payroll or 40% of the value of outside contracts).

The Ontario government, on the other hand, offers an additional deduction (super-allowance) in income calculations with respect to eligible R&D projects conducted in Ontario. The rates applicable, taking the usual deduction into account, are 125% or 135%, depending on the type of business. When annual R&D spending exceeds the average for the three preceding years, these rates increase to 137.5% and 152.5% respectively.

The federal government treats the Québec tax credit and the Ontario super-allowance differently in calculating its own R&D tax credit and in calculating the deduction for the purposes of federal corporate income tax.

— The Québec tax credit decreases, by the same amount, the expenditure eligible for the federal tax credit calculation and for the calculation of the federal tax deduction. For each increase of one percentage point in the Québec tax credit rate, the federal government reduces its R&D assistance, to a maximum of 0.44 percentage points.

— On the other hand, the Ontario super-allowance does not change the amount eligible for the federal tax credit or the amount that may be deducted from federal corporate income tax.

This approach favours businesses established in Ontario, which are able to maximize the financial assistance from the federal government, while businesses established in Québec see the amount of federal tax assistance reduced, due to the type of assistance offered by the Québec government.

❒ *Type of assistance*

Under the new approach adopted by the Québec government, the following will be increased:

— the deductions allowed in the income calculation for labour expenditures associated with the R&D conducted by a company;

— the expenditures related to research contracts concluded with third parties.

These deductions will be authorized in place of the refundable tax credits, provided, of course, that the company chooses this option.

The expenditures subject to increase are those currently eligible for the calculation of R&D tax credits. These expenditures will give the taxpayer an identical tax benefit whether it chooses the super-deduction or the tax credit. The rates of increase have been calibrated to the tax credit rates and the rates for the taxation of profits in effect in Québec on July 1, 1999.

Consequently, an SME claiming the super-deduction will apply a rate of 460% to the expenditure in question and will enjoy a tax benefit similar to the amount it would have had if a tax credit rate of 40% had applied.

The super-deduction rates are shown in the table below:

TABLE 13

ILLUSTRATION OF THE R&D SUPER-DEDUCTION RATES APPLICABLE

Activities	SME	Large corporation
In-house R&D and certain outside contracts[1]	460%	230%
R&D carried out by another entity[2]	460%	460%

1 For companies which conduct R&D in house and whose assets are between $25 million and $50 million, the 460% rate is reduced linearly to 230%.

2 University research centres, public research centres, research consortia or business combinations conducting or contracting out pre-competitive research.

Table 14 compares the level of tax assistance allowed businesses depending on whether they opt for the tax credit system or the new super-deduction.

TABLE 14

EFFECT OF FEDERAL TAX TREATMENT ON THE COST OF R&D IN QUÉBEC: COMPARISON BETWEEN THE TAX CREDIT AND THE SUPER-DEDUCTION FOR A $100 WAGE EXPENDITURE
(in dollars)

	SME		Large corporation	
	Tax credit	**Super-deduction**	**Tax credit**	**Super-deduction**
Expenditures	100	100	100	100
Québec tax credit	-40	—	-20	—
Super-deduction[1]	—	-41	—	-21
Federal tax credit	-21	-35	-16	-20
Reduction in Québec income tax	-7	-6	-8	-7
Reduction in federal income tax	-5	-9	-14	-18
Net cost for the business	**27**	**9**	**42**	**34**
Cost for Québec	**47**	**47**	**28**	**28**
Cost for the federal government	26	44	30	38

1 The business may claim the super-deduction in order to reduce its eligible business income to zero. Should it post an operating loss, it may use the tax credit.

❒ *Impact: reduction in the net investment cost for the business*

The net investment cost for the business is reduced when the super-deduction method is used, due to rules specific to the federal tax system. For example, an SME making use of the super-deduction would see the net cost of a $100 labour expenditure drop from $27 to $9 (see Table 14).

This measure will, therefore, have a number of extremely positive repercussions:

— The super-deduction will fully benefit businesses generating sufficient income to use it. In this way, the measure should encourage businesses to concentrate, in Québec, the production and marketing activities resulting from R&D findings, so as to maximize the benefits of the deduction.

Businesses which are not able to benefit fully from the super-deduction will be able to continue to claim the refundable R&D tax credit.

— This measure will enable businesses to reduce, by more than $50 million over a full year, the net cost of R&D conducted in Québec. This actual benefit will enable Québec businesses to allocate additional financial resources to their current operations.

— This measure will represent no additional cost for the Québec government.

2.1.2 Improved financial assistance for supplementary R&D

❐ *An improvement for SMEs*

As emphasized earlier, despite the major progress made in recent years, the overall R&D effort of Québec enterprises must be increased.

This objective cannot be achieved without the active participation of SMEs. SMEs whose research capacity is currently insufficient can overcome this constraint by making greater use of outside research expertise and infrastructure.

To increase the R&D intensity of SMEs and accelerate the catching up under way in relation to the G7 countries, the Québec government is implementing, for a period of five years, improved tax assistance for supplementary R&D expenditures incurred by SMEs, i.e. enterprises with assets below $25 million.

This tax measure meets the priorities set forth in the paper entitled *Focus on Jobs*, which suggested the average performance of the G7 countries as the target to be achieved in the period from 2006 to 2010 for R&D expenditures as a proportion of GDP.

❐ *Nature of assistance*

The measure announced by the government consists of the following elements:

— An SME carrying out R&D activities may henceforth take advantage of a 40% tax credit or a 460% super-deduction under the new tax measure explained in the preceding section.

— This tax assistance will be improved if the SME incurs R&D expenditures that exceed a reference amount. The improved formula will apply to the same elements constituting the base for calculating the various R&D tax credits and the new super-deduction.

  SMEs may claim an additional 15% tax credit on the increase in R&D expenditure, which will bring the tax credit to 55%. SMEs that opt for the super-deduction may take advantage of an additional super-deduction of 190%, as the super-deduction rate rises from 460% to 650%.

— The reference amount will be equal to the average R&D expenditures for the preceding three years.

The following table shows the improved tax assistance rates.

TABLE 15

IMPROVED RATES FOR SUPPLEMENTARY R&D EXPENDITURE SME

Form of tax assistance	Basic rate	Additional rate on the increase in expenditure	Improved rate
Refundable tax credit	40%	15%	55%
Super-deduction	460%	190%	650%

Table 16 illustrates how this improved tax assistance operates. In the case of an SME that opts for the tax credit, the addition 15% tax credit will apply to the portion of the R&D expenditure that exceeds the reference amount. In this illustration, the SME has a reference amount of $100 and incurs R&D expenditures of $160 in the year. These expenditures exceed the reference amount by $60. Because of the improvement, the enterprise sees its tax credit increase by $9 for a total of $73, bringing the average rate of assistance for the whole of its R&D expenditures from 40% to 45.6%.

TABLE 16

ILLUSTRATION OF THE IMPACT OF AN INCREASE IN R&D EXPENDITURES ON THE VALUE OF TAX CREDITS
SME

	R&D expenditures of $160	Basic system	Improvement	Total	Average rate
		Tax credit (40%)	Additional tax credit (15%)		
Reference amount[1]	$100	$40	—	$40	40.0%
Increase[2]	$60	$24	$9	$33	55.0%
Current expenditures	$160	**$64**	**$9**	**$73**	45.6%

1 Average R&D expenditures for the preceding three years.
2 Corresponds to the difference between the R&D expenditure for the year ($160) and the reference amount ($100).

This measure will benefit some 1 500 enterprises. It will stimulate R&D activities in enterprises and will motivate them to enter into outside research contracts.

This fiscal measure represents a financial cost to the government of $24 million over a full year.

2.1.3 Tax holiday for foreign R&D experts

- ***A measure that has proved its worth, but that must be improved***

The tax holiday for foreign R&D researchers, implemented in 1987, has produced very good results. More than 70% of foreign researchers were hired by enterprises because of the measure.

However, certain improvements must be made to this measure:

— The current two-year duration of the measure is too short to ensure the desired rate attraction and rate of retention, and to encourage foreign researchers to put down roots here.

— The period of application of the measure is shorter than the period for a conventional R&D program, which is five years, when commercialization efforts are considered.

— Lastly, the current measure neglects specialized workers, other than researchers, who participate in the realization of an R&D project.

❒ *Policy directions chosen*

The purpose of the improvement is to guarantee better access to a pool of foreign R&D expert by offsetting such disadvantages as the relatively heavy tax burden on individuals in Québec.

The government therefore decided to lengthen the duration of the tax holiday and open up eligibility for it to specialized workers other than researchers, i.e. managers in the field of innovation and specialists in foreign commercialization, cutting-edge technology transfer and innovation financing.

The objectives are as follows:

— significantly increase the number of foreign R&D researchers and experts;

— increase the proportion of researchers that extend their stay or remain permanently in Québec.

The measure has two distinct components:

Component 1: Extension of the tax holiday for foreign R&D researchers from two to five years

Component 2: Broadening of the five-year tax holiday for foreign R&D researchers to include foreign experts dedicated to an R&D project

The specialists hired by the enterprise will work together to carry out an R&D project and to commercialize the research results that stem from it. The ministère de la Recherche, de la Science et de la Technologie (MRST) will issue the required certificates for the experts. The MRST reserves the rights to limit the number of experts able to benefit from the tax holiday. The size of the R&D project and the scope of the needs inherent in projects are criteria that the MRST will use for this purpose.

This tax measure represents a financial cost for the government of $4 million over a full year.

2.1.4 Administrative improvement of the system of tax assistance for R&D

As stressed earlier, business associations voiced their administrative demands to the ministère des Finances and the ministère du Revenu, as well as Finance Canada and Revenue Canada, concerning the system of tax assistance for R&D.

To respond to these recommendations, and following the work of the joint task force set up by the Minister of Revenue, the ministère du Revenu du Québec made public an action plan with the following four objectives:

— increase the certainty of enterprises that the tax credit will be allowed;

— facilitate taxpayer access to the program by developing a range of specific standards and administrative rules on which the parties agree;

— simplify relations between the ministère du Revenu and taxpayers in regard to the credit auditing process;

— develop access to the scientific auditing know-how of Revenue Canada.

The implementation of this action plan should meet the expectations expressed by the enterprises concerned.

2.2 Field of intervention 2: Strengthen the system of tax assistance for technological adaptation

The preceding analysis made it possible to identify the improvements that must be made in the system of tax assistance for technological adaptation:

— Businesses, particularly SMEs, must receive additional support in order to have access to strategic information on existing technologies and market changes.

— Businesses must be given an incentive to invest more in the creation of a true innovation network.

— The acceleration of technological change requires the strengthening of tax support for the acquisition of tangible and intangible assets.

The government is announcing two initiatives to meet these objectives:

— A new tax credit, the tax credit for technological adaptation services, is defined.

— The government is renewing, until March 31, 2000, the supplementary deduction related to the accelerated depreciation measure that applied to certain technological adaptation investments.

2.2.1 Tax credit for technological adaptation

The government is announcing the creation of a refundable tax credit for technological adaptation services.

This new tax credit will have two components, devoted to competitive information, and liaison and transfer.

❒ ***Competitive information component***

Lacking resources, businesses, particularly SMEs, do not devote sufficient investments to the monitoring of available knowledge and technologies, or to business opportunities in their sector. This is why they are delayed in acquiring and commercializing these technologies, and their competitiveness is adversely affected.

The purpose of the new tax measure is to enable companies to:

— improve their knowledge, technology and business opportunity watch internationally;

— acquire and rapidly commercialize this knowledge and these technologies.

The government is therefore creating a refundable tax credit of 40% for the expenses incurred by SMEs to acquire information services offered by accredited competition watch organizations.

— The 13 Centres de veille concurrentielle, or competition watch centres, are the purveyors of accredited services.

— Eligible expenditures consist in the fees for information services,[15] the fees for participation in information and training activities conducted by the centres and the subscription fees related to information products and services.

This tax measure represents a financial cost for the government of $1 million over a full year.

❒ *Liaison and transfer component*

Businesses, particularly SMEs, tend to count solely on their own resources in order to innovate. However, innovation is generally the result of a collective effort. The current level of interaction between the parties in the innovation system is not sufficiently high.

The purpose of the tax measure created by the government is to:

— intensify and improve the quality of the collaborative ties between companies, research centres and the other innovation parties;

— assist businesses in acquiring and commercializing research results;

— consolidate offers of liaison and transfer services tailored to the sectors of activity and the various profiles of the business clientele.

To achieve these objectives, the government has defined a refundable tax credit of 40% relating to the expenses incurred in the acquisition, by SMEs, of the liaison and transfer services of accredited organizations.

— The six Centres de liaison et de transfert (CLTs), or liaison and transfer centres, and the 23 Centres collégiaux de transfert de technologies (CCTT), or college technology transfer centres, are the organizations accredited to render these services.

— Eligible expenditures consist in fees for liaison and transfer services,[16] fees for participation in information and training activities conducted by the organizations, as well as subscription fees related to liaison and transfer products and services.

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[15] In the case of information services, the eligible expenditure corresponds to 80% of fees.

[16] For liaison and transfer services, the eligible expenditure corresponds to 80% of fees.

Liaison services consist in bringing together businesses and various innovation parties. Transfer services are aimed at facilitating the acquisition, by the business, of the results of research or of outside analyses.

This tax measure represents a financial cost for the government of $4 million over a full year.

Organizations dedicated to support for innovation

Thirteen Centres de veille concurrentielle, or competition watch centres, have been created since 1992. They offer businesses in their sectors a strategic information service on changing technologies and markets.

Six Centres de liaison et de transfert (CLTs), or liaison and transfer centres, have been created and offer a liaison service between businesses, universities and other parties. They identify needs, facilitate the coming together and communication of parties and assist businesses in the realization stages of their innovation project.

The 23 Centres collégiaux de transfert de technologies (CCTT), or college technology transfer centres, which are affiliated with Cegeps and distributed throughout Québec, have approximately the same duties from a regional perspective. They also provide support for technical training. The list of these organizations is given in Appendix 1.

2.2.2 Renewal of the improvement for accelerated depreciation

An accelerated depreciation measure, consisting in a 100% depreciation rate, applies to certain investments, namely, acquisitions of property needed for the manufacturing and processing, certain computer supplies and intangible assets such as patents, permits or licences. This measure should, among other things, facilitate technology transfers, i.e. the acquisition of knowledge, know-how, techniques, processes or formulas, whether they are protected or not, for the purpose of commercializing an innovation or an invention.

In the 1997-1998 Budget Speech, this measure was enhanced through the addition of a supplementary deduction of 25% for investments made until December 31, 1998.

To recognize the constant changes in the field of technological innovation and to increase the dissemination and adaptation of new technologies, the government has decided to extend this improvement until March 31, 2000, and make it apply retroactively to January 1, 1999. This initiative should promote efforts to commercialize the results of R&D conducted by businesses, and attract new investments.

This tax measure represents a financial cost for the government of $34 million over a full year.

2.3 Field of intervention 3: Broaden measures in favour of businesses in the new economy

In tax assistance for innovation, the most recent and most imaginative measures – those in which Québec truly played a role as a trailblazer – are measures in favour of information and communications technologies within the framework of designated sites.

Since these measures have been spectacularly successful, their broadening is planned both for the technologies concerned and for the regions where designated sites will be defined.

Furthermore, simplification of the administration of the taxation assistance was becoming increasingly urgent.

To meet these demands and fulfil the commitments it made in this regard, the government is announcing the following four initiatives, as part of *An Integrated Fiscal Strategy for the Knowledge-Based Economy*:

— The government is entering a new stage in the creation of designated sites for advanced-knowledge businesses, with the establishment of the Carrefours de la nouvelle économie (CNEs), or new economy centres.

— The government is creating the Centre national des nouvelles technologies de Québec (CNNTQ).

— The tax holiday for foreign instructors working in a CDTI is being improved.

— The government is significantly simplifying the administration of assistance measures for advanced-knowledge businesses by creating a one-stop centre for businesses in the new economy.

2.3.1 Carrefours de la nouvelle économie

After the CDTIs and the Cité du multimédia, the government is introducing a new concept, the Carrefours de la nouvelle économie (CNEs), or new economy centres, in order to stimulate through tax measures the start-up and development of businesses in the new economy, in designated buildings.

The goal is to encourage the emergence and growth of businesses in the new economy, foster the creation of technological hubs that maximize synergy and collaboration, and ensure that these businesses establish their operations in buildings adapted to new technologies.

❐ *A broad concept, for each Québec region*

As in the case of the CDTIs, the CNEs are groups of businesses that operate in one building. Corporations that carry out their activities in such a building will be eligible for a refundable tax credit calculated on wage expenditures.

— Unlike the CDTIs or the Cité du multimédia, the CNEs will not be limited to information and communications technologies. The concept is extended to all general application new technologies, which have developmental effects on economic activity as a whole.

— In addition, the CNE concept will apply throughout Québec, given that a CNE will be established in each region which does not have a CDTI. In this regard, the single-building concept will be relaxed so that a region can decide to establish its CNE in more than one municipality depending on its needs.

The CNEs will be an important development tool for boosting the economic strengths of each Québec region. Overall, the implementation of the CNEs is designed to allow Québec to make the transition to the knowledge-based economy, while offering young Quebecers quality jobs that secure their future.

❒ *Nature of the tax assistance*

Businesses that establish their operations in a building designated as a CNE will be eligible for a refundable tax credit. This tax credit will be applicable to labour expenditures directly associated with the carrying out of activities related to the knowledge-based economy.

These businesses will be able claim a tax credit equal to 40% of the salaries paid to eligible employees. The amount of tax assistance may not exceed $15 000 per job. This assistance will be available beginning on the day of the Budget Speech and will end on December 31, 2010.

Specific provisional measures will be introduced to accelerate the development of the CNEs. These measures, which are similar to those that apply to the Cité du multimédia, provide notably for:

— the possibility of taking advantage of the tax credit as of the day a lease is signed;

— a mechanism for the interim financing of the tax credit.

TABLE 17

CARREFOURS DE LA NOUVELLE ÉCONOMIE
SUMMARY OF TAX ASSISTANCE

Refundable tax credit	Nature of assistance	Application period
Businesses that have received a certificate	40% of salaries paid (maximum of $15 000 per job)	March 10, 1999 to December 31, 2010

❒ *Implementation of the CNEs in the regions*

Each Québec region will play a key role in implementing the CNEs given that they will determine the policy directions for these economic development tools. More precisely, the regions will decide which sectors will be given priority in their CNE and choose the location of the designated building.

Creation of an advisory committee

To ensure the implementation of the CNEs meets the expectations of local stakeholders, each region will have to set up an advisory committee made up of:

— four people from the business or academic community, appointed by the Conseil régional de développement (CRD);

— the director general of the CRD in the region concerned;

— the Assistant Deputy Minister of the ministère des Régions (MR) responsible for the region concerned;

— the regional director of the ministère de l'Industrie et du Commerce (MIC) for the region.

Responsibilities of the advisory committee during the implementation of the CNEs:

The advisory committee will be responsible for:

— identifying priority sectors of activity for the region's economic development;

— proposing a method for determining the location of each CNE.

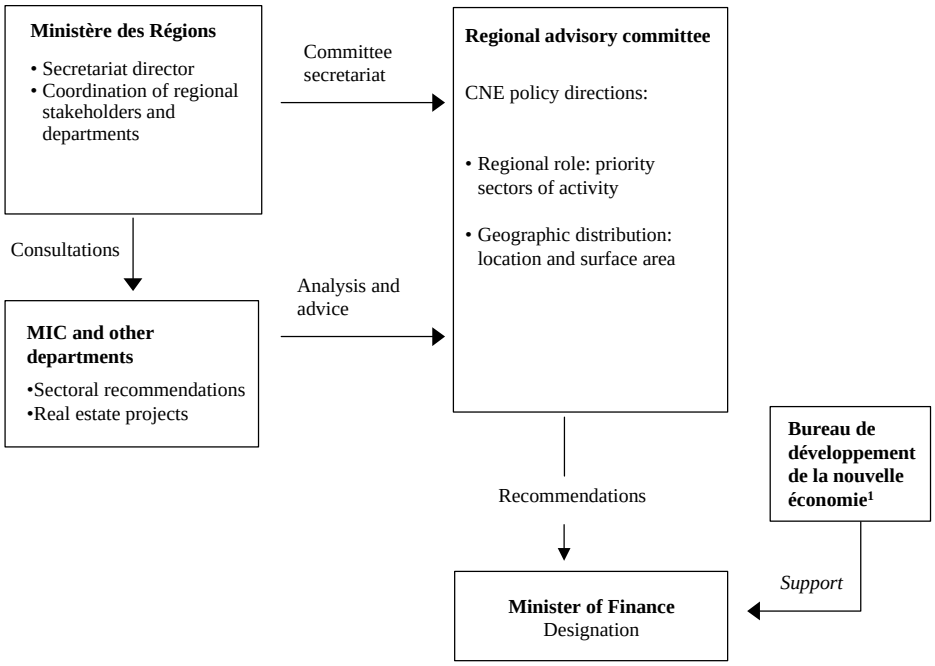
The advisory committee's secretariat will be under the authority of the ministère des Régions. A region may decide to specialize in a particular sector or to diversify its economy in several fields of the knowledge-based economy.

In addition, the regional advisory committee will be able to count on the support of the ministère des Régions, which, during the implementation of the CNEs, will coordinate relations and discussions between regional stakeholders and the other departments and public organizations involved in regional development. The advisory committee will be able to take advantage of the expertise of the MIC and other sector-oriented departments in fulfilling its mandate.

Once the advisory committee has completed its consultations and analyses, it will make recommendations to the Minister of Finance on the location of buildings. The minister of Finance is responsible for designating buildings for the purposes of the CNEs.

DIAGRAM 2

CNE: ROLE OF REGIONAL STAKEHOLDERS



(1) The Bureau de développement de la nouvelle économie will replace the Bureau des Centres de développement des technologies de l'information (see Section 2.3.4).

❒ *Integration of CDTI and CNE programs*

The geographic distribution of the CNEs will take into account the CDTIs currently in place. Therefore, priority will be given to regions that do not yet have a CDTI.

The aim of the measure announced by the government is to ensure that each Québec region has either a CDTI or a CNE. However, the assistance measures will be applied using a flexible approach. Each CNE will be able to house businesses that operate in information and communications technologies. These businesses will be able to opt for the tax assistance intended for the CNEs or, if they submit an innovative project in the information and communications technologies field, to opt for the tax assistance intended for the CDTIs.

In addition, regions that have already been granted a CDTI may decide to house, in designated buildings, businesses with projects related to other sectors of the knowledge-based economy eligible for the purposes of the CNE concept.

❒ *Distribution of the CNEs*

The CNEs will be established in all Québec regions. Their distribution will target three groups of regions, namely, the resource-rich regions, the central regions and the regions around Montréal. Each group of regions will be assigned available space expressed in square metres, which will be divided among each of the regions in the group.

The total surface area available at the outset is 45 000 square metres. Once a site is fully occupied, the Minister of Finance may grant additional space to the regions concerned. Table 18 shows the distribution of the total space available.

TABLE 18

DISTRIBUTION OF SPACE ALLOCATED TO THE CNEs

Regions	Projected surface area (square metres)
Resource-rich regions	
Bas-Saint-Laurent	3 000
Saguenay–Lac-Saint-Jean	3 000
Abitibi-Témiscamingue	3 000
Côte-Nord	3 000
Nord-du-Québec	3 000
Gaspésie–Îles-de-la-Madeleine	3 000
	18 000
Central regions	
Mauricie	4 000
Chaudière-Appalaches	4 000
Centre-du-Québec	4 000
	12 000
Regions around Montréal	
Lanaudière	5 000
Laurentides	5 000
Montérégie	5 000
	15 000
	45 000

The ministère des Régions will coordinate discussions on the distribution of space among the regions in each of the three groups.

❒ *Sectors targeted*

To extend tax assistance to all sectors of the knowledge-based economy, the CNEs may house businesses that carry out job-creating activities in the following sectors:

— Information and communications technologies, notably:

- data processing, software or software packages;
- telecommunications;
- consulting services.

— Production technologies, notably:

- design and engineering;
- manufacturing and assembly;
- automated handling of materials;
- manufacturing information systems.

— Biotechnologies, notably:

- human and animal health;
- farming, agri-food and forestry;
- environment.

— Materials technologies, notably:

- chemical and metallic materials;
- polymers and composite materials.

— Scientific and technological services, notably:

- engineering services;
- test laboratories;
- scientific and technical consulting services;
- design of data processing systems.

The choice of fields is broad enough to allow all regions to diversify their activities in the knowledge-based economy. All these technologies are general application technologies, with a developmental impact on the economy as a whole.

Businesses in the sectors targeted will be able to claim the tax credit in regard to employees assigned to the following activities:

— tasks related to the collection, storage, processing and communication of information;

— activities targeting innovation, particularly pre-production, production, technological adaptation and the development of new by-products.

Activities related to market analysis and development, financial assembly, business plans, capital financing, publicity and promotion are excluded.

The tax assistance provided in conjunction with the CNEs will reach $30 million over a full year.

2.3.2 The Centre national des nouvelles technologies de Québec

The Québec government is aware of the spill-over potential of the information and communications technologies sector. It is also keenly interested in the dissemination of Québec's culture and arts. Therefore, it is creating the Centre national des nouvelles technologies de Québec (CNNTQ) for the Québec City region. This measure is aimed at supporting and encouraging the development of the arts as they relate to the new information and communications technologies and multimedia.

This government initiative supports a rapidly growing sector, while allowing artists to experiment with new means of expression. The project will further stimulate the start-up of businesses in Québec and the imagination of its creators. It is in keeping with the Québec capital development policy, which the government made public in June 1998.

❒ ***The project***

The CNNTQ will group, within a designated area of downtown Québec, businesses focusing on new information and communications technologies such as multimedia, animation, image and text digitization, and special effects, applied in particular to the arts and culture sector.

The project is part of a series of measures aimed at revitalizing Québec City's downtown area and strengthening its cultural role.

The CNNTQ, which is to be located near the present CDTI, will group buildings offering approximately 18 600 square metres of space.

❒ ***Nature of the tax assistance***

The Québec government will grant businesses that carry out job-creating activities and that establish their operations in the CNNTQ a refundable tax credit equal to 40% of the salaries paid to employees directly involved in production operations. The amount of tax assistance may not exceed $15 000 per job on an annual basis.

This assistance will be available beginning on March 10, 1999 and will end on December 31, 2010. Specific provisional measures will be introduced to accelerate the development of the CNNTQ. These measures, which are similar to those that apply to the Cité du multimédia, provide notably for:

— the possibility of taking advantage of the tax credit as of the day a lease is signed;

— an interim financing mechanism.

For slightly more than 10 years, the Québec government will provide substantial support for businesses that decide to move to the CNNTQ to conduct their affairs.

TABLE 19

CENTRE NATIONAL DES NOUVELLES TECHNOLOGIES DE QUÉBEC SUMMARY OF TAX ASSISTANCE

Refundable tax credit	Nature of assistance	Application period
Businesses that have received a certificate	40% of salaries paid (maximum of $15 000 per job)	March 10, 1999 to December 31, 2010

Once the CNNTQ is fully operational, the corresponding tax assistance will reach $12 million.

❒ *Integration of the CDTI and CNNTQ programs*

The creation of the CNNTQ will take into account the CDTIs currently in place.

Businesses that establish their operations in the CNNTQ will be able to opt for the tax assistance intended for it or, if they submit an innovative project in the information and communications technologies field, to opt for the tax assistance intended for the CDTIs.

In addition, businesses that have been issued a certificate for CDTI tax assistance will be able to opt for the tax assistance granted in accordance with the CNNTQ concept.

2.3.3 Tax holiday for foreign trainers

Foreign trainers employed by a corporation that operates a business in a CDTI benefit from a two-year tax exemption in regard to salaries paid to them by the corporation.

Given that the CDTI concept includes a component for the promotion of employee training, the government has decided to increase to five years the period to which the personal income tax exemption applies.

This measure, which is modelled on the tax holiday for foreign R&D experts, will allow businesses established in a CDTI to recruit specialized instructors more easily.

This tax measure represents a financial cost of $1 million to the government over a full year.

2.3.4 A one-stop tax assistance centre for businesses in the new economy

While tax policy is the exclusive responsibility of the Deputy Prime Minister and Minister of State for the Economy and Finance, tax administration is entrusted to several departments and organizations, particularly in the case of the measures targeting businesses in the new economy. The process currently in effect, as described above, must be simplified to provide businesses with more ready access to the tax measures supporting the new economy.

- ***Creation of the Bureau de développement de la nouvelle économie***

To ensure optimum support for the development of businesses in the new economy, the government intends to adopt an administrative framework that will limit the number of parties which businesses in this sector have to deal with. The goal is to provide these businesses with a veritable one-stop tax assistance centre.

For this purpose, the Bureau de développement de la nouvelle économie (BDNE) will be created. The BDNE, which will be an integral part of the ministère des Finances, will replace the Bureau des Centres de développement des technologies de l'information (BCDTI). The BDNE, which will assume all of the responsibilities currently shouldered by the BCDTI, will henceforth be in charge of:

— the issue of eligibility certificates and the interim financing of the tax credits for the production of multimedia titles, the CNNTQ and the CNEs;

— the provision of loan guarantees for the interim financing of the tax credits for the CDTIs and the Cité du multimédia.

Responsibilities of the BDNE

More specifically, the BDNE will make recommendations to the Minister of Finances on the following:

— the certification of the eligibility of a corporation to operate a business in a building housing a CDTI or a CNE, in the CNNTQ and the Cité du multimédia;

— the certification of the eligibility of employees in respect of whom the corporation may benefit from the tax assistance for the CDTIs, the CNEs, the CNNTQ and the Cité du multimédia;

— the certification of the eligibility of specialized equipment entitling a corporation to the refundable tax credit in conjunction with the CDTIs;

— the certification of the eligibility of corporations and multimedia titles with regard to tax assistance for the production of multimedia titles;

— the certification of the eligibility of foreign trainers so that the latter may benefit from the tax holiday provided to that effect;

— the provision of loan guarantees for the interim financing of the tax credits for the production of multimedia titles, the CDTIs, the CNEs, the CNNTQ and the Cité du multimédia.

With these new responsibilities, the BDNE will administer all the specific tax measures available to businesses in the new economy. It will thus have all the leeway needed to promote these measures, inform the businesses targeted, analyse projects submitted, and propose, among all of the tax measures applicable, those that would be most advantageous for these businesses.

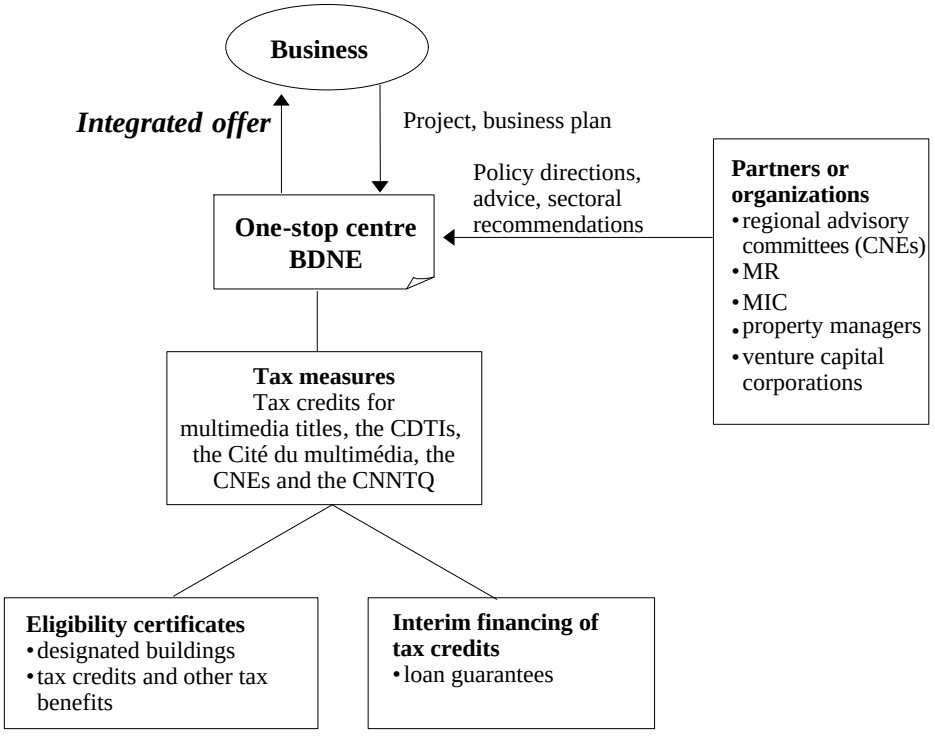
Simpler relations with businesses

With this new administrative framework, businesses will merely have to submit one file to one place.

In addition to taking into account the many relationships between the various tax measures, the BDNE will be able to propose a series of measures aimed at securing the interim financing of the tax credits to which businesses are entitled, and where applicable, at taking into consideration for the purposes of this integrated offer the various budgetary assistance programs available.

DIAGRAM 3

ONE-STOP CENTRE FOR BUSINESSES IN THE NEW ECONOMY
OPERATION OF THE BUREAU DE DÉVELOPPEMENT DE LA NOUVELLE ÉCONOMIE



In addition, the ministère des Finances (MFQ) has the authority to rapidly amend the tax legislation. This rapid response capability is essential in a fast changing sector. By following changes in the application of tax measure as closely as required, the MFQ can make the necessary adjustments, if any.

This one-stop centre will boost the effectiveness of the means implemented by the government to offer businesses a competitive tax system in this area. In addition, decision makers and managers will be able to devote more efforts to developing their operations and thus increase their chances of success.

For the purpose of administering the new measures introduced by the government, the current budget of the BCDTI will be transferred to the BDNE and the latter will be granted an additional operating budget of $1.2 million.

❒ *Interim financing of tax credits for the knowledge-based economy*

Tax credits are claimed upon the filing of income tax returns. However, to allow businesses to benefit immediately from the tax assistance offered by the government, a mechanism exists for the interim financing of tax credits. By granting loan guarantees, the government facilitates the short-term financing of the activities of businesses in the new economy.

At present, the interim financing of these tax measures involves the intervention of the Société de développement des entreprises culturelles with regard to the tax credit for the production of multimedia titles and of Investissement-Québec with regard to the tax credits for CDTIs and the Cité du multimédia.

A one-stop centre will be made available to businesses in the new economy for obtaining these guarantees. To that end, guarantees for the interim financing of the measures targeting such businesses may henceforth be granted by the BDNE.

The *Financial Administration Act* will be amended to allow the Minister of Finance to award loan guarantees for the interim financing of tax credits for the development of the new economy. For this purpose, the budget of the ministère des Finances will be increased by $3.5 million in 1999-2000.

CONCLUSION

The measures announced by the government in *An Integrated Fiscal Strategy for the Knowledge-Based Economy* correspond to a comprehensive vision of the use of the tax measures implemented to encourage innovation. Certain components of these measures should be highlighted in the conclusion and the total cost of the initiatives announced by the government indicated.

- ***Government assistance tailored to the level of risk assumed by businesses in the new economy***

An Integrated Fiscal Strategy for the Knowledge-Based Economy contains a set of tax measures designed to support various stages in the innovation process. The parameters of these measures have been determined in accordance with the level of risk assumed by the business throughout the innovation cycle.

Certain measures have strict eligibility criteria, and the businesses that meet with them receive more generous tax assistance. This is the case of the tax credit for R&D, granted to businesses that submit a project involving major scientific risk. The same applies to the CDTI concept, in which businesses must submit an innovative project involving R&D.

Table 20 illustrates this approach.

— It will be noted that the tax credit for R&D enables a business to maximize the level of tax assistance. The business receives assistance corresponding to 71.3% of the salary paid the employee. This tax credit, combined with the federal system, provides the most generous tax assistance, as it requires of the business an additional effort to reduce the risk related to innovation.

  It should also be pointed out that this tax assistance does not have a ceiling, as such tax credits as those related to CDTIs and the Cité du multimédia do. Under the tax credit for R&D, more assistance can be provided for the hiring of researchers requiring higher remuneration. For example, for the purpose of the illustration in Table 20, a salary of $80 000 instead of $37 500 raises the total tax assistance from $26 736 to $56 123.

— The tax credit for CDTIs is the second tax measure in terms of compensation. Under the same conditions, a business taking advantage of the tax system for CDTIs would receive assistance corresponding to 62.8% of the salaries paid. This assistance takes into consideration a tax credit of 40%, which will be in force next June and remain in force for the next 11 years.

— The tax credit for the production of multimedia titles corresponds to tax assistance of 59.2% of the salary amount paid. This assistance targets the production of a multimedia title that meets certain characteristics, and it is calculated taking into consideration a credit rate of 50% applicable in situations in which the bonus for a production in French is granted.

— Certain tax measures require more flexible application terms. This is the case with the tax credit for the Cité du multimédia, which therefore provides less generous assistance. The assistance corresponds to an amount equal to 51.4% of the salary paid. This tax credit encourages the general development of activities related to the knowledge-based economy. The tax credit rate, which is currently 60%, will be reduced to 40% next June.

TABLE 20

TAX MEASURES FOR BUSINESSES IN THE KNOWLEDGE-BASED ECONOMY
ILLUSTRATION OF THE LEVEL OF TAX ASSISTANCE GRANTED[1]
(in dollars)

	Tax measures applicable to the knowledge-based economy			
	R&D	**CDTI**	**Multimedia titles**	**Cité du multimédia, CNE and CNNTQ**
	40%	40%	50%	40%
Basic parameters				
Yearly salary[2]	37 500	37 500	37 500	37 500
Capital expenditure	10 000	10 000	10 000	10 000
Before-tax profit	2 000	2 000	2 000	2 000
Québec taxation				
Impact of tax assistance[3]	15 000	20 742	18 750	15 000
Other impacts of tax system[4]	2 007	0	1 039	1 373
Sub-total	17 007	20 742	19 789	16 373
Federal taxation				
Impact of tax assistance[3]	7 875	n/a	n/a	n/a
Other impacts of tax system[4]	1 854	2 808	2 395	2 887
Sub-total	9 729	2 808	2 395	2 887
Total fiscal assistance	**26 736**	**23 550**	**22 184**	**19 260**
Net cost per job	10 764	13 950	15 316	18 240
Assistance as a percentage of salary	**71.3%**	**62.8%**	**59.2%**	**51.4%**
	Level of risk			
	+ high →			+ low

1 This illustration is based on the following assumptions:
- the tax assistance related to the Cité du multimédia and the CDTIs is calculated at the rate of 40% in effect as of June 16, 1999;
- the tax assistance is calculated according to the maximum tax credit applicable to each measure;
- the capital expenditure corresponds to purchases of computer equipment eligible for the Québec accelerated depreciation measure, which gives entitlement to a deduction of 125% of the capital cost of the good in the calculation of income;
- the equipment is entirely financed by a loan.

2 The $37 500 salary corresponds to the salary level at which it is possible to benefit from the applicable maximum tax credit of $15 000.

3 Takes into consideration the applicable tax credits and any tax holiday.

4 Takes into consideration the impact resulting from corporate income tax, the tax on capital and the payroll tax.

❒ *Financial impact of* An Integrated Fiscal Strategy for the Knowledge-Based Economy

The measures as a whole in *An Integrated Fiscal Strategy for the Knowledge-Based Economy* will make it possible to reduce the tax burden of businesses by:

— $45 million in 1999-2000;

— $164 million over a full year.

TABLE 21

FINANCIAL IMPACT OF TAX MEASURES TO SUPPORT INNOVATION AND THE KNOWLEDGE-BASED ECONOMY
(in millions of dollars)

Tax measures	Full year	1999-2000	2000-2001
Strengthening of tax system applicable to R&D			
- Super-deduction[1]	-54	-3	-54
- Improved tax assistance for supplementary R&D	-24	-1	-24
- Tax holiday for foreign experts[2]	-4	-1	-2
Sub-total	**-82**	**-5**	**-80**
Technological adaptation of businesses			
- Tax credit for technological adaptation services	-5	-3	-5
- Accelerated depreciation (15 months)	-34	-34	-28
Sub-total	**-39**	**-37**	**-33**
Specific measures for the new economy			
- Carrefours de la nouvelle économie	-30	-1	-9
- Centre national des nouvelles technologies de Québec	-12	-1	-5
- Tax holiday for foreign instructors (CDTIs)[2]	-1	-1	-1
Sub-total	**-43**	**-3**	**-15**
Measures as a whole	**-164**	**-45**	**-128**

1 Gain for Québec businesses resulting from the application of the federal tax system. Represents no cost for the Québec government.
2 Reduction of the personal income tax burden.

Appendices

APPENDIX 1: LIST OF ORGANIZATIONS DEVOTED TO SUPPORT FOR INNOVATION

- ***Centres de veille concurrentielle, or business watch centres***

  - Centre de veille sur les médias
  - Centre de veille concurrentielle sur les communications graphiques (Vigicom)
  - Centre de veille de la construction (CeVeC)
  - Centre de veille des équipements de transport terrestre (CVETT)
  - Centre de veille sur les métaux légers (CVML)
  - CEVEIL (Cellule de veille et d'expertise sur les inforoutes et langues)
  - ÉCO RADAR (Réseau de veille concurrentielle en environnement)
  - Observatoire des technologies de l'information du Québec (OBTIQ)
  - Réseau CHIMIE (Réseau d'information stratégique de l'industrie chimique)
  - Réseau de veille stratégique bioalimentaire (RVSB)
  - Réseau d'information stratégique de plasturgie (RISP)
  - Réseau INFO-BOIS (Réseau d'information sur les produits du bois inc.)
  - Réseau d'information stratégique de la mode et des textiles

- ***Centres de liaison et de transfert (CLTs), or liaison and transfer centres***

  - Centre de recherche en calcul appliqué (CERCA)
  - Centre de recherche informatique de Montréal (CRIM)
  - Centre francophone en informatisation des organisations (CEFRIO)
  - Centre interuniversitaire de recherche en analyse des organisations (CIRANO)
  - Centre québécois de recherche et de développement de l'aluminium (CQRDA)
  - Centre québécois de valorisation des biomasses et des biotechnologies (CQVB)

- ***Centres collégiaux de transfert de technologie (CCTTs), or college technology transfer centres***

  - Centre collégial de transfert de technologie en biotechnologies (TRANSBIOTECH)
  - Institut des communications graphiques du Québec
  - Centre collégial de transfert technologique en musique et son (MUSILAB)
  - Institut de chimie et pétrochimie
  - Centre d'innovation technologique agroalimentaire (Cintech AA inc.)
  - Centre de géomatique du Québec inc.
  - Centre de métallurgie du Québec
  - Centre de production automatisée
  - Centre de recherche et de développement en agriculture du Saguenay–Lac-Saint-Jean
  - Centre de robotique industrielle inc.
  - Centre de technologie minérale et de plasturgie inc.
  - Centre de technologie des systèmes ordinés inc. (CETSO)
  - Centre des technologies textiles
  - Centre d'enseignement et de recherche en foresterie inc. (Sainte-Foy)
  - Centre Microtech inc. (Sherbrooke)
  - Centre national en électrochimie et en technologies environnementales inc.
  - Centre spécialisé de la mode du Québec
  - Centre spécialisé de technologie physique du Québec inc.
  - Centre spécialisé des pêches
  - Centre spécialisé en pâtes et papiers
  - Centre technologique en aérospatiale (CTA)
  - EQMBO ENTREPRISES INC., Centre d'aide technique et technologique
  - Centre des matériaux composites

APPENDIX 2: TAX MEASURES FOR R&D AND THE KNOWLEDGE-BASED ECONOMY A COMPARISON OF COMPONENTS[1]

	Tax system for R&D	Tax credit for the production of multimedia titles	Centres de développement des technologies de l'information
Level of tax assistance	In-house research: ▪ Tax credit applicable to salaries: – 40% for SMEs – 20% for others; or ▪ Super-deduction: – 460% for SMEs – 230% for others Research by a prescribed third party: ▪ Tax credit of 40% applicable to amount of eligible R&D expenditure, or ▪ Super-deduction of 460% Improved tax assistance for supplementary R&D: ▪ Additional tax credit of 15% ▪ Additional super-deduction of 190% No ceiling Tax holiday of five years for foreign researchers and other foreign experts	Tax credit of 40% of salary paid in regard to the production of multimedia titles destined for distribution to general public. Increase in tax credit of 10% of salary paid for products eligible for the bonus for French language productions Tax credit of 35% of salary paid in regard to other productions No ceiling	Tax credit of 60% of salary paid by June 15, 1999 (a maximum of $25 000) Tax credit of 40% of salary paid after June 15, 1999 but before January 1, 2011 (a maximum of $15 000) Tax credit of 40% of cost of specialized equipment for three years Tax holiday for five years: ▪ income tax ▪ tax on capital ▪ contribution to HSF Tax holiday of five years for foreign instructors
Targeted sectors	All sectors	Multimedia	New information and communications technologies (including multimedia)
Eligible activities	Pure or applied research and experimental development	Production of multimedia titles	Innovation process (from R&D to production of goods and services)
Specific criteria	Research and development protocol: ▪ advancement of science or technology ▪ scientific or technological uncertainty ▪ scientific and technical content	Interactive content with text, sound and images	Innovative project
Interim financing	Investissement-Québec	Ministère des Finances (BDNE)	Ministère des Finances (BDNE)
Manager	Ministère du Revenu	Ministère des Finances (BDNE)	Ministère des Finances (BDNE)

1 Taking into account the tax measures announced in the 1999-2000 Budget Speech. Note: tax credits are refundable.

TAX MEASURES FOR R&D AND THE KNOWLEDGE-BASED ECONOMY
A COMPARISON OF COMPONENTS (CONT.)

	Cité du multimédia	Carrefours de la nouvelle économie	Centre national des nouvelles technologies de Québec
Level of tax assistance	Tax credit of 60% of salary paid by June 15, 1999 (a maximum of $25 000) Tax credit of 40% of salary paid after June 15, 1999 but before January 1, 2011 (a maximum of $15 000)	Tax credit of 40% of salary paid after March 9, 1999 but before January 1, 2011 (a maximum of $15 000)	Tax credit of 40% of salary paid after March 9, 1999 but before January 1, 2011 (a maximum of $15 000)
Targeted sectors	New information and communications technologies (including multimedia)	New information and communications technologies (including multimedia), production technologies, biotechnologies, materials technologies, scientific and technological services	New information and communications technologies (including multimedia), applied in particular to arts and culture
Eligible activities	Innovation process (from R&D to production of goods and services)	Innovation process (from R&D to production of goods and services)	Innovation process (from R&D to production of goods and services)
Specific criteria	Expansion and job creation project	Expansion and job creation project	Expansion and job creation project
Interim financing	Ministère des Finances (BDNE)	Ministère des Finances (BDNE)	Ministère des Finances (BDNE)
Manager	Ministère des Finances (BDNE)	Ministère des Finances (BDNE)	Ministère des Finances (BDNE)

Source: ministère des Finances.

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