

Québec Research and Innovation Strategy

SUMMARY

A Word from the Premier



Québec has tackled many challenges over the last decades. Our transformation into a confident, modern society has touched every aspect of our economic, social, and cultural life and led to an unprecedented measure of individual and collective know-how.

We have created a first-class education system, including a higher education system involved in very advanced research. We have built a modern state and designed instruments of development that stand as a model to others, whether in energy, finance, or social solidarity.

We have stimulated and diversified our economy. Québec today is responsible for nearly 44% of Canada's high tech exports, a fact we can be proud of. But we must seek to do more. Innovation is the key to the economic and social growth of Western economies facing new sources of competition. And by definition, innovation is a process of perpetual renewal, a never-ending quest.

In the years to come, our prosperity will depend on our ability to master this process. We are already successful innovators. Now we must be better innovators. We will always be outnumbered, but we have all that we need to be creative, daring, and nimble as we seek to thrive in the new global economy.

In *The Québec Advantage*—our economic development strategy—we affirmed the essential role of research and innovation and set precise targets for R&D spending. In *An Innovative and Prosperous Québec*, we have now indicated the means by which we will work to attain these targets.

The strategy is based on a partnership with business, the research community, and the public agencies that oversee research and innovation. The goal is to promote innovation, increase the number of firms that invest in innovation, and improve the efficiency of the mechanisms whereby scientific advances are turned into marketable products, jobs, and new wealth.

It is a daunting challenge, but a natural one for today's Québec. By actively promoting innovation, we will unleash the creative forces that have forged our reputation around the world and will ensure our prosperity in tomorrow's world.

A handwritten signature of Jean Charest in black ink.

Jean Charest
Premier of Québec

A Word from the Minister



Research and innovation are the keys to a competitive economy, a fact nowhere in dispute. We must build on our success to prepare for the future and the challenges that we know await. Taking action now is our only choice.

This is why the government has made research and innovation the centerpiece of its economic development strategy. We have set out ambitious objectives that must be met if Québec is to assert its place among the leaders in research and innovation.

- Québec must train sufficient numbers of talented researchers and provide them with research facilities of international caliber.
- Research financing levels in universities and hospital research centers must be competitive.
- Québec must be an active participant in international research.
- The ability of businesses to innovate must be strengthened.
- Access to the results of public research must be facilitated.
- More research results must be turned to commercial benefit.

These conclusions—the result of a detailed situational analysis—are the foundation of the Québec research and innovation strategy. Our diagnosis is clear: Québec has invested heavily in R&D, and its researchers have made major advances in many fields, but the time has come to turn this success into concrete benefits for the economy and for employment.

To attain our objectives, we must therefore pay particular attention to research development and the transfer of research results to businesses and other organizations. The strategy thus targets areas that will require additional efforts in order to enhance Québec's prosperity and improve quality of life in all regions.

To optimize our investments, we must be sure to garner the support of all actors in our economy. No society can show innovation without the concerted efforts of industry, government, and the public research community. The strategy will therefore seek to increase cohesion throughout the innovation system.

By stressing its scientific heritage, the dynamism of its business community, and the pooling of resources, Québec will be ideally positioned to assert its role as an innovative economy and an exciting and prosperous society.

A handwritten signature in black ink that reads "Raymond Bachand". The signature is fluid and cursive, with the first name and last name clearly distinguishable.

Raymond Bachand

Minister of Economic Development, Innovation and Export Trade



To distinguish itself from other economies and thus ensure its prosperity, Québec must rely on research and innovation. The establishment of an environment conducive to the development of research and innovation is more crucial than ever.

The Québec research and innovation strategy, *An Innovative, Prosperous Québec*, reflects this context. The strategy has been elaborated in light of the opinions expressed by stakeholders in the sector, including those of the Conseil des partenaires de l'innovation. The Conseil, made up of 20 representatives from universities, Cégeps, businesses and the regions, has appreciably influenced the choice of policy directions and priorities in the strategy.

The strategy pinpoints the challenges that it is essential to meet and the measures required to optimize spinoff on the economy and employment from investments devoted to research and innovation. It has been elaborated in the wake of the Québec economic development strategy, *The Québec Advantage*, and reiterates the mobilizing targets spelled out in the strategy:

- ensure by 2010 that research spending reaches 3% of GDP and maintain Québec among the leading countries in subsequent years;
- increase the private sector's share of R&D financing from 60% in 2002 to over 66% in 2010¹.

1. Gouvernement du Québec, *The Québec Advantage - The Québec Government's Economic Development Strategy*, page 38.

Québec enjoys undeniable advantages from the standpoint of innovation. However, if it is to perform even more efficiently, we must ensure that we can deal in the future with a number of factors that affect weak links in the innovation chain. The strategy thus includes a series of measures that focus on certain facets of public research, industrial research and innovation in businesses, and the development and transfer of research findings. To insure a solid foundation and guarantee its success, the strategy also makes provision for initiatives aimed at promoting a scientific culture and the implementation of governance that relies on stakeholders in the Québec innovation system.

The government has focused in its approach on the following essential observations to guide its choices:

- Since its economy is relatively small, Québec must target and concentrate its R&D and innovation efforts in order to assemble critical masses of research capacity in promising fields and in respect of technologies that are deemed to be of strategic importance.
- To optimize investments and ensure complementarity, it is important to strengthen partnerships and synergy among all stakeholders.
- The government is acting as a facilitator that acts when the private sector is unable to do so, supports initiatives instead of institutions and ensures the presence of effective governance.

The government must not only assume considerable responsibility for adequate funding for research but must also ensure the presence of mechanisms that facilitate networking and access by businesses to resources in the innovation system.

A strategy centred on three key guidelines

The Québec research and innovation strategy centres on three key guidelines:

1. enhance the excellence of public research;
2. better support industrial research and innovation in businesses;
3. round out and strengthen mechanisms to develop and transfer research findings.

The strategy does not overlook the consolidation of past achievements and makes the marketing of research its main thrust. Moreover, it clearly spells out the government's priorities:

- by pinpointing the technologies that are deemed to be of strategic importance for Québec's economic development;
- by proposing initiatives that are aimed, first and foremost, at bolstering the weak links in the innovation chain.

Target and prioritize public support for R&D

To compensate for the relatively small size of its economy and the resources that it can allocate to research and innovation, Québec must target and concentrate its efforts on:

- those fields in which it enjoys advantages;
- technologies that are likely to have the greatest impact on economic development and job creation.

For this reason, it is essential to prioritize the allocation of public and private resources to the creation of critical masses of research and innovation projects in fields linked to strategic technologies.

This underlying policy direction is reflected clearly in several measures put forward in the strategy.

- Funding will be gradually, significantly increased for the Fonds québécois de recherche sur la nature et les technologies.
- The work of strategic research groups, through networks of university and industrial researchers, will be given priority when such researchers specialize in technological fields that have the greatest potential for success in Québec.
- Government funding will give priority to targeted strategic technologies such as nanotechnologies, genomics, optics and photonics, leading-edge materials, the ICTs, and energy because:

- of their potential economic spinoff;
- the importance to Québec of maintaining comparative advantages to ensure that federal government investments in these fields are made in Québec.
- Research infrastructure budgets will be earmarked bearing in mind the technologies prioritized and the ACCORD niches of excellence selected by the regions.
- The strategy will, in particular, support participation by researchers and graduate students in certain major international networks, forums and research programs that are of strategic interest to Québec. In this way, the Québec economy can quickly attract expertise and technology that Québec cannot obtain on its own.

Market research more effectively to maximize spinoff from investments in it

Marketing is the focal point of new research and innovation policies the world over. Without marketing, research initiatives have no future and research spending becomes an unproductive investment for society.

The strategy implements unique measures to encourage marketing. Indeed, over half of the budgetary expenditures in the strategy support two components of marketing, i.e. the development of research findings and transfers to enterprises and organizations.

- Sectoral industrial research groups will be established that rely on the successful adoption of this formula, especially in the aeronautics and telecommunications sectors. They will act as intermediaries between businesses and research centres to submit mutually worthwhile projects, facilitate loan arrangements and the conclusion of intellectual property agreements. The groups will complement to some extent the network of liaison and transfer centres.
- The groups will also offer a referral service to businesses that wish to consult specialists in order to resolve technological problems.
- The initial stages in the development chain, i.e. technological maturation and start-ups, will be supported to take advantage of the commercial potential of public research through the establishment of businesses, the issuing of patents and the granting of licences.
- University research development corporations will be maintained because they have proven their usefulness and have at their disposal the skills needed to establish the value of inventions.
- Technology transfers and beneficial interaction between research centres and industry on themes of interest to industry will be strengthened by enhancing grants to active researchers, especially in the regions, and assistance to enable SMEs to hire researchers.
- Direct assistance will be granted to firms that carry out projects with the CCTTs in order to foster their collaboration.

A strategy that stems from two conditions for success

Science that is receptive, accessible and responsible

Like other knowledge-based economies, Québec must promote an environment that develops research and innovation. In this perspective, the strategy supports initiatives aimed at broadening public interest in science and innovation and in promoting careers in science and technology, bearing in mind Québec society's concerns about its choices in the realms of science and technology.

Additional funding will make it possible to enhance support for the key initiatives of organizations devoted to the promotion of science and technology, including:

- the Conseil de développement du loisir scientifique and the Conseils du loisir scientifique in the regions of Québec;
- scientific communication organizations.

Concerted, enlightened, effective governance

To effectively, coherently coordinate private- and public-sector research and innovation initiatives and thus enhance the efficiency of Québec's knowledge-based economy, the government is reconfirming the mandate of the Conseil de la science et de la technologie (CST) and is establishing an issue table made up of stakeholders in the new technologies development and transfer chain.

Substantial investment to support Policy Directions

The Québec research and innovation strategy is proposing over the next three years additional investments totalling \$888 million, broken down as follows:

- \$400 million² to strengthen public research and support industrial research and innovation in businesses. The funds will also be used to broaden and strengthen measures devoted to the development and transfer of research findings;
- \$420 million for research infrastructure;
- \$80 million to support research by businesses through modifications to existing tax credits.

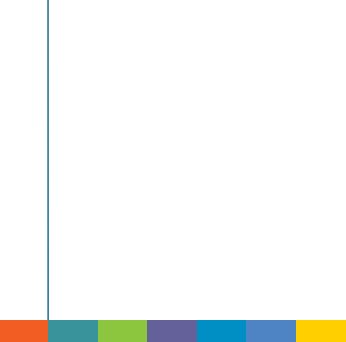
These funds are being added to the \$83 million in additional funding granted in the 2006-2007 Budget Speech and in conjunction with the aeronautics strategy and \$195 million in investments in research infrastructure this year. Overall, the government is clearly indicating the priority that it is giving research and innovation by allocating \$1.2 billion to fund the new measures in its research and innovation strategy.

ADDITIONAL GOVERNMENT COMMITMENTS IN RESPECT OF RESEARCH AND INNOVATION (in millions of dollars)

	Québec research and innovation strategy	2006-2007 Budget Speech and Appropri- ations	TOTAL
1. Strengthen public research and the development of strategic technologies	221	34	255
2. Better support industrial research and innovation in businesses	68	16	84
3. Round out and strengthen mechanisms to develop and transfer research findings	101	23	124
Scientific culture and cooperation	10		10
Budgetary measures	400	73	473
Fiscal measures	80	10	90
Research infrastructure	420	195	615
TOTAL	888	278	1,166

Over half of the budgeted cost of the strategy is devoted to measures that directly support the development of research findings and technology transfers, for a total of nearly \$210 million over three years. These measures are found in each of the strategy's policy directions.

2. Including debt service (interest and amortization) stemming from capital expenditures devoted to research infrastructure. However, the value of amortization linked to such infrastructure (\$12 million) is not included in the calculation of the overall investment of \$888 million.



Anticipated impact of the strategy

Impact on students

The additional investments for which the strategy makes provision will help students through:

- 900 additional merit scholarships granted over three years, in addition to the 2200 scholarships now offered by Québec grant funds;
- the awarding to master's and doctoral students of nearly 200 scholarships that enable them to engage in research internships in the work place, mainly in businesses;
- access to leading-edge research infrastructure;
- additional financial support from grant funds to strategic research groups that would make it possible to support the training of over 1100 graduate students;
- participation by nearly 500 Québec and foreign student-researchers in international research projects;
- the elaboration and dissemination of innovative science learning tools.

Impact on businesses

Québec businesses will be better equipped to enhance their competitiveness through:

- broader access to an enhanced rate for the R&D and design tax credits;
- the realization of 300 additional innovation projects in businesses in collaboration with the CCTTs;
- support for the hiring of 100 additional researchers;
- the establishment and development of sectoral industrial research groups;
- financial support to attract and expand businesses active in R&D in Québec, which will generate investments of \$350 million.

Impact on universities and researchers

To consolidate the excellence of public research, the strategy proposes concerted measures aimed at universities and researchers:

- \$420 million in financial assistance over three years for new research infrastructure and \$12 million in assistance to cover the operating and maintenance costs of research infrastructure in the regions;
- increased financial support for the FQRNT and the FRSQ in respect of strategic research groups that act as centres of excellence in priority sectors;
- more extensive funding for the maturation of inventions and the start-up of technology businesses.

Impact on stakeholders engaged in the development and transfer of research findings

Various organizations play a key role at each stage in the innovation chain. They help to accelerate the creation and use of new knowledge and the marketing of such knowledge.

The Québec research and innovation strategy makes provision for:

- renewed support for existing public research development corporations and financial assistance to support development initiatives in respect of projects conducted by researchers from Université du Québec campuses in the regions;
- substantial funds for the initiatives of sectoral industrial research groups;
- more extensive funding for Cegep technology transfer centres;
- \$104 million in funding over three years to develop strategic technologies in conjunction with the projects of research organizations and centres;
- the establishment of an issue table that assembles stakeholders engaged in the development and transfer of research findings to ensure better coordination of their initiatives and enhance the complementarity of the services that they offer businesses.

Impact on the regions

The strategy proposes a series of specific measures to support research and innovation in the regions:

- increased financial assistance for research infrastructure projects in the regions;
- specific financial support for the operation and maintenance of research infrastructure in the start-up phase;
- increased support for the establishment of new lecturer-researchers starting their careers;
- financial assistance for the development measures required by projects conducted by researchers working on Université du Québec campuses in the regions;
- an increase in the number of scholarships for internships in businesses offered to student-researchers who undertake such internships in the regions;
- an increase in the number of Cegep researchers working in Cegep technology transfer centres.

