



*Energy
at the Service
of Québec*

*A Sustainable
Development
Perspective*

DISTRIBUTION

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A Word from the Minister



In the last few years, several questions have arisen, some of them major, that have led us, as Quebecers, to wonder about the way in which we develop our energy. These questions have dealt with how we use energy, the environmental and social impact of activities in the sector, and the place of native peoples and the role of regions in the execution and management of projects. At the same time, there have been profound changes in the North American and international structures of energy trade, including trade deregulation, more efficient operating methods and the increased role of markets.

Confronted with these questions and changes, it was urgent for the Government of Québec to define its orientations, identify its objectives and undertake a certain number of initiatives. The new energy policy proposes all of this and clearly indicates the route to be followed. We must put energy at the service of Quebecers and engage in sustainable development that respects future generations while taking full advantage of current changes. The government has acknowledged these changes and is undertaking the necessary initiatives. It is ensuring, at the same time, that the future that we are building is in keeping with our values.

The new government policy expresses, in terms of government initiatives, the consensus established during the public energy debate, and formulated by the Consultation Panel. It proposes a clear and ambitious framework that will allow the necessary changes to be carried out in the best possible conditions. It supports endeavours to create wealth and jobs in a context that is becoming increasingly difficult due to greater market access and international competition. Through

this policy, the government is providing Québec with the tools needed to meet the challenges arising from the North American energy context.

Major institutional reforms have been announced by the government. The creation of an energy board, the Régie de l'énergie, with decision-making authority will make for fair and transparent decisions concerning the Québec energy sector in general and the setting of the rates of regulated companies in particular. Its presence will guarantee that investment choices are made with full knowledge of the facts and with full public participation. The Régie will also ensure that the possibilities to make better use of energy are systematically exploited and that energy conservation is considered to be a genuine priority. The creation of an energy efficiency agency with solid financing, the Agence de l'efficacité énergétique, confirms how important better energy use is in the opinion of the government, which will make the necessary funds available.

These institutional reforms will likewise enable Québec to prepare for and take advantage of increased market access. The Régie de l'énergie will make recommendations to the government about the most suitable means for liberalizing electricity production. The government will prepare the opening-up of the transmission network of Hydro-Québec to electricity wheeling. The new energy policy will allow private producers to participate more fully in the exploitation of the different forms of electricity production, in accordance with clear and fair conditions. Export conditions will likewise be relaxed.

In the electricity sector, the choice of energy forms must be as transparent as possible. As a consequence, an energy-form characterization process has been provided for, and the regions and Amerindian nations will have an essential role to play in river classification. Québec's main asset in the deregulation and restructuring of the North American electricity sector is of course Hydro-Québec. The new energy policy entrusts the public utility with certain responsibilities and establishes the new ground rules that will change the operation and organization of the utility. The energy policy provides the perfect opportunity for the government to clarify its expectations on this matter.

In the fossil-fuel sector, the government considers that oil and natural gas must have their rightful place on the Québec energy market. All energy forms will, consequently, be placed in equivalent conditions on the markets in which they compete with each other. Attempts should be made to provide natural gas and oil at the lowest possible cost. Moreover, the energy policy defines the strategies and initiatives that will reinforce Québec's international role as a North American crossroad in the fossil-fuel trade. The use of fossil fuels poses certain environmental challenges. Initiatives must be proposed to meet these challenges.

The energy policy contains several other initiatives concerning wind energy, research and development, and the organization of government administration. As the government attaches a great deal of importance to these initiatives, the role of Amerindian nations and the regions in project implementation and management will be confirmed, specified and reinforced. Proposals have been brought forward, for example, concerning native peoples that could encourage another type of relationship and a more genuine collaboration in the development of the Québec energy sector. The regions will be asked to take on greater responsibilities, participate in decisions, and consider the new options put forward.

It was thus essential that the government propose a new energy policy. In answer to a deeply changing context, the government was obliged to revise and redefine its orientations. This revision needed to be subject to a genuine consultation and based on an explicit and real consensus. By holding a public debate on energy, the Québec government ensured that the new policy would be built on the most solid base possible. The energy policy that we are submitting represents the conclusion of one of the largest debates that the Québec energy sector has ever known, a debate which brought together all the different currents of thought found in the energy sector. The report that resulted from this debate, "For an Energy Efficient Québec", was warmly received. It opened doors, indicated directions favoured by the public, suggested new approaches, and put forward an impressive number of recommendations. The energy policy adopted by the Government of Québec is both an extension of and a logical conclusion to this report.

The policy being proposed to our society corresponds to the values that we feel to be important. It likewise constitutes a response to the numerous challenges with which we are faced. The government is convinced that, at the dawn of the twenty-first century, this policy will enable Québec to prepare its future by making full use of current possibilities.

Minister of State of Natural Resources



Guy Chevrette



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A Policy That Prepares the Future

A New Energy Policy for Québec

Québec has built a significant part of its growth and development around the energy sector, first and foremost by developing the hydro-electric resources on its territory. The ensuing results have been spectacular. The Québec economy has carved out a significant place for itself, at the international level, in the production and use of electricity. A powerful industrial sector has been developed through the energy at our disposal. Thanks to major investments, Québec plays an important role in the trade of natural gas in North America. Its maritime access, its pipelines and refining industry allow it to benefit from international petroleum markets. Québec thus has many energy-related assets which are particularly valuable in the increasingly demanding context that has resulted from increased market access and international competition.

A Necessary Change in Direction

The conditions in which these assets can be exploited have changed greatly, however, since the middle of the eighties. Indeed, the last decade has seen a series of evolutions and changes, some having a direct affect on the Québec energy sector. These changes are major, and they are far from over.

In Québec, a decrease in the number of large-scale hydro-electric projects under construction is the most obvious example of these changes. The maturity of Québec's electricity market, environmental questions, and the positions of native peoples were key points in discussions about the Great Whale project, on which a moratorium was placed in the fall of 1994. The amount spent by Hydro-Québec on the development of new hydraulic sites is decreasing rapidly, and the regions and companies that depend on this activity sector must consequently make some extremely difficult adaptations.

Another major change in Québec and elsewhere is that our concern for the protection of the environment has taken on a new dimension. This concern has been systematized in the emerging concept of sustainable development. This has led to a search for answers on a planetary scale to questions about such major phenomena as the global warming caused by the greenhouse effect. This commitment to taking environmental and social "externalities" into account is, however, accompanied by another, apparently contradictory phenomenon. An increase in international competition and the growing role of markets has overturned the conditions for the production, transmission and distribution of energy forms, such as electricity, that were tightly regulated until recently.

Environmental pressures, competitive and short-term profit constraints and technological progress have come together to accelerate the emergence of new energy-production methods, in particular electricity. The new approaches favour decentralization and call upon smaller production units which are capable of rapidly adapting to consumer demands and which entail smaller financial risks for the required investments. This evolution has led to questions about Québec's strategy of basing development on large-scale projects. It is also worth noting that rationalization and competition on North American energy markets has produced certain results. They have considerably reduced the cost of electricity produced by our competitors, thereby decreasing the comparative advantages that our economy has enjoyed until recently.

The Public Debate on Energy and the Recommendations of the Consultation Panel

In early 1995, the Québec government began the process of defining a new energy policy. The goal of this process was, first and foremost, to consider the aforementioned changes and analyse their implications in order to collectively define

the best approach. In February, 1995, in response to requests from a growing number of stakeholders and in keeping with a commitment made by the government party, the Minister of Natural Resources began the public energy debate.

This debate — the largest public consultation ever held in Québec in the energy sector — gave rise to a remarkably rich “brainstorming session”. After a carefully organized information period, the Consultation Panel, established by the government and presided over by Alban D’Amours, received and analysed more than 300 submissions, covering all the questions related directly or indirectly to the Québec energy sector.

In April of 1996, the Minister of Natural Resources, Guy Chevrette, made public the report resulting from these discussions and analyses¹. The report of the Consultation Panel, “For an Energy Efficient Québec”, was warmly received by all the various groups concerned. As a reflection of the debate, the report faithfully expressed the many concerns and suggestions made to panel members during their regional tour. The report, however, went further, making more than two hundred recommendations based on a global vision of the Québec energy sector and its evolution. These recommendations, the result of a strong consensus, provide the base on which the government has constructed the energy policy it will propose to Quebecers.

The Report of the Consultation Panel for the Public Debate on Energy

The report of the Consultation Panel is in fact based on an inclusive definition of the concept of sustainable development, which provides a framework for arbitrating among economic, social and environmental concerns. As it is defined, the concept also takes into account the notion of individual and collective equity. In its report, the Consultation Panel proposed a balance between an “efficient resource allocation system”, Québec’s answer to market constraints, and the integration of externalities, most notably environmental and social. The Panel recommended that this balance be obtained through institutional reforms (the creation of a Régie de l’énergie, the introduction of integrated resource planning, the establishment of a tradeable emissions market), vigorous support for energy efficiency, a careful adaptation of the restructuring of the North American electricity market and the use of fiscal tools in areas where externalities cannot be integrated in other ways. The Panel’s report dealt specifically with the role of the regions and the place of Amerindians, expressing, in the latter case, the need for a genuine partnership.

Strictly speaking, several of the recommendations go beyond the energy sector, focusing as they do on activity sectors which have a direct or indirect impact on energy,

such as transportation, land-use planning and education. Acknowledging current changes, the Panel proposed initiatives designed to take Québec’s specific characteristics into account. In particular, the Consultation Panel emphasized the issue and challenge that is seen to be essential in Québec, as in most advanced societies. This issue, this challenge, can be summarized in a question: based on our situation, what energy policy must we adopt to integrate our environmental and social concerns, thereby protecting the needs of future generations, while still satisfying present requirements related to growth and economic development? The Consultation Panel has provided answers to this important question.

The New Energy Policy: Acknowledging Changes, Preparing the Future

The new energy policy must be seen, above all, as a tool that Quebecers are giving themselves in order to acknowledge current changes and prepare the future. Despite the changes affecting our traditional form of development, Québec still has some real assets in the energy field that it only needs to exploit and develop to their fullest. Based on the consensus achieved in the public debate, the first goal of the energy policy is to take into account the externalities that correspond to our collective values. This fundamental objective will be given concrete form with the creation of an energy board in Québec, the application of integrated resource planning and an emphasis on energy efficiency.

At the same time, however, Québec cannot ignore the requirements of new energy markets, nor fail to seize the possibilities and chances that they offer us. The government wants the new energy policy to go as far as possible in its consideration of these new situations. Much can be accomplished in terms of the organization of electricity production and transmission markets, the restructuring of Hydro-Québec, and the introduction of increased competition in the electricity sector, without, however, calling into question the advantages that all Quebecers value greatly. Companies that have, until now, founded their prosperity on the construction of large-scale hydro-electric projects must be provided with new challenges. In the natural-gas and petroleum-product sectors, Québec must take full advantage of its geographical location and current or future infrastructures. The new energy policy proposes new initiatives for all of these aspects.

The government feels it is necessary to establish a new relationship with the native peoples and to place greater importance on the consideration of regional requirements. Here as well, the new energy policy proposes initiatives that should make room for these two major components of the Québec context.

¹. For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy, Government of Québec, 1996.

Putting Energy at the Service of Quebecers

The Overall Objective: Adapt to Changes in Progress, and Benefit from Them in a Sustainable Development Perspective

Energy must be at the service of Quebecers from a sustainable development point of view. For the Government of Québec, the new energy policy will be founded on the concept of sustainable development in its largest accepted meaning. The Brundtland Commission, which popularized the concept of sustainable development, provided a widely accepted definition: sustainable development is development that makes it possible to meet the needs of current generations without jeopardizing the ability of future generations to meet their own needs.

The definition of this concept is thus quite broad: sustainable development includes economic, social and environmental concerns and takes into account the notion of equity, at the individual and collective levels². The government considers that in addition to supply durability, the quest for sustainable development helps provide solutions to the needs of a growing economy while preserving environmental quality and ensuring that collective aspirations and equity are taken into consideration.

The Four Objectives of the Energy Policy

Given this overall objective, the new energy policy follows four main guidelines.

- **Ensure that Quebecers receive the necessary energy services at the best possible cost**

As concerns the energy policy, the first objective of the government is to meet the needs of its citizens by ensuring that Quebecers receive the necessary energy services at the best possible cost. This objective presupposes that we must meet the material needs of both citizens and companies, by aiming to reduce or limit the energy bill. The concept of energy services is an idea that has emerged gradually over the last few years in North America. It presupposes listening to consumers and seeing energy use as a whole that includes energy efficiency endeavours. Energy services must be provided at the best possible cost, so as to keep as low as possible the bill that consumers must eventually pay to meet their energy needs.

When examining our needs, not only must present-day needs be considered, but also needs linked to the growth and development of Québec and its regions. The concept of supply security is necessarily included in this objective, even though it is no longer as urgent as it might have been in the

past. One way of ensuring this security is by providing access to several energy forms for a given use.

- **Promote new ways of developing the economy**

For the government, sustainable development must ensure an increase in wealth and job creation. Thanks to investments made in past years, Québec now has some powerful assets at its disposal. They must be fully used in this new economic deregulation context. Québec must take certain initiatives regarding not only the organization of markets but also involving an adaptation of the tools at our disposal, the most important being Hydro-Québec.

At the same time, traditional methods of development must be replaced by new niches for excellence. The energy sector offers a whole series of possibilities for this, with the development of technical know-how, high-added-value industries, energy efficiency, alternative and renewable energy forms, and energy technologies. The possibilities offered by growing world markets must be seized in a much more dynamic manner, since these markets have substantial needs and thereby offer considerable opportunities for Québec companies. Promoting new ways of developing the economy also means fostering a better sharing of development throughout Québec's regions, which should favour job creation.

- **Respect or restore the environmental equilibrium**

In a sustainable development perspective, a special place is given to our respect for the quality of the natural environment, the sustainability of resources and the capacity of the biosphere to meet the needs of humanity. The energy policy has a major role to play in this respect. It must result in the systematic consideration of environmental externalities. It is essential that all decisions integrate anticipated environmental consequences, whether they are positive or negative.

The new energy policy must likewise ensure, with respect to the energy sector, that international commitments made by Québec are met. Agreements on climate change and the protection of biodiversity and natural environments have created obligations which have a direct affect on Québec's energy sector. The government's objective is both to reduce as much as possible the effects of consumption and energy production, and to contribute to the restoration of the natural equilibrium that is inseparable from the very concept of sustainable development.

- **Guarantee equity and transparency**

The new energy policy will attempt to guarantee equity and transparency in energy-related activities. The various categories of consumers must be treated equitably, as must the producers and distributors of different energy forms. However, equity must also provide the basis for the largest

². For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy, op cit, p 22.

possible participation of the regions in economic and job development. The construction of a partnership with the aboriginal nations, by using opportunities provided by the energy sector, likewise meets, at least in part, this concern for equity.

The new energy policy must not only promote equity in Québec society. It must also improve the transparency of decision-making and the subsequent application of these decisions. Transparency means encouraging the participation of citizens in the analysis of issues and the choosing of solutions. This in turn presupposes better access to information, the genuine possibility of intervening in discussions and the establishment of forums and institutions for this purpose.

The public energy debate provides an excellent example of transparency in the discussion of collective issues. The government requested this transparent approach, and the ensuing results have proven the soundness of this choice. One point is clear for the government: it is above all through the concepts of equity and transparency that the new energy policy will ensure that energy is at the service of Quebecers.

■ A Profoundly Modified Context

As was already pointed out, the objectives of Québec's new energy policy are part of a profoundly modified context which justifies the change in direction being proposed to the society. These modifications are far from over. The main characteristics of this context must, nonetheless, be described, since they provide the framework for the application of the government's energy policy.

The Maturity of Québec's Electricity Market

The first point worth noting is that Québec's energy market has reached maturity, as the different available statistics and forecasts indicate. According to the most recent studies of the ministère des Ressources naturelles, the total consumption of energy will increase at an annual average rate of 1.2% for the period from 1994 to 2011. This forecast predicts that the energy demand will increase at this rate for the next two decades, at the same rhythm as that observed since 1984. It is worth pointing out that this forecast does not take into account all the programmes and energy-efficiency measures that could be implemented by the government and energy suppliers.

- **A relatively slow increase in demand**

This growth rate is relatively low in comparison to the growth seen from 1961 to the first oil crisis, which was as high as 5.8% per year. The present moderate increase can be explained above all by a slow-down in population growth and a slower increase in economic activity. The two phenomena

are, moreover, not independent, since weak population growth results in a slower increase in the workforce, thereby limiting the potential for economic growth.

Several technological gains, brought about by the rocketing prices of the seventies and permitting more efficient energy use, can be added to these two factors. These gains, as well as energy-efficiency legislation, have become practically irreversible. This is even more true now that environmental concerns have replaced the high cost of fossil fuels and supply security as the motivation for a more reasonable use of energy. It is thus understandable that forecasts call for moderate demand, even if the hypothesis of a significant rise in energy prices is excluded.

Forecasts made by the ministère des Ressources naturelles provide a relatively detailed analysis of the evolution of energy consumption in relation to different uses. It is estimated that the energy needs of the manufacturing industry will increase much more quickly than the overall needs, whereas on the other hand, energy consumption related to the heating of buildings will come to a virtual standstill. With regard to transportation, energy needs related to the transportation of goods will increase more quickly than the corresponding needs for the transportation of people. For the overall forecast period, almost two-thirds of the additional energy demand will come from the manufacturing industry, and more than a quarter from the transportation sector.

- **Québec's energy balance sheet**

Studies by the ministère des Ressources naturelles indicate moderate growth in overall energy demand. They likewise indicate a relative stability in the evolution of the distribution of energy consumption by energy forms. In 1994, oil and electricity accounted for practically the same amount of Québec's energy market, with 38 and 37% respectively of the total demand, including energy used in alternative forms. According to ministerial forecasts, the share of electricity will increase to 39% by 2011, with the share of oil dropping to 34%. Natural gas will account for 16% of consumption, as compared to 13% in 1994. Finally, alternative energy forms (biomass for the most part), will account for a bit more than 8% of total demand, instead of the current 10%.

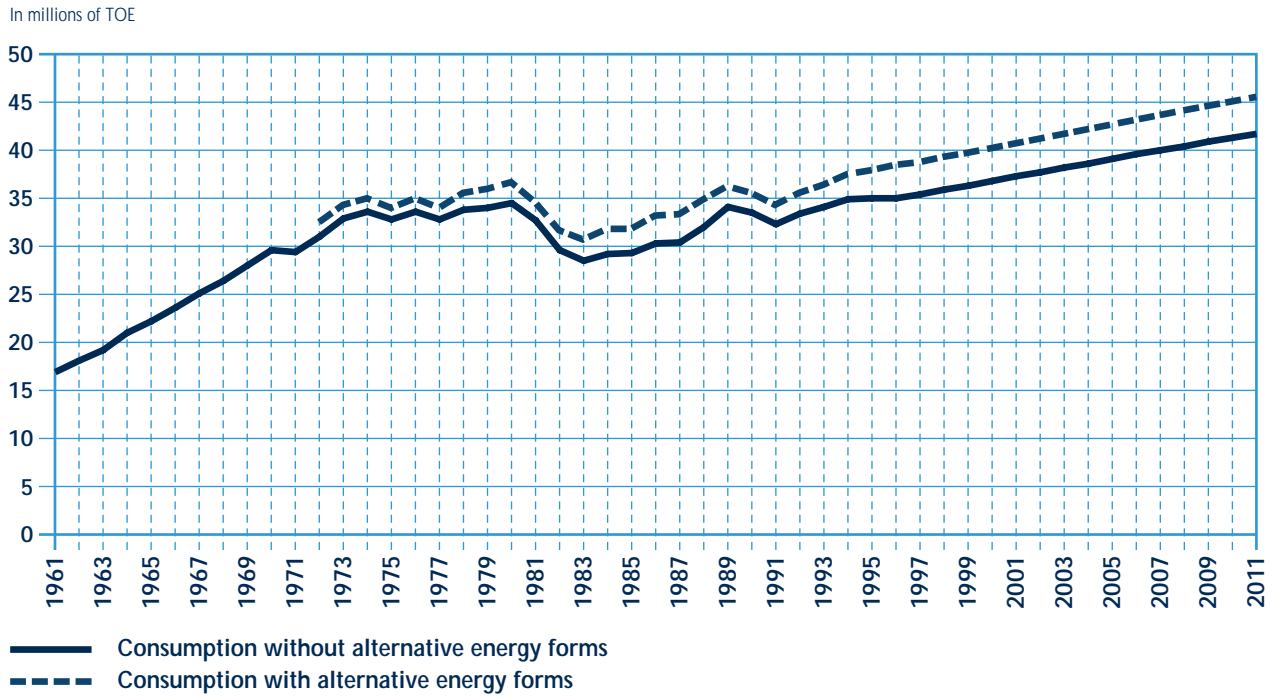
This stabilization of the respective shares of the Québec market of each energy form will prolong the tendency seen since the middle of the eighties. This will be in contrast to the upheavals that occurred in the seventies, when in just slightly more than ten years the share of electricity doubled and that of natural gas tripled in the energy balance sheet.

- **Mature markets**

The studies of the ministère des Ressources naturelles give precise indications about the foreseeable evolution of different energy markets. In the electricity sector, the demand will increase at an average annual rate of 1.5%, which is

FIGURE 1

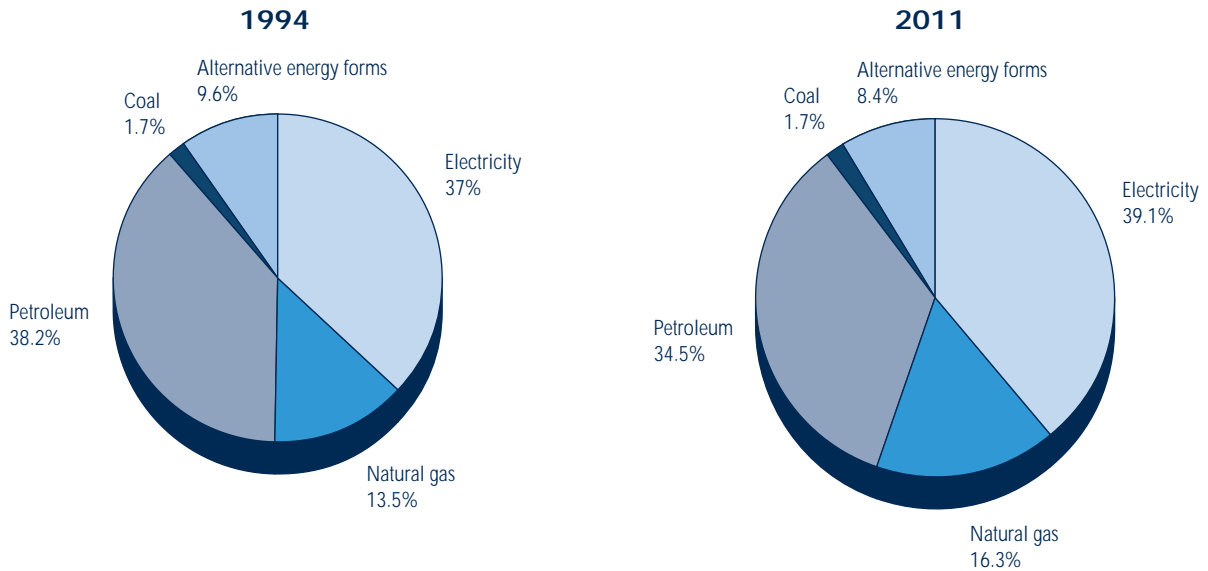
Total Energy Consumption in Québec 1961 - 2011



Source: Direction des politiques, des études et de la recherche of the ministère des Ressources naturelles du Québec.

FIGURE 2

Energy Consumption in Québec



Source: Direction des politiques, des études et de la recherche of the ministère des Ressources naturelles du Québec.

two times less than that occurring from 1980 to 1995, and four times less than during the preceding fifteen years. Two thirds of the new demand came from the manufacturing industry, with a bit more than 20% coming from traditional electricity use in the residential and service sectors (household appliances and lighting). It is worth noting that according to these evaluations, space heating will only account for 6% of new electricity consumption, given that the use of electric-heating systems in houses has reached a certain saturation.

The forecasts of the ministère des Ressources naturelles thus confirm the waning growth observed in domestic electricity demand. This slow-down is a normal phenomenon, since, in a relatively short period, Québec replaced oil with electricity for most of its residential heating market, as well as for a fraction of the heating uses of the other consumption sectors. At the same time, there was the fast development of several energy-intensive industries for which electricity is a production factor. In particular, at the international level, Québec's share in world aluminum production increased significantly, following the installation of several large production units.

Major changes in demand have turned Québec into one of the societies that uses the most electricity in the world. If the transportation sector is excluded, electricity now meets the majority of energy needs of individuals and companies, accounting for, depending on the consumption sector, from 50 to 65% of the markets in question. The forecasted decrease in the growth rate of the coming years only reflects the maturity of markets in which electricity has a preponderant role.

Nonetheless, it must be pointed out that even if electricity demand grows at a slower rate, it will give rise to, in the mid-term, significant energy needs. All in all, for the period from 1994 to 2011, the forecasts of the ministère des Ressources naturelles predict a demand of close to 50 TWh of electricity, which corresponds to a generating capacity of between 7,000 and 10,000 MW, depending on electric-power use. This could be covered in part by current power surpluses.

In the natural-gas sector, the ministère des Ressources naturelles foresees a relatively strong growth in demand. According to the ministerial studies, gas consumption will increase by 2.3% per year for the period studied, with almost two-thirds of this growth coming from industrial markets. This evolution results from increasing energy needs in the manufacturing sector, which represents most of the outlets for natural gas. It is also based on the hypothesis that heavy-fuel-oil imports will not increase significantly. Heavy fuel oil competes with natural gas for many types of uses.

As for the petroleum sector, the studies of the ministère des Ressources naturelles reached the conclusion that there will be a virtual stabilization of the current demand, as the total consumption of petroleum products will only increase by

10% during the period in question, which corresponds to an average annual growth rate of 0.6%. According to these forecasts, an increase in the sale of fuel for transportation will be compensated, in large part, by a decrease in the sale of products used to heat houses and buildings in the service sector. These forecasts thus mean that the share of motor fuel in the sale of petroleum products in Québec will continue to grow, thereby extending a phenomenon observed since the early eighties.

Major Environmental Issues

The new dimension that environmental issues have taken on represents another element in the context affecting the Québec energy sector. Environmental concerns have been a central part of energy policies for many years now in the industrialized countries due to the significant impacts that energy production and consumption have on the environment. Québec is not an exception to this situation.

This awareness of environmental issues has grown over the last few years. It focuses, first of all, on local and regional impacts of energy-related activities. Concerns were first directed at the risks of oil spills and lead pollution from gasoline consumption. Larger-scale problems were then identified, such as acid rain, which was responsible for the deterioration of the forests and aquatic environments. More recently, protests concerning large-scale hydro-electric projects have been founded on environmental concerns, a relatively new phenomenon for Québec.

Currently, in inhabited areas, people are more and more aware of the impacts of energy-related developments on their immediate environment, whatever the energy technology in question. One of the expectations of the people of Québec is that the new energy policy will integrate, in a more systematic manner than in the past, the direct environmental implications that decisions made by producers and consumers will have.

Another phenomenon marked the beginning of the nineties. The nature of the management of energy-related environmental questions has changed with the emergence of planet-wide problems that can only be solved through large-scale international cooperation. Indeed, the accumulation of greenhouse gases in the atmosphere and the resulting planetary warming threaten all the regions of the planet, to varying degrees. The seriousness of the situation has only come to be understood recently. The environmental context of energy policies has now been profoundly modified, due to both the importance of the issues and the coordinated action required of all countries in the fight against climatic warming. Another global phenomenon which also affects energy policies is the threat to biodiversity caused by the deterioration of ecosystems, as the exploitation of energy resources constitutes one of the factors in the modification of these ecosystems.

The fight against climatic change and the endeavours needed to maintain biological diversity have been the subject of international agreements which Québec has explicitly signed. Québec has committed itself to a world-wide effort to reduce greenhouse gases and to protect the biodiversity of the ecosystems within its territory. These major governmental priorities represent an essential element of the context in which the new energy policy is being developed. In concrete terms, Québec's commitments regarding greenhouse-gas emissions are expressed in quantitative objectives. Like most of the developed countries, Québec committed itself, at the Rio Conference in 1992, to stabilizing its greenhouse-gas emissions at their 1990 level by the year 2000. This commitment has not yet been met, and it will only be met through a concerted effort on the part of all those involved.

The Restructuring of Energy Markets

While the increased awareness of environmental issues is still a factor, there is another challenge that is now appearing, namely the restructuring of energy markets, which is affecting all energy forms. After having profoundly changed the market conditions of oil and natural gas, the deregulation phenomenon is now having a profound affect on the structure of the North American electricity sector, causing major and rapid changes. They directly concern Québec due to both the importance of electricity in our economy and the role played by Hydro-Québec and the Québec electricity sector at the North American and international levels.

Reforms implemented in the United States, several European countries and now in Canadian provinces all have the same objective, namely the reduction of electricity costs by favouring competition among producers. Depending on the country or region, competition among producers takes on different forms. In certain cases, it is achieved through power pools to which distributors belong. There are also cases where the liberalization of wholesale markets leads to the liberalization of retail markets. Direct transactions are concluded with consumers, as now takes place in the natural-gas sector. This liberalization of markets is accompanied, in many cases, by the vertical de-integration of electric utilities.

• Pressure on Québec

The restructuring of the electricity sector, which is accelerating for our trade partners, is already creating pressure on Québec to liberalize its practices. The pressure is being applied through foreign trade. If Québec wants to maintain or even increase its exports, it must offer a certain reciprocity so that our partners may find the same market conditions here as we would like to find there. Recent decisions of the FERC, the Federal Energy Regulatory Commission of the United States, have gone in this direction.

In Canada, the Agreement on Internal Trade adds an additional dimension to this movement in favour of the deregulation of

electricity markets. It can be expected that the granting of an electricity transmission service between Canadian provinces will bring about a greater integration of electricity grids in Canada. It could even increase competition in several provincial markets.

• An exceptional and evolving situation

The restructuring of the American electricity sector belongs to a context that is not necessarily our own here in Québec. In electricity markets in the United States, rates vary considerably from one state to another, and even inside the same state, due to the large number of electricity production and distribution companies. In the case of Québec, the monopoly of Hydro-Québec has made it possible to benefit fully from our resources, and to offer all Quebecers prices that are among the lowest in the world. Furthermore, the very nature of the generating facilities and transmission grids of Hydro-Québec, which are centralized and essentially made up of large-scale production units, imposes strong limits on the possibilities of market restructuring.

Nonetheless, there are several aspects of the situation that are changing. The deregulation of the American electricity and natural-gas sectors is already affecting rates, at least with respect to the price of electricity sold to companies and large consumers. On the other hand, Québec electricity rates have continued to rise during the last 25 years. As a result of this double phenomena, the comparative advantage that Québec companies have had regarding their electricity bill has been eroded.

It is estimated that the difference in the price paid by industrial electricity consumers in Québec and the United States has decreased by 15 percentage points during the last 15 years. For the period from 1987 to 1994, this advantage decreased by 3 percentage points in comparison with the New England states, and 10 percentage points with California and the State of New York. A similar phenomenon can be seen in the other Canadian provinces. For example, since 1981, Québec's advantage, when comparing the average price of electricity in the industrial sector, decreased by 14 percentage points in relation to British Columbia, 19 percentage points to New Brunswick, and 26 percentage points to Manitoba. In fact, the average electricity price in this sector is now lower in Manitoba than it is in Québec.

If we exclude this last case, and despite the changes of the last few years, electricity produced in Québec remains competitive with respect to the electricity to which our main competitors have access. Nonetheless, our advantage has been reduced. Calling into question the traditional structures of the electricity market would thus appear to be the way to restore this advantage, while providing our electricity industry with an increased access to American and Canadian markets.

Another obstacle to the restructuring of the Québec electricity sector is probably fading away, since technological changes are now making small electricity-production units competitive with large-scale hydro-electric plants. And though Québec's territory has significant hydraulic potential, the production of additional quantities of electricity through the use of large-scale facilities with a centralized grid is no longer the only solution. Québec could thus use this new form of flexibility to reform the electricity markets and re-establish our former comparative advantages, which are essential to the good health and dynamic nature of our economy.

New Partners

As previously mentioned, the new energy policy is being developed in a demanding context. There is, however, another element that will influence future orientations. This policy must be based, more systematically than in the past, on the collaboration and partnership that have become inevitable with the regions and native peoples.

- **Regional expectations**

The increased expectations of the regions is one of the characteristics of modern Québec. These expectations take on a particular strength in the energy sector. Indeed, the regions want to take charge of their own economic development and see energy as an essential control lever.

During the public energy debate, many regional representatives expressed their vision of economic development in their region. Not only do the regions want to derive greater benefit from the resources on their territory, they also want to participate in the energy planning-process itself. For the regions, it is a question of using these benefits for structurally modifying expenses that would help them maintain their work force and stop the exodus of young people. Special interest was shown for energy-efficiency investments, which could foster the emergence of local expertise with numerous spin-offs. The new energy policy must provide answers to these numerous expectations.

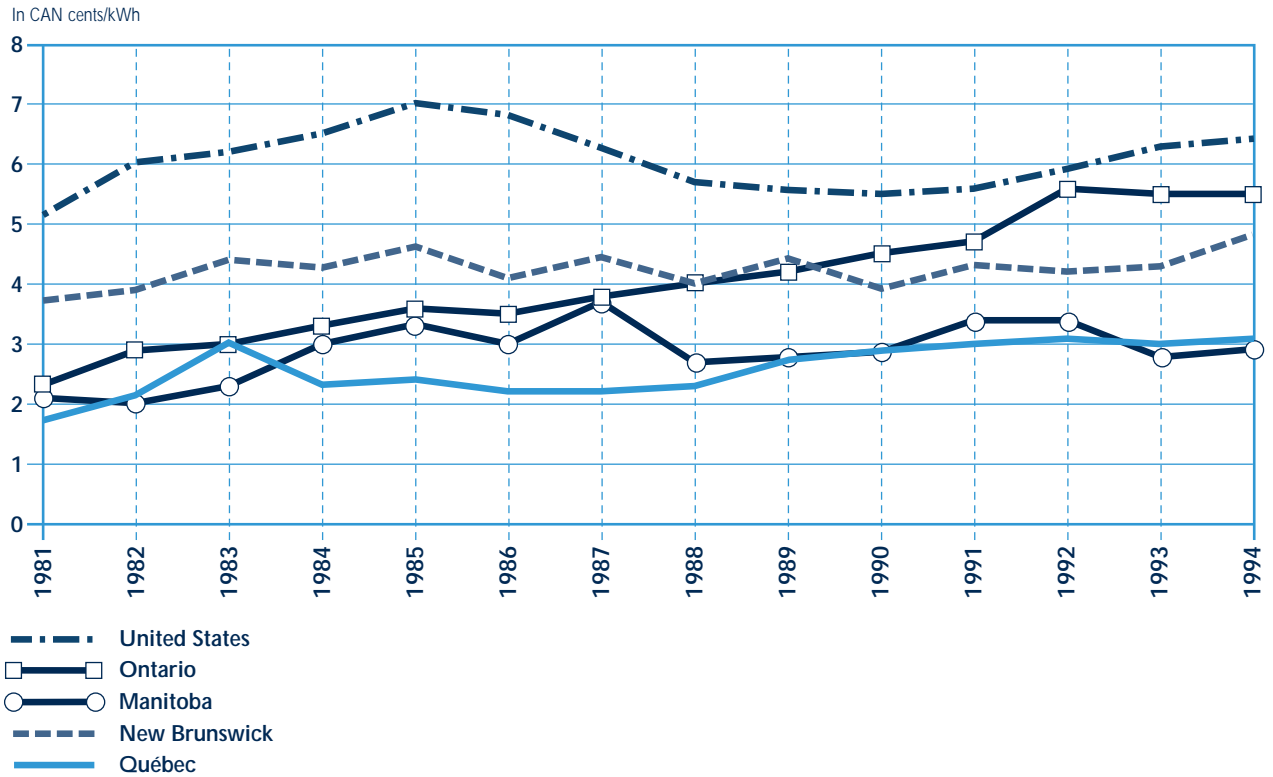
- **The aboriginal nations**

The development of energy-sector discussions over the last few years has confirmed the necessity of establishing relations with the aboriginal nations. This phenomenon is not recent: the James Bay development led to the signing of the first agreement negotiated between Québec and the aboriginal nations of Northern Québec. Since the beginning of the nineties, however, the role played by representatives of the native peoples in several energy dossiers has increased considerably.

It is in acknowledgement of this fact that the government invited two representatives of the native peoples to sit at the Consultation Panel for the Public Debate on Energy. The new energy policy will confirm this reality, by formally integrating the concerns of Amerindian nations in governmental orientations and commitments.

FIGURE 3

Electricity Prices in the Industrial Sector
 Québec, Certain Canadian Provinces and the United States 1981-1994



Source: Statistics Canada and Energy Information Administration, United States.



CHAPTER 2

The Creation of a Régie de l'énergie

The government felt that it was urgent that changes be made to the way the energy sector is administered in Québec. The modernization of the regulatory framework is one of the major aspects of this new policy. The creation of an energy board, which has been requested for many years now, will be one of the central elements.

■ Why Create an Energy Board?

The creation of a Régie de l'énergie having the powers required to regulate the electricity sector meets an obvious need. The government is taking this major initiative so that it will be possible to respond to Hydro-Québec's rate requests with satisfactory counter valuations, using a transparent mechanism that allows public participation.

The use of regulatory boards, which represents a typically North American approach, is an answer to a delicate economic and administrative problem: in certain sectors of economic activity, such as in the transmission and distribution of natural gas and electricity, or in telecommunications, the technology used requires that the product in question be delivered to the consumer through the intermediary of a pipeline or transmission grid. These pipelines or transmission grids require significant investments, and it is excluded, for obvious financial reasons, that two competitive networks be created to serve a given region or zone. The companies that own these grids thus become "natural monopolies" with respect to consumers. As there is no competition in the supply of users who are hooked up to the grid, the companies can charge unjustified rates. Public authorities must then intervene so as to protect consumers and establish the balance necessary to the proper functioning of markets.

In the United States and Canada, the approach chosen to solve this problem has been that of regulatory boards. These boards are quasi-judicial institutions whose "raison d'être" is to ensure an arbitration between consumers and distribution

companies, taking their inspiration directly from the courts. Regulatory boards thus have an independence that guarantees their credibility in the eyes of the different stakeholders involved. Their judicial approach ensures that they rigorously examine the questions submitted to them. The analysis of rate-change requests in public hearings enables public participation and the involvement of all interested parties in the discussions. By so doing, the government thereby makes it possible for Quebecers to take full part in the democratic process, and for all stakeholders to present their point of view.

A Transparent and Equitable Regulatory Approach

Though it has already used a board for the regulation of natural-gas distribution, Québec was unique in not having a similar system for electricity distribution. In the past, it seemed logical to some that Hydro-Québec, a state-owned company belonging to the society, not be subject to the control of a regulatory board. This situation nonetheless led to a certain confusion in the roles taken on by the State, as the government was both regulator and shareholder. Indeed, like regulatory boards in the rest of North America, the government had to arbitrate, in the electricity sector, between the interests of consumers and shareholders. However, at the judicial level, the government is the sole owner of Hydro-Québec. It must, moreover, assume its first vocation, that of safeguarding the public's interests. The multiplicity of roles directly assumed by the government obviously had a direct effect on the perception of its decisions.

It is also worth noting that the examination method used to analyse changes to Hydro-Québec's rates was not entirely satisfactory. The process used until recently was carried out in a very limited length of time at the National Assembly before the Committee on Labour and the Economy. This public examination was based on analyses conducted by the

administration, essentially the ministère des Ressources naturelles. It consisted, for the members of the parliamentary committee, in questioning Hydro-Québec authorities in order to clarify the conditions of the proposed rate changes. The system did not permit a sufficiently deep analysis of the rate cases due to the amount of time available to the parliamentary committee, the limited resources that the ministère des Ressources naturelles could bring together, and the difficulty of providing a suitable counter valuation to viewpoints of the upper management of Hydro-Québec. The political context could also influence decisions concerning the state-owned company. Moreover, the public could only participate indirectly, since the different intervenors involved could not question Hydro-Québec on the reasons behind the requested rate changes.

These various reasons explain the interest in extending the regulatory-board approach, as it already exists in the natural-gas sector, to the electricity sector. The creation of a Régie de l'énergie to regulate the electricity sector represents the best way for the government to guarantee the equity and transparency of rate analysis, and thereby concretely follow up on one of the objectives of the new energy policy. The Régie de l'énergie would be the best-adapted institution for this purpose.

As provided for in the bill presented by the government last October, the new Régie de l'énergie will have powers in the electricity sector that guarantee this equity and transparency in the analysis of requests for rate changes, as well as in their follow-up. By creating a Régie de l'énergie, the Government of Québec is profoundly transforming the administrative conditions of the Québec energy sector, and providing needed reform.

The Supervision of Petroleum-Product Prices

The Régie de l'énergie will not limit its activities to the natural-gas and electricity sectors. In the desire for equity and transparency, the government felt that it was important that the jurisdiction of the Régie also include the petroleum-product sector. The difficulties in this sector, however, are not of the same type. The distribution of petroleum products is conducted in conditions that are quite different from those prevalent in the natural-gas and electricity sectors. The delivery to consumers, for example, does not lead to the creation of natural monopolies, thereby permitting genuine competition in the markets in question, under normal conditions.

The government already had supervisory powers and the possibility to establish ceiling prices for certain products, in the form of the *Act respecting the use of petroleum products*. These powers were, until now, exercised by the ministère des Ressources naturelles. Nonetheless, a regulatory board

would be in a better position to apply the current legal provisions, which the government wishes to extend, moreover, to petroleum products. Furthermore, due to its operational mode, the Régie de l'énergie will foster the discussion of the arguments of both consumers and distributors in the case of objections to prices. The intervention of the Régie will allow the different stakeholders in the market, such as major companies, independent distributors and consumers, to express their point of view and present their evaluations within the transparent and rigorous framework of public hearings.

Moreover, and so as to avoid abusive practices in the sale of gas and diesel fuel, the Régie can intervene in the analysis of the retail price of these products. The goal of this measure, which will be discussed below, is to avoid the repetition of extreme price swings such as those of last spring. Finally, it is worth noting that the powers given to the Régie will enable it to have an overall picture of the conditions prevailing in the whole energy sector, which could be very useful with respect to the investigative and analytical powers of this institution.

The Consensus Stemming from the Public Debate on Energy: A Régie for All Energy Forms, Decision-Making Power and a Precise Mission

By creating the Régie de l'énergie, the government is building on a very clear consensus, that was confirmed during the public energy debate³. Commitments made by the government in its new energy policy are in keeping, for the most part, with this consensus, whose main elements were:

- The Régie de l'énergie will have jurisdiction over all energy forms, including petroleum products, using various means. The government has even decided to extend provisions concerning petroleum products to district heating, ensuring that the Régie has jurisdiction over all commercially distributed energy forms.
- The Régie will have decision-making power with respect to the setting of rates for natural gas and electricity. The consensus reached during the public energy debate was respected here as well, as the bill tabled by the government provides the Régie with full authority. In particular, the government will not be able to revoke Régie decisions and its power to issue policy direction will have strict limitations.
- The bill creating the Régie de l'énergie provides for mechanisms that will make it possible to use integrated resource planning. The Régie will thus have all the tools and authority needed to minimise the total social cost of energy choices.

³. For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy, op cit, p 32 ff.

Opening Up to Deregulation

At the same time that it is creating the Régie de l'énergie, the government is defining a clear and firm orientation to deregulate electricity production, mandating the Régie towards this end⁴.

As previously mentioned, the current restructuring of our partners' electricity sectors is one of the concerns and challenges that the government is meeting through its new energy policy. Precise initiatives have been taken with this in mind. As regards the new Régie de l'énergie, this new institution, instead of encumbering Québec's regulatory framework, should, on the contrary, facilitate the necessary adaptations. The Régie de l'énergie will thus, as part of its general investigative and analytical powers, deal with the deregulation of the electricity sector.

In order to emphasize the importance of this mandate, the government has included it in the bill presented to the National Assembly. The Régie de l'énergie will advise the government concerning ways of deregulating or excluding from its jurisdiction all or part of electricity production. It will then be up to the government to decide whether or not to follow up on the recommendations of the Régie.

The Creation of a Régie de l'énergie: Transparency, Equity and Openness to Deregulation

The creation of the Régie de l'énergie represents a major change for the Québec energy system. By the nature of the powers entrusted to it and the fields in which it will intervene, this institution will bring equity and transparency, while providing an exceptional tool to meet the new challenges of the North American energy context.

An Institution Endowed with Wide-Ranging, Credible and Efficient Powers

The Régie de l'énergie will be endowed with wide-ranging powers and real authority. It is essential for the government that this institution be credible and independent, and that its decisions be respected by the different stakeholders concerned. This credibility will be based, to begin with, on the adoption, by the Régie, of a rigorous approach to inquiry and public hearings, as well as on the competency of its management and personnel, to which particular attention will be paid.

The credibility of the Régie will likewise be founded on the type of powers it will have. In the electricity and natural-gas sectors, the Régie's decisions will be binding with respect to rates and the authorization of resource plans and projects.

The decisions of the Régie will not be subject to appeal in general law courts, nor submitted to revision. This is a fundamental point that guarantees the authority of the Régie, which will have powers similar to that of most North American regulatory boards. In particular, the Régie de l'énergie will have all the necessary credibility, as concerns our North American partners, to authorize wheeling rates and thereby guarantee our access to export markets.

The government will have the power to issue policy direction, but it will be more strictly defined than in the case of the Régie du gaz naturel. Such a power is necessary if a balance between the regulatory institution and the government is to be ensured, in particular when government-owned utilities are regulated by boards. It must, however, be seen as exceptional, and it is noteworthy that the Québec government has never had recourse to it in its dealings with the Régie du gaz naturel.

The Régie de l'énergie must be efficient. It will be equipped with all the tools that it requires to adopt, from the outset, the new operating methods of the North American regulatory boards. The Régie will, nonetheless, have to meet an important challenge early on, that of ensuring the redefinition of the rates and profits of Hydro-Québec.

One point worth noting is that despite its wide-ranging powers and the extent of its jurisdiction, the Régie de l'énergie is being created, above all, to regulate energy forms having natural monopolies. It will have supervisory powers in the other energy markets, reviewing the retail price of certain petroleum products. It is not, however, the mission of the institution to take the government's place in the definition and evaluation of energy policy. These are functions that must remain under the direct control of the government, so authorized by the population through the democratic system.

The Régie's Mission: Taking Externalities Into Account

The government has given a two-fold mission to the Régie de l'énergie. Like all institutions of its kind, the Régie must reconcile the public interest, consumer protection and a fair treatment of distributors. Generally speaking, the Régie must help ensure that energy needs are met through sustainable development.

Making the concept of sustainable development a part of the Régie's mission represents an innovation. The government thus confirms the importance that it attaches to the notion of sustainable development in the context of the new energy policy. Above all, the government is giving a concrete form to this concern: the Régie de l'énergie will be called upon to integrate economic, social and environmental effects into its analysis when reviewing natural-gas and electricity rates, when examining the resource plans of regulated companies

⁴ The Consultation Panel strongly insisted in its report that Québec be opened up to electricity deregulation. The Panel felt that it was possible to reconcile this concern with the establishment of a new institution overseeing the energy sector. It was indeed suggested that the first mandate of the Régie de l'énergie be to analyse the implication for Québec of the process taking place in North America.

and as part of its mandate regarding project implementation and the extension or modification of distribution networks.

The Régie de l'énergie will thus take economic, social and environmental "externalities" into account in areas where its decisions are binding. The integration of externalities should, nonetheless, be coherent with government policies and guidelines. Indeed, if this were not the case, the Régie de l'énergie could, using its authority in the energy sector, intervene in fields outside of its jurisdiction and mission.

Operation and Financing

The creation of the Régie de l'énergie must be seen as a chance to establish a supple, flexible and light structure. Thus, the operation of the Régie should be relatively straightforward. The Régie de l'énergie could hold general public hearings on certain problems so as to establish the rules and guidelines that will determine how companies will be treated in years to come. This approach, which is already being used in several North American boards, avoids having certain problems debated a second time during a rate case, insofar as the context has remained unchanged.

It will likewise be possible for the Régie de l'énergie to simplify or accelerate the public hearing process, by holding preparatory meetings or by promoting agreements between concerned parties. The Régie will have to take advantage of this possibility without compromising the credibility of its analysis process. The government feels that this simplification is quite important. The Régie will thus have the tools needed to lighten its operation, and the government expects it to use them.

These hearings must give rise to genuine public participation. The Régie de l'énergie will be able to make the distributor pay for part or all of the intervenors' costs, along the lines that it will define. The Régie could likewise devote part of its own budget to this, an element that is not found in the *Act respecting the Régie du gaz naturel*. Nonetheless, the Régie will have the powers needed to define certain guidelines for stakeholders' financing. North American boards are using new approaches to this end. For example, so as to limit the time and resources devoted to hearings, they do not automatically reimburse all expenses. These boards define preliminary budgets, and can even force stakeholders to form groups so as to avoid repeating similar input. The Régie will have the power needed to impose such conditions, and, once again, the government expects the Régie to use the provisions.

As for the financing of the Régie itself, the rules retained by the government will respect the principles of equity and accountability. The Régie will finance itself through non-bypassable fees and annual duties paid by the distributors, which will be integrated into the rate base. The duties will reflect the weight of the Régie's costs as concerns the treatment

of the various energy sectors. The accounting of the Régie will be organized accordingly, thus favouring the imputability of its activities. Indeed, it is out of the question that activities related to one form of energy be financed by the distributors of other sectors. Regarding the balancing of its accounts, the Régie will not be able to have operating deficits. If there is a budgetary surplus for a given financial year, the fees collected by the Régie in the following year will be reduced accordingly, and the government will not be allowed to use these fees for its general needs.

■ The Fields of Activity of the Régie

Electricity and Natural Gas

The Régie de l'énergie will serve as Québec's energy regulatory institution, intervening above all in sectors where natural monopolies exist, namely electricity and natural gas. As with other regulatory institutions in North America, the Régie de l'énergie will have responsibilities concerning various fields of activity that might influence rate schedules, namely electricity production, transmission, distribution and supply, as well as the transmission, distribution, supply and stocking of natural gas.

The distributors in the electricity and natural-gas sectors that will fall within the jurisdiction of the Régie will be Hydro-Québec, Gaz Métropolitain and Gazifère. The government has decided not to include municipal electricity grids at least with respect to rate schedules. The "trailer clause", included in the *Act respecting municipal and private electric power systems* will continue to guarantee that users of these grids will not see their electricity bill surpass that imposed by Hydro-Québec. Moreover, consumers of these grids could go to the Régie in the case of complaints against distributors.

Rate Schedules and Resource Plans

As concerns the setting of rates for natural gas and electricity, the decisions of the Régie de l'énergie will be binding and will apply to the level and structure of rates and to marketing programmes and special contracts. The government will be able to exercise a power of withdrawal concerning special contracts, so as to set rates that will contribute to the development of Québec. To this end, the government will take into account economic benefits and job creation in the analysis grid that it will make public so that this process will be conducted with the utmost transparency. Until the Régie de l'énergie is operational, the government will adjust rates according to variations in the consumer price index. During this transition period, it will no longer be necessary to conduct rate examinations in parliamentary commissions.

The jurisdiction of the Régie will also extend to the rates and conditions regarding the transmission of natural gas and electricity. This is a major innovation in the case of electricity: the government is opening the door to the possible development of wheeling electricity across the Hydro-Québec grid, and is giving the Régie the power to control the rates. The issue of wheeling is very important. It will be discussed in more detail in the section on government initiatives to open up the Québec electricity market and provide it with the tools needed to penetrate the North American market.

Hydro-Québec and the gas distributors will submit their resource plans to the Régie de l'énergie for approval. Resource plans are multi-year planning instruments that distributors use to determine how to meet anticipated demand. The application of resource plans has a direct impact on rates, which is why boards examine them. Resource plans submitted to the Régie will be developed using an integrated-resource-planning approach.

Project Authorization

To implement their resource plans, Hydro-Québec and the gas distributors will have to obtain authorization from the Régie de l'énergie to make the necessary investments. This is a logical requirement, because once they are authorized, the distributor's investments can be integrated into the rate base and start providing a return. As for small projects, the Régie will use its powers to precisely state the implementation conditions of the investments, which will not have been described in detail in the resource plan. At this point, the Régie will then verify the justification of the project from an energy standpoint.

One point is very clear in the government's opinion: this process of investment authorization by the Régie, which already exists in the natural-gas sector, must in no way undermine the evaluation and analysis of environmental impact provided for in the *Environment Quality Act*. The two processes take place separately. The authorization process of the Régie is begun at the request of a distributor, and may take place before or after the environmental control process.

Distribution Rights and Exports

As pertains to the granting of exclusive distribution rights for natural gas, the Régie de l'énergie will give an advisory opinion to the government, which retains the privilege of the final decision. The granting of franchises must remain a government responsibility due to the issues involved. Moreover, this is what currently takes place in the gas sector. The Régie de l'énergie will not have similar power in the electricity sector, since the government is excluding any possibility of modifying the current grant conditions of distribution grids.

The export contracts of Hydro-Québec will likewise be submitted to the Régie de l'énergie. The objective of this competency is also the same, namely to allow the Régie to verify the possible impact of exports on the rates of Québec consumers, and to ensure that these exports do not encroach upon their interests. The Régie will be able to adjust how it exercises this power, so as to adapt its initiatives to changes in the export market. Changes happen quickly in this field, and the government expects the Régie to use the powers available to it. As for electricity exports, the powers of the Régie will not bring an end to the direct authority of the government. This subject will be discussed more in depth in the chapter on electricity markets.

Consumer Complaints

How consumer complaints are handled is a delicate matter in the distribution of regulated energies. The government considers it to be essential that consumers be treated fairly, and appropriate mechanisms should ensure this. Hydro-Québec, the other electricity distributors (including the municipal grids) and the gas distributors will thus submit their internal complaint procedure, which specifies how complaints are dealt with in relation to rates and conditions, to the Régie de l'énergie for the latter's approval. Distributors in question will be required to provide an initial examination of complaints. If a plaintiff is not satisfied with a distributor's decision, the matter can then be referred to the Régie. The Régie will give its ruling, with which the distributor must comply, no appeal being possible.

These rules already exist in the natural-gas sector. In the electricity sector, they represent a reinforcement of consumer protection, since the current commissioner for complaints for Hydro-Québec⁵ only has powers of recommendation, which are, moreover, limited to the residential sector. By creating the Régie de l'énergie, the government is transferring reinforced powers to the new institution, a fact which will be advantageous for business, institutional and industrial clientele, and at the same time is moving towards a standardization of complaint processing in the electricity and natural-gas sectors.

Petroleum Products and District Heating

As was previously emphasized, the government is not limiting the responsibilities of the new Régie de l'énergie solely to the natural-gas and electricity sectors. The new institution will be responsible for the monitoring of gasoline prices, which is currently the responsibility of the ministère des Ressources naturelles. These responsibilities will be extended to all petroleum products and to district heating. The Régie will provide advisory decisions, and it will be up to the government to decide whether or not to follow up on them with respect to maximum prices. Furthermore, so as to avoid

⁵. Its official title is "Commissaire aux plaintes des clients des distributeurs d'électricité".

abusive practises in gasoline and diesel-fuel sales, the Régie will conduct analyses of the retail prices of these products. As was previously mentioned, the goal of this measure is to avoid a repetition of the extreme price swings that occurred last year.

The government likewise intends for the Régie to be able, upon request, to inform consumers about the price demanded by distributors of petroleum products and steam, and to inform distributors about the needs of consumers.

General Investigative and Analytical Powers

The Régie will have general investigative and analytical powers that are independent of its role in energy regulation. This power will be used upon request by the Minister of Natural Resources or at the initiative of the Régie for subjects within its jurisdiction.

All sorts of analyses could be entrusted to the Régie as part of this power. It was previously mentioned that the government intends to use this power to ask the Régie to analyse the issues involved in electricity-sector deregulation. The new energy policy provides for other uses of this power of the Régie, for example, in the choice of electricity-production forms. The government could likewise call upon the general investigative and analytical powers of the Régie when dealing with subjects concerning the whole energy sector, such as demand forecasting.

The Main Mandates of the Régie de l'énergie

Upon examination of the powers entrusted to the Régie de l'énergie, the importance of the role that this new institution will take on over the next few years becomes obvious. The new energy policy of the Québec government will put this major reform into effect and will specify the implementation conditions. The government would also like the new energy policy to provide the first opportunity to clarify the conditions in which the Régie will fulfil its mandates.

The Price of Energy

The Régie de l'énergie will intervene directly in all questions concerning energy prices. The orientation of the government concerning energy prices is clear, namely that the price that Quebecers pay for energy must be kept as low as possible. This commitment is found in the energy policy, and the Régie should bring it into effect through its the decisions and conclusions.

- **Natural-gas and electricity rate schedules**

The Régie de l'énergie will have considerable powers with respect to natural gas and electricity, since its decisions

concerning ratemaking and supply conditions will be binding and without appeal. The creation of the Régie will make it possible to establish identical rules for the definition of rates. The government is convinced that if the market is allowed to play its true role, based on fair rules, consumers will make the right decisions with respect to choosing energy forms for a given use. The *Act respecting the Régie de l'énergie*, which borrows provisions applied by the Régie du gaz naturel, will describe the conditions for determining electricity and natural-gas rates and the various other elements that must be considered. These conditions and elements arise from a certain number of explicit or implicit principles. It is the government's opinion that the rates authorized for the sale of natural gas and electricity must reflect costs and the clients' ability to pay, be fair in their impact, and be simply defined.

These principles have several implications: natural-gas and electricity rates must be as close as possible to the cost of serving each consumer category. Even though rates are based on average costs, rates should evolve towards a better integration of marginal costs, with basic rates more directly reflecting the value of the energy consumed.

The rates must be justified and reasonable. They must likewise ensure the integrity and long-term survival of the distribution company, as well as the quality of its service. The Régie must not hesitate to integrate mechanisms in its regulation practices that will encourage energy suppliers to improve their performance. Moreover, in its analysis of energy costs, the Régie must consider economic, social and environmental effects, in keeping with government policy.

- **The price of petroleum products**

As regards petroleum-product prices, the creation of the Régie de l'énergie should make the market more efficient, while still protecting the consumer. The government considers, moreover, that the continued existence in Québec of genuine competition presupposes a powerful and dynamic network of independent distributors. In 1996, fierce competition in gasoline prices destabilized the independent companies, which are more vulnerable to this type of event due to their particular financial structure. Québec consumers will not come out on the winning end, in the mid- or long-term, from another crisis of this type.

With the creation of the Energy Board, several levels of intervention will be available, adapted to the different possible situations.

- At all times, the Régie will have supervisory, inspection and investigative powers concerning petroleum-product prices. Until now, these supervisory powers could only be used for gasoline prices by the ministère des Ressources naturelles.

- At its own initiative or at the request of the Minister, the Régie will be able to present the government with recommendations concerning petroleum-product prices. These recommendations will often be made after holding public hearings. The government is convinced that public hearings, will be an efficient way of resolving any possible market dysfunctions by making the different intervenors defend their viewpoints and strategies in a transparent and public manner. At the end of each hearing, the Régie will put together the appropriate recommendations for the government.
- As part of the *Act respecting the use of petroleum products*, the government will be able to set ceiling prices for all petroleum products. This provision is not new; in fact, it already was law. The government feels that setting ceiling prices should be seen as a last resort. Indeed, there is considerable risk that setting prices would turn against consumers.
- Moreover, and so as to avoid abusive practises in the sale of gasoline and diesel-fuel, the government has proposed a major modification to the *Act respecting the use of petroleum products*. A presumption of an excessive and unreasonable exercising of rights was defined concerning retailers who sell gasoline or diesel fuel below a certain price. The Régie will conduct an analysis of this price by annually defining the amount that will be retained for operation costs. The goal of this provision, which is to avoid wide price swings, represents a balanced approach that is adapted to the Québec context. The government does not intend to regulate gasoline and diesel-fuel prices nor to put an end to competition. This being said, the government, nonetheless, expects the Régie de l'énergie, when setting an amount for operating costs, to retain the minimum evaluation, taking into consideration the logic of a competitive market and integrating productivity gains and economy of scale.

Interfinancing and Rate of Return for Hydro-Québec

In particular, the Régie will first have to examine the difficult questions of interfinancing in the electricity sector and the rate of return of Hydro-Québec.

• The objective in interfinancing

More often than not, there is an attempt to avoid interfinancing when setting rates. Indeed, certain consumer categories do not pay the real costs with such a rate schedule, a fact which compromises an efficient resource allocation and market operation. Certain forms of interfinancing constitute, nonetheless, a way of explicitly reaching social objectives. This is the case, for example, with the interfinancing resulting from a uniform electricity rate for all of Québec. Quebecers

feel that this principle is quite important, and though the government has no intention of questioning the validity of this principle, it does wish to ensure that uniform rates do not lead to a poor use of energy.

This case aside, there should, in the future, be a move towards the disappearance of or, at the very least, a reduction in interfinancing in Hydro-Québec rates. This move is already under way in the natural-gas sector, under the supervision of the Régie du gaz naturel. Such a readjustment must be accomplished fairly, and must respect another principle about which the government feels quite strongly, namely respect for the consumer's ability to pay. The government therefore wants this question to be examined rigorously and transparently.

As soon as the Régie de l'énergie is operating, it will be mandated to hold general public hearings to analyse methods for the allocation of costs in the setting of Hydro-Québec rates. The intention of these general public hearings is to examine this question and determine possible solutions. Several interesting points can be made on this subject, such as the idea that rates paid by consumers should reflect the commercial risks that distributors actually take in each of the markets concerned.

• Disparity in rates of return

At the end of general public hearings, the Régie de l'énergie will pass on its recommendations to the government, proposing how interfinancing will be dealt with in the ratemaking of Hydro-Québec. These recommendations should also examine the question of the rate of return of Hydro-Québec.

In 1995, sales to clients concerned by the rate schedule, which represented 85% of the revenue of the public utility, provided a return of approximately 6.5%, while the average return of lenders to Hydro-Québec was 9.5%. Compare this with the return of 12% for the same period on the regulated activities of Gaz Métropolitain, approved by the Régie du gaz naturel. These conclusions, however, must be qualified due to the status of Hydro-Québec, which is the collective property of Quebecers. Nonetheless, there is a real disparity in how the shareholders of the two energy-distribution companies are treated, and this has an affect on competition conditions. On the other hand, Québec society does not receive a normal return from the heritage value that Hydro-Québec represents.

Based on recommendations that the Régie de l'énergie will make to the government, concerning both cost-allocation methods and rates of return, the government will determine the orientations that will be applied to the setting of future electricity rates. Indeed, the *Act respecting the Régie de l'énergie* provides the government with the possibility of producing guidelines for the implementation of Régie

recommendations. When necessary, the government will thus be able to limit the possible impacts of the recommendations of the Régie de l'énergie on consumers, and avoid possible "rate shocks". The government wishes to underline the importance it attaches to the rate effects arising from decisions of the Régie, and to confirm the need to respect the consumers' ability to pay.

Integrated Resource Planning

As was previously mentioned, Hydro-Québec and the natural-gas distributors will submit their resource plans to the Régie de l'énergie for approval. The resource plans will propose strategies that attempt to attain a balance between supply and demand by acting as much on supply as on demand, while taking into account the economic, social and environmental impacts and the risks resulting from the energy choices.

These measures are of great importance. Indeed, they will serve as the basis for the application in Québec of integrated resource planning, which will be used to analyse the development of regulated companies. The issues involved concern Hydro-Québec for the most part.

Up until now, natural-gas distributors have not had to submit their resource plans for approval. This new obligation will put them on an equal footing with Hydro-Québec. In the case of the latter, the resource plan essentially corresponds to that part of the development plan which must be implemented to satisfy demand. The rules applying since 1991 to the development plan of Hydro-Québec, most notably to its frequency, should normally be applied to the resource plans presented to the Régie. These rules will be defined by the Régie.

In its examination of the resource plans submitted to it, the Régie will use an approach that corresponds to integrated resource planning. The government is thus following up on another consensus of the public energy debate⁶. The use of integrated resource planning in Québec has been analysed in depth over the last few years. Energy-sector stakeholders agree that it is an interesting approach which is both logical and neutral, and which makes it possible to systematically take into account the externalities accompanying energy decisions. The difficulty lies in the reconciliation of this method with the requirements arising from deregulation and more open markets.

This necessary reconciliation will be discussed in the chapter devoted to electricity-sector restructuring. The government considers that it is possible to implement integrated resource planning in Québec while taking into account the changes that our partners' markets are undergoing and the deregulation that we ourselves would like to implement. Integrated resource planning is sufficiently flexible to take the reality of our situation into account.

According to the process currently provided for, the government will ask the Régie de l'énergie to use its general investigative and analytical powers to hold public hearings on the characterization of electricity-production forms. The characterization of energy forms represents the first step in the implementation of the integrated resource planning method. Once these methods have been validated by the government, the Régie will be mandated to ensure that Hydro-Québec use them in the development of its resource plan. As will be seen further on, the government already wants to determine some of the points to be analysed with respect to the characteristics of each of the electricity-production forms that Québec might use.

The way in which integrated resource planning will be implemented could change greatly, depending on initiatives taken in electricity deregulation. As was previously mentioned, the Régie de l'énergie will have to give its opinion to the government on ways of deregulating or excluding from its jurisdiction all or part of electricity production. In the analysis it will undertake for this purpose, the Régie must ensure that the deregulation thus defined does not jeopardize the implementation of integrated resource planning in Québec. Several North American regulatory boards have already defined approaches that reconcile total or partial deregulation of electricity production with a respect for integrated-resource-planning principles. These approaches could inspire the proposals put forward by the Régie de l'énergie.

Integrated Resource Planning

In its report⁷, the Consultation Panel for the Public Debate on Energy writes that integrated resource planning can be defined using the four characteristics found in all the methods directly inspired by it:

- All possible strategies are analysed, on both the supply and demand sides, to attain a balance between energy supply and demand, including the possibilities of energy conservation.
- The analysis of these options is achieved by integrating all related consequences, namely the environmental, economic and social externalities.
- The process includes a systematic call for public participation.
- The analysis considers the risks inherent in proposed energy choices.

Integrated resource planning, which was developed in the United States in the early eighties, was first used in the electricity sector and then extended to natural gas. In Québec, a public review, carried out in 1994 at the demand of the Government of Québec, made energy-sector stakeholders

⁶. For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy, op cit, p 68.

⁷. For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy, op cit, p 69.

aware of the value of this method in relation to questions about the evolution of the sector. The stakeholders' interest was largely confirmed during the public energy debate, giving rise to precise recommendations in the report tabled by the Consultation Panel.

Energy Conservation

As was just stated, one of the characteristics of integrated resource planning is putting supply and demand options at the same level in the analysis of the development plans of regulated companies. This means, with respect to Hydro-Québec and the natural-gas distributors, the Régie de l'énergie must ensure that energy conservation that is profitable for these companies, including the possible recourse to private initiatives, must be part of their resource plan, and the distributors must make the appropriate investments. These measures meet what is called the "rate impact measures test". It is in the suppliers' best interest to invest in these

measures; as for consumers, rates are lower than or equal to what they would have been without energy conservation.

The Régie de l'énergie can go further. The government will explicitly allocate it the power to authorize distributors to collect rates from certain consumer categories to finance energy conservation which is not profitable for companies but which is profitable for these consumers. The measure should represent an important tool for the Régie in its efforts to encourage greater energy efficiency⁸. At the same time, the measure respects the "user-pays" principle, since the investments corresponding to an implementation of this type of energy conservation will be the responsibility of the consumers who will benefit from the conservation, with appropriate rate schedules ensuring financing for the distributor.

Provisions of this type allow the government to confirm the role that it wants the Régie de l'énergie to play. The Régie de l'énergie will not only ensure the modernization of the regulatory framework of the Québec energy sector; it will also represent a powerful tool for reaching the objectives of the new energy policy.

⁸. This measure is in keeping with one of the recommendations of the Public Debate on Energy. See *For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy*, op cit, pp 47-53.



Better Use of Energy

Energy Efficiency, a Priority

As part of its new energy policy, the government of Québec has adopted four objectives that represent its main themes; energy efficiency would seem to be an excellent way to pursue three of them.

Responding to Needs While Reducing Costs

The first of these objectives is to make sure that Quebecers get the energy services they need at the lowest possible cost. Households and companies have lighting, heating, air-conditioning, power and transportation needs, all of which require that energy be available to satisfy them. To meet these needs, energy efficiency must be considered as a form of energy in its own right, on the same level as the types of energy to be found on the market.

In many cases, the energy-saving solution is much more advantageous than the purchase of motor or heating fuels or electricity: the investments needed for better energy use pay off quickly, and the overall cost is reduced, often significantly. It should also be considered that in the mid-term, the consumer also saves on the energy production and distribution equipment that is no longer needed. Making sure that Quebecers get energy services at the lowest possible cost will make for better use of energy.

For Québec, the relevance of energy savings is all the greater because the potential is considerable and the stakes, high: energy needs will continue to grow during the next fifteen years, even if the rhythm has slowed down in comparison to the evolution seen in the past. Above all, the quantities involved are considerable, since Québec is, on a per-capita basis, among the greatest users of energy in the world. Québec, whose economy is in large part based on the transformation and consumption of energy, must thus rely on energy efficiency in order to better satisfy its various needs at a lower cost.

A Factor in Economic Development

By reducing energy bills, energy savings will allow Québec companies to improve their competitiveness in an economy where any reduction in costs represents a strategic advantage. The restoring of the comparative advantages enjoyed by the Québec economy by acting on energy costs is one of the objectives set by the government with the new energy policy. A more rational use of energy will contribute directly to this.

Moreover, energy efficiency triggers considerable investments and brings economic agents from all sectors of society into play, which in turn leads to considerable economic spin-offs. Energy efficiency requires products and expertise that stimulate new sectors of activity and represent an interesting potential for growth and job creation. The impact of energy-conservation investments is all the more advantageous because the activities in question are decentralized and can represent promising outlets for the regions. Energy conservation provides the Québec energy sector with a development niche which must be exploited in a systematic manner.

The Best Way to Restore Environmental Equilibrium

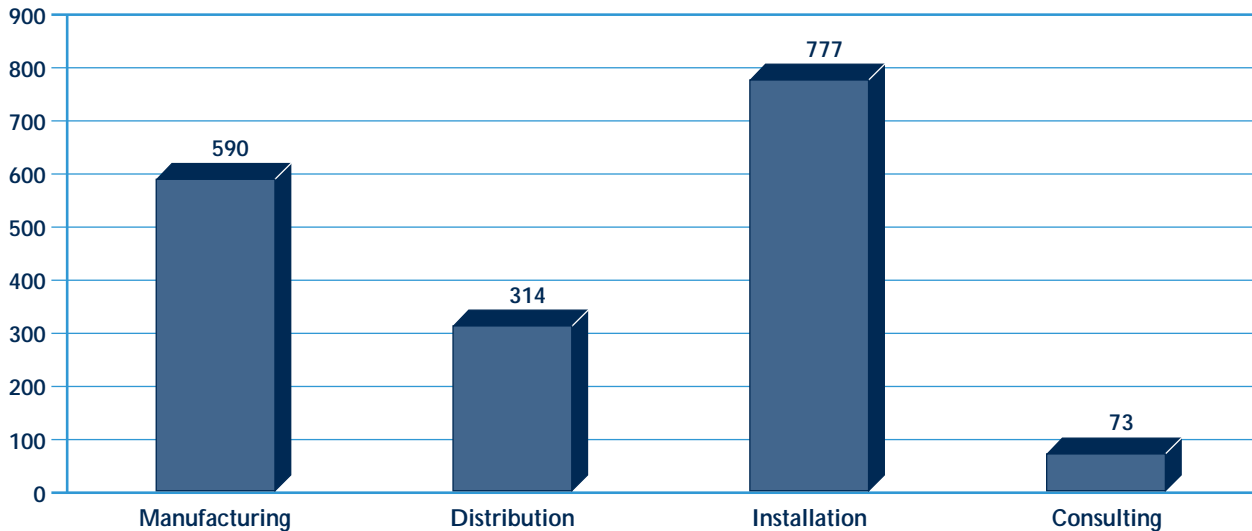
Finally, energy efficiency makes it possible to reduce the impact of human activities on the environment with respect to both the production and consumption of energy. A better use of energy thus represents a direct contribution to restoring and improving environmental equilibrium. In certain cases it is actually the only means available for re-establishing this equilibrium. For example, it is certain that the objectives set in the fight against greenhouse gases will not be respected without increased energy conservation and systematic exploitation of the existing potential.

Energy efficiency measures therefore enable us, at one and the same time, to improve the quality of life of consumers, to

FIGURE 4

Business Activities Related to Energy Efficiency in Québec 1994

In millions of dollars



NB: The data presented in this figure cannot be added between themselves.

Source: Agence québécoise pour la maîtrise de l'énergie, *Étude sur l'industrie de l'efficacité énergétique au Québec en 1994, March, 1996.*

reduce their energy bill, and to respect our commitments on the environmental level. What is more, they contribute to the development of a new activity sector. For all these reasons the Québec government wants energy efficiency to be a pivotal part of the new energy policy. This orientation is logical, given the objectives adopted by the government. It means that every effort must be made to help Québec become an "energy-efficient society"⁹.

The Road Behind and Ahead of Us

Québec has already made great progress in improving its energy use. Since the first oil crisis, the energy intensity of the Québec economy has diminished by more than a third. In 1994, total energy consumption was barely superior to the level reached twenty years earlier, while in the meantime the gross domestic product had increased by close to 60% in constant dollars.

Spectacular Progress

In certain consumption sectors, the progress has been particularly spectacular. Between 1975 and 1995, the average number of new cars on the market was reduced by half. In 1973, at the time of the first oil crisis, small cars represented only 45% of the number of vehicles on the road in Québec

and 46% of those in Canada¹⁰. The situation has now been completely changed. The proportion of small cars has considerably increased, Quebecers being their greatest users. In 1994, small cars represented 62% of the car fleet in Canada and 71% in Québec. In the residential sector, the results attained are also very encouraging. Quebecers are among the most efficient in terms of energy consumption, in relation to Canadian consumers. In 1994, energy consumption, excluding that used for transportation needs, reached 2.51 TOE¹¹ per household, as compared to 2.68 TOE in British Columbia and 3.55 TOE in Ontario.

This progress can be explained by a whole series of factors: the rise in the price of energy at the end of the 70's and the beginning of the 80's, the existence of important government aid programmes, and the establishment of suitable legislation and regulations. All of these factors have made consumers more aware of the advantages of better energy use. In Québec, the substitution of electricity for part of the oil being used on a number of markets has also led to a considerable improvement in energy efficiency.

Carrying On with the Effort

Now however, these phenomena are largely complete, and in some cases a reversal of the situation is occurring. Oil prices are lower, in constant dollars, than before the first

⁹. For *An Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy*, op cit, p 43.

¹⁰. This refers to cars which weigh less than 1,180 kg.

¹¹. Ton of oil equivalent.

energy crisis, and no change in the situation is predicted, unless something unforeseen happens to the economy. Massive public programmes such as those offered by the federal government during the energy crises are a thing of the past. In the case of Québec, the beneficial effects of the increased use of electricity have in large part already been attained, due to the maturity of markets.

Even though the context is less favourable, Québec should continue to improve its conditions for energy use. According to predictions drawn up by the ministère des Ressources naturelles, it is estimated that the energy intensity of the Québec economy will decrease by an additional 14% during the next fifteen years. Indeed, though the potential for energy conservation is difficult to assess, all stakeholders agree that it is significant.

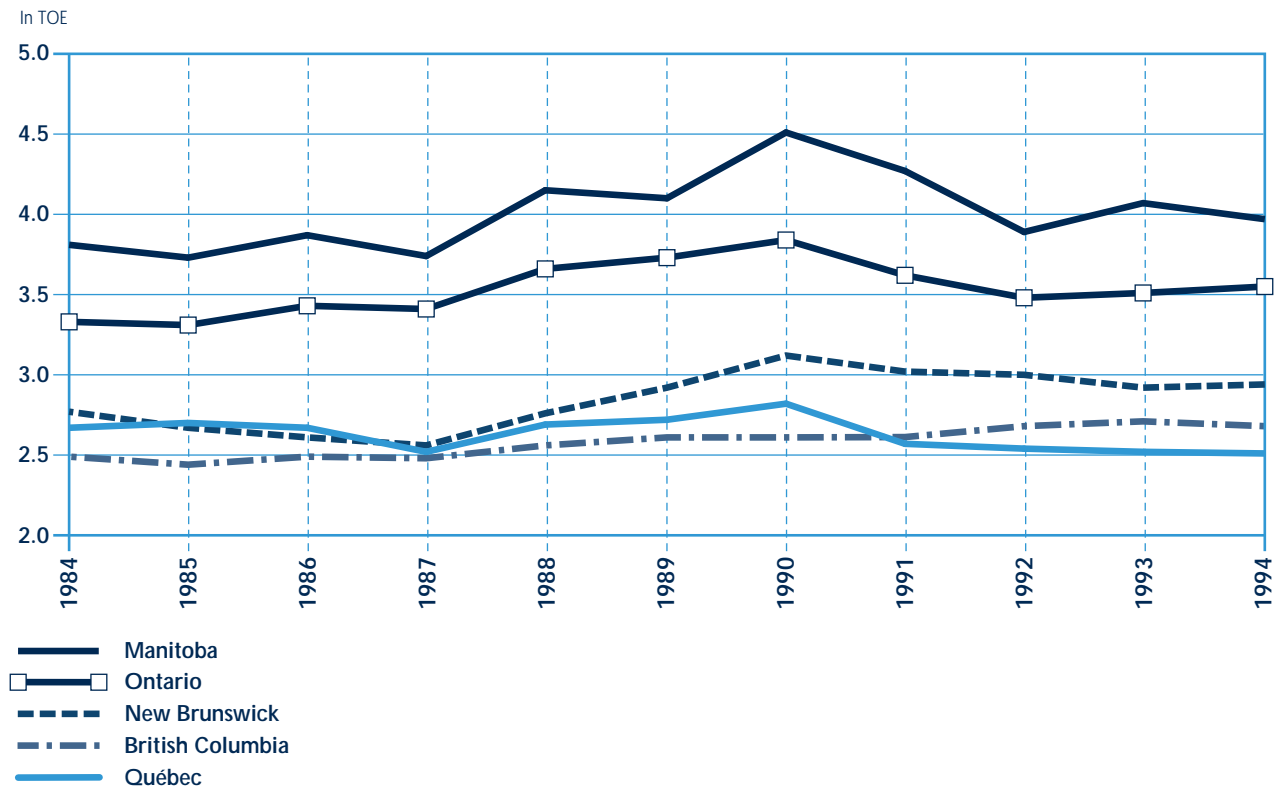
This potential covers energy conservation that is profitable both for suppliers and distributors, due to the structure of

production costs, and for consumers, because of the amount of anticipated benefits in relation to required investments. This potential also includes measures that are much more difficult to carry out — in the area of transportation and land use planning, for instance — but whose overall impact on society, at the energy level, would be extremely great. For the Québec government, the goal of the energy policy is to achieve profitable potentials for energy conservation, according to an approach and a series of strategies that are appropriate for each of the markets in question.

■ The Preferred Approach

The approach chosen by the Québec government in order to reach this ambitious objective arises from an analysis of market reality.

FIGURE 5
Energy Consumption¹ per Household
Québec and Certain Canadian Provinces 1984 -1994



1. Corresponds to energy consumption in the residential sector, after adjustment for climate and excluding consumption for transportation needs.
 Source: L'Observatoire de l'efficacité énergétique, ministère des Ressources naturelles du Québec.

Energy Conservation That Is Profitable for Suppliers

As was just emphasized, there are, to begin with, energy-efficiency measures that are profitable for energy suppliers. It is, therefore, in their interest to provide part of the financing for carrying out these measures among their clients. This is the case for energy suppliers whose marginal production costs are rising, and whose rates, since they are regulated, reflect the average costs, which are lower than the marginal production costs.

Investing in energy conservation allows suppliers in this situation to improve company results whenever the cost of the required measure respects the “rate impact measures” test: the use of this measure has a lower or equal impact on rates than does the alternative supply-side measure. The situation described here is not simply theoretical. This was the situation confronting Hydro-Québec at the beginning of the 90’s, until the public utility entered into a surplus period, where its marginal production costs dwindled to almost nothing — at least over the short-term. In the long-term, this situation still reflects the reality of the Québec electricity-production sector.

For this type of energy conservation, it is normally sufficient to let companies respond to the signals that they receive and maximize their results by encouraging the implementation, at the customer’s site, of energy conservation that is profitable for the companies. However, experience shows that the programmes designed by energy suppliers do not always go as far as could be hoped for, in terms of initiatives aimed at a better use of energy, and this in spite of the advantages that these companies would derive from them.

The Régie de l’énergie will represent a major guarantee in this respect. In examining the resource plans of regulated companies, namely Hydro-Québec and the gas distributors, the Régie will make sure, in a systematic way, that the energy conservation that is profitable for the company has been taken into account by the suppliers, before authorizing additional investments for the construction of equipment, including the possible recourse to private initiatives. This approach is logical. It aims to minimize, for suppliers and hence for consumers, the cost of carrying out a given resource plan.

Energy Conservation That Is Profitable for Consumers But Not For Suppliers

There is a second type of energy conservation that is not financially advantageous for energy suppliers, but is profitable for consumers. This refers to situations where consumers can, over a relatively short period of time, recover the cost of energy-conservation investments through money saved on their energy bill. This situation can be found on all

energy markets, regardless of the production-cost structure or the method of determining rates.

It might be expected that consumers, after making a rational economic calculation, would conclude that it is in their interest to invest in energy efficiency, and would actually make the investment. This is not always the case, in fact far from it. Indeed, consumers, whether companies or individuals, come up against a whole series of difficulties. For example, they might not have the financial resources needed to carry out these measures; it might take too long for them to recover their investment; their debt load is too great for them to sustain additional financing charges; they do not own the building where they live; or they simply have not found out about the possibilities available to them to better manage their energy bill. It must also be pointed out that destitute households find themselves in a situation that is particularly difficult and paradoxical: they are unable to invest in energy conservation which would, however, represent an immediate way for them to improve their general economic situation.

The potential energy conservation that is at stake here is quite significant. As concerns regulated energy, and as was seen in the previous chapter, the creation of a Régie de l’énergie will provide a very important tool which can be used to remove one of the obstacles to consumer investments. The Régie will be able to ask Hydro-Québec and the gas distributors to offer rate schedules to consumers that provide the latter with financing for investments in energy conservation, based on the savings obtained on their energy bill. This is an innovative initiative that will confirm the responsibility taken on by energy distributors in promoting and implementing energy conservation.

However, it is important to go even further by fostering voluntary action on the part of all energy consumers, whatever the form of energy used. As far as the government is concerned, it is not a question of modifying the signals sent out by the market, but rather of coordinating and encouraging initiatives designed for better energy use, of setting up associations and cooperative efforts with different intervenors, of imagining the best approaches for reaching the desired goals, or even, in certain cases, of using legislative or regulatory means to put an end to dysfunctional situations. These different mandates will be entrusted by the government to the Agence de l’efficacité énergétique, whose essential mission will be to stimulate the development of potential energy conservation.

The Agence de l’efficacité énergétique will be provided with the means necessary to fulfill the role entrusted to it. Its fields of activity will be discussed further on, as well as its method of functioning and its financing. It is important to emphasize at this time that by setting up this agency, the government is clearly indicating the importance that it attaches to efforts

made to exploit the energy-conservation potential that is profitable for consumers¹².

Energy Conservation That Is Profitable for the Whole Society

Finally, there is one last category of energy-conservation measures corresponding to situations where the profitability of energy efficiency appears only in relation to the whole society. These are measures that cannot pay for themselves on the market, because the prices do not include all the costs resulting from poor use of energy. The transportation of people and merchandise, land-use planning and the exploitation of “passive solar energy” provide characteristic examples of this type of situation. As concerns transportation, the energy consumed is almost exclusively fossil fuels, and is thereby responsible for a very large part of the greenhouse-gas emissions in Québec. In the case of land-use planning, the type of suburban development that we have been choosing has been carried out without effectively considering the impact that it would have on energy consumption¹³.

The government is conscious of the extent of the energy-saving potential that it would be theoretically possible to pursue, if external energy factors were systematically taken into account and passed on to consumers. These are complex problems, where energy is not the only factor in question, and where there is not as much actual leeway as one might wish. Nevertheless, efforts must be made in these cases as well, in order to improve our use of energy.

As part of the new energy policy, the Agence de l'efficacité énergétique will have the mandate to undertake coordinated actions with the different ministries involved — in particular, Transports, Environnement et Faune, Affaires municipales, Finance, and Industrie, Commerce, Science et Technologies, — in order to find overall solutions for the problems identified. These initiatives will be integrated into an interministerial action plan for the optimization of energy consumption. Moreover, the Government of Québec has committed itself to integrating the energy dimension into future sector-based policies drawn up by certain ministries. This particularly refers to the future transportation policy, which is presently being developed. In this respect, the Agence should offer valuable support to ministries in their dealings with these problems.

An Interministerial Action Plan

Energy consumption in transportation is the result of a complex set of factors and decisions. These factors and decisions affect the evolution of Québec's various regions, the industrial structure, transportation methods, user behaviour, types of equipment, land-use development and the location for residence, work, leisure and various other activities.

The forecasts of the ministère des Ressources naturelles indicate that the transportation of people and goods will be responsible for close to 30% of the new energy demand. Fossil fuels provide almost all the energy consumed for transportation and are responsible for a large part of the atmospheric pollution, including greenhouse gases, nitrous-oxide emissions and fossil-fuel vapour, which are the main causes of urban smog.

Several institutions and ministries must contribute to the optimization of energy consumption in transportation. This involves, in particular, questions about land-use development, which has a large influence on transportation needs and which is the responsibility of the Ministère des Affaires municipales. The ministère des Transports likewise has a major role to play concerning the availability of different transportation methods and the planning of the road network. Various regulation measures dealing with safety and environmental protection also affect energy consumption. Finally the development of alternative fuels that pollute less affect both industrial and environmental policies.

It is thus necessary in this field to begin a genuine coordination of the ministries involved as part of the interministerial action plan for the optimization of energy consumption. This action plan will complete the new energy policy and the future transportation policy. Its development will involve the ministère des Ressources naturelles, ministère des Transports, ministère de l'Environnement et de la Faune, ministère des Affaires municipales, and ministère de l'Industrie, du Commerce, de la Science et des Technologies.

The Creation of an Agence de l'efficacité énergétique

The setting up of an Agence de l'efficacité énergétique is thus a major element in the new energy policy, demonstrating the importance placed by the government on promoting and implementing energy conservation. So that it will begin operations soon, the Agence will be created out of the current Direction de l'efficacité énergétique of the ministère des Ressources naturelles. The Agence de l'efficacité énergétique will be a government administrative branch, under the supervision of the ministère des Ressources naturelles, and assisted by an advisory committee made up of representatives of the main intervenors in the field, including energy suppliers, consumers and regions. The government does not exclude the possibility of extending the judicial personality of the Agence by making it more independent. Moreover, it will have ample autonomous financial means at its disposal, which will be discussed further on.

By creating the Agence de l'efficacité énergétique, Québec is providing itself with a neutral, credible agency whose

¹². In so doing, it follows up on one of the main recommendations arising from the public debate on energy. *For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy*, op cit, pp 50 ff.

¹³. The Consultation Panel insisted upon this very fact. See *For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy*, op cit, pp. 98 ff.

mission will be to see to the promotion of energy efficiency for all types of energy, in all sectors of activity, and for the benefit of all regions of Québec. The Agence is thus being given an overall mandate to put into practice the government's commitments in terms of energy conservation. It will act as a funnel for everything having to do with energy efficiency within the government administration.

The final objective entrusted to the Agence is to make sure that Québec becomes an "energy-efficient society". This objective can be attained if the potential for energy conservation is fully exploited. The Agence will put great effort into achieving this goal. The initiatives thus undertaken by the government should, with the involvement of energy suppliers and the support of the Régie de l'énergie, soon bear fruit.

The Mandates Entrusted to the Agence de l'efficacité énergétique

The main mandates taken on by the Agence de l'efficacité énergétique will be as follows:

- **Establishing recognized and credible expertise**

The Agence de l'efficacité énergétique will develop and deepen its knowledge of energy efficiency, in order to become the recognized and competent institution in this area, thus giving Quebecers access to unbiased and credible expertise. In concrete terms, the Agence de l'efficacité énergétique will monitor developments in markets and technology, analyse financing mechanisms, evaluate the profitability of measures, and construct performance indicators. On a more general level, this mandate presupposes that the Agence will play the role of expert and consultant for public authorities, companies and consumers.

- **Support for the Régie de l'énergie with respect to energy efficiency**

The Agence de l'efficacité énergétique will place its competence and expertise at the disposal of the Régie de l'énergie, not only during the analyses carried out by the latter but also within the framework of public hearings. As was seen in the preceding chapter, in analysing resource plans and determining the rate schedule, the Régie must pay particular attention to the possibilities offered by energy conservation. The Agence de l'efficacité énergétique will provide valuable support for this task. The Agence could contribute to the evaluation of energy conservation potential, the analysis of proposals coming from energy suppliers, the assessment of results, and follow-up studies of initiatives.

- **Disseminating information and increasing the awareness of different client groups**

In general, gaps exist between available information and consumer awareness of the benefits of energy efficiency. These gaps were emphatically underlined during the public

energy debate. The Agence will have a specific mandate to monitor information, build an energy-efficiency information base, and oversee its dissemination among different clientele. Thus, one of the first things the Agence should do is to equip itself with an integrated information system concerning energy efficiency, covering technology monitoring, analysis and dissemination, and calling upon advanced technologies.

- **Coordination of training and education**

The Agence has an important role to play in responding to training needs in energy efficiency and making people aware of the value of this new activity sector. The Agence must therefore contribute to the drawing-up of information conveyed in training and educational activities. This refers to the preparation of pedagogical documents, the design of information kits, the financing of theses, the awarding of scholarships and the training of instructors.

However, the Agence de l'efficacité énergétique must also increase the awareness of the various people involved in training and education concerning the new outlets created by energy-conservation endeavours. For the Agence, this involves informing companies of the business opportunities offered by energy efficiency. The Agence must also inform associations and professional corporations of the potential for job creation that energy efficiency represents for their members.

- **Support for research and development in energy-efficiency technologies**

As is the case for education and information, the government has an important role to play in research and development as well as in increasing the awareness of new techniques. At present, the ministère des Ressources naturelles administers the energy-productivity programme, which is essentially centred on technological demonstration activities. This programme will be entrusted to the Agence, which will have to adapt it in order to integrate energy-efficiency research and development, to increase available resources and to channel support to the most promising technologies.

- **Identification of appropriate legislative and regulatory measures**

The government has exclusive responsibility for the normative and regulatory framework. This represents an extremely powerful means of intervention for the State, which can make sure that certain objectives are attained. However, it is important to avoid imposing cumbersome rules on economic agents. Above all, the use of this tool must be accompanied by permanent discussions with those directly concerned.

This perspective will guide the Agence de l'efficacité énergétique as it continues to revise standards having to do with the

energy performance of appliances and the regulations concerning the thermal envelope of new buildings. As part of its mandate, the Agence could also propose the legislative and regulatory modifications that it considers indispensable to attaining energy-conservation objectives. The Agence could thus propose recommendations concerning “solar rights”.¹⁴

- **Designing specific programmes**

The government wishes to entrust the Agence with the responsibility for designing and putting into practice a certain number of programmes aimed at particular client groups. The promotion of energy conservation through programmes must be considered as a means of intervention to be used only as a last resort: the approach preferred by the government aims above all at stimulating the implementation and financing of energy conservation by those who have an interest in doing so due to their direct benefit from it.

Nevertheless, there are cases where direct public assistance is necessary. The situation of low-income consumers is one example. The Agence will thus have the mandate to draw up and suggest programmes aimed at meeting this type of need. Initiatives in this direction are already ongoing, with the creation of development assistance for community-based energy-conservation programmes.

A Plan of Action That Will Soon Be Operational

Created out of the current Direction de l'efficacité énergétique, a branch of the ministère des Ressources naturelles, the Agence de l'efficacité énergétique will, in a very short time, be able to begin carrying out a structured action plan established as part of the mandates entrusted to it. The main lines of actions taken by the Agence will issue directly from these mandates. Precise initiatives concerning information and consciousness-raising, education, training, standards, regulations and support for research and development in energy efficiency have already been identified. Sector-based actions that have an integrated impact on residential, industrial, institutional and commercial markets, as well as on the transportation sector, are being drawn up or are about to be initiated. Several of these initiatives can already be announced.

- PRIME, the residential programme for initiatives and investments in energy efficiency, is already in its experimental phase. The objective of this programme, with which numerous partners are associated, is to encourage private individuals to invest in energy efficiency in the residential sector. This will be accomplished by relying on market forces and allowing the market to take charge of the programme. PRIME, which is directed at the renovation sector, focuses on thermal envelopes, air-conditioning, ventilation and heating systems, as well as household appliances. The programme will offer free, objective and reliable information on profitable investments in energy conservation that the

residential consumer can put into practice. The programme will also offer advantageous financial products and services, a qualified workforce, a guarantee for the work carried out, as well as a procedure for acknowledging investments.

- In the industrial sector, the Agence will very quickly set up an energy-efficiency awareness programme, by means of which companies can find out about the most efficient energy sources, plan their management, correct their performance, train their personnel and have access to comparative data bases.

Within the scope of this programme, the Agence will produce and disseminate adapted information material. A data base, accessible via Internet, will, in particular, provide consumption statistics classified by industrial sub-sector. Guides for setting up energy-management programmes will be designed and disseminated. Finally, computer software will be proposed that will make it possible to carry out energy diagnoses and to analyse the profitability of the contemplated measures. Most of these measures will be geared towards small and medium-sized businesses.

At the same time, certain endeavours have already been undertaken concerning industries with high energy-conservation potential, such as pulp and paper, metallurgy and the mining sector. These endeavours deal primarily with energy management, support for technology development and personnel training.

- The Agence will undertake to design and coordinate an energy-performance improvement programme destined for the Québec institutional sector. This programme will consist of two main phases: first of all, it will endeavour to eliminate constraints linked to existing administrative and budgetary instructions. This phase will also allow the client groups involved to become aware of the objective of the programme, as well as to define the intervention conditions of the partners involved, including most notably the private sector, with the participation of engineering-consulting firms and energy-service companies.

During the second phase, the measures themselves will be implemented. This stage will include interventions in the energy management of buildings and systems, project-financing mechanisms, investment monitoring and result evaluation. The Agence will have a very important role to play, since it will provide the different intervenors with expertise and necessary advice. It will take part in the accreditation of companies, as well as in public invitations to tender. Finally, it will be closely associated with the evaluation of results and the monitoring of interventions.

- In the transportation sector, the Agence will continue the initiatives undertaken by the government administration to optimize the energy performance of the truck, bus and school bus fleets. The Agence will support the trucking

¹⁴. For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy, op cit, pp 99-100.

industry in the establishment of a new formula for paying drivers that includes energy efficiency among the evaluation criteria. Initiatives to improve the energy efficiency of vehicles used in the public and parapublic sectors are planned. Among measures that are being or will be tested, there is, in particular, the conversion of vehicles to natural gas or propane, the consideration of energy-efficiency criteria in purchases, and the stricter management of the motor-vehicle fleet. Moreover, the ministère des Transports will ensure that the orientations of the energy policy are respected in the formulation of the transportation policy as well as in the preparation process of regional transportation plans.

- The standards and regulations concerning the energy performance of energy-consuming appliances will be updated and completed. Thus, there are plans to revise the minimum requirements for most of the categories of already-regulated appliances and to add provisions concerning certain new appliances.
- The Agence de l'efficacité énergétique will take the necessary measures to ensure a stricter application of the regulations concerning the new-housing market. It is possible that cities and municipalities could be called upon to require a certificate of conformity to these regulations, or else to oblige the seller to produce the certificate in the notarized act. It is essential that such a measure be accompanied by a campaign to inform the main intervenors and to make them aware of the reasons and methods of application. The adoption of certain provisions in the new energy code is also being considered for new buildings, particularly those referring to energy performance, the introduction of the concept of a useful life cycle and the use of high-performance computer tools.

Autonomous and Adequate Financing

In order to carry out the mandates entrusted to it, the Agence de l'efficacité énergétique must have adequate financing at its disposal. This will allow it to guarantee the coherence of its actions, while at the same time respecting the constraints imposed on public and private finances within the current economic context. With this end in mind, the future Agence de l'efficacité énergétique will be financed through a non-bypassable fee which will be included in the fee collected by the Régie de l'énergie in order to finance its activities¹⁵.

The principle of a fee seems to be the solution to adopt: it makes it possible to establish a close link between the payment of this fee and the services performed. Moreover, the Régie de l'énergie fee will be collected from all consumers. The customer base for this fee therefore corresponds, in all fairness, to the collection base that should be used to finance the Agence de l'efficacité énergétique.

The government will thus propose, by way of legislation, the creation of an Agence de l'efficacité énergétique possessing

the characteristics previously described. In order to finance this Agence, an additional component will be added to the fee collected by the Régie de l'énergie. Strict budget rules will be set down in law. The fee will be set annually, according to the needs of the Agence. The Agence de l'efficacité énergétique will not be allowed to incur deficits. Any surpluses will be carried over to the budget of the following year and deducted from the corresponding fee. The budgetary projections of the Agence de l'efficacité énergétique will have to be approved by the Minister of State for Natural Resources, then examined in the National Assembly. The law could, moreover, provide for a collection ceiling in order to avoid any unexpected increase.

These rules are directly inspired by the way the fee collected by the Régie de l'énergie is defined. According to this mechanism, there will be a direct link between the Agence's activities and its cost for consumers, and the government will abstain from using this fee to meet the overall needs of the State. Moreover, the size of the revenue base for this fee will make it almost painless for the consumer. For example, an overall budget of 5 million dollars for the Agence, which corresponds fairly well to the reality of the announced action plan, would be financed by a fee that would not be greater than 0.03% of total energy expenditures. This system will therefore provide the Agence with the financing needed for its activities, while at the same time minimizing the cost for those who will benefit from it.

It must be emphasized that the Agence de l'efficacité énergétique will represent a significant economic-development lever, whose financial benefits, for public funds and the society, will far surpass the sums invested. It is important, moreover, that the financing of the Agence not affect the profits of Hydro-Québec.

Alliances That Should Be Reinforced

The approach adopted by the government in order to promote energy efficiency will rely on the major energy intervenors, that is, energy suppliers, the Régie de l'énergie and the Agence de l'efficacité énergétique. Energy suppliers will be responsible for implementing energy conservation that is profitable for them. In the case of Hydro-Québec and the gas distributors, the Régie de l'énergie will see to it that the investments needed for this purpose are approved. The Régie will also be able to ask Hydro-Québec and the gas distributors to set up a rate schedule that facilitates the financing by consumers of the energy-conservation investments that would be advantageous to them. Created specifically in order to ensure that the potential for energy conservation is fully exploited, the Agence de l'efficacité énergétique will

¹⁵. For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy, op cit, p 54.

facilitate rational decision-making, work to correct market dysfunction and provide the support and expertise that are indispensable to the efforts that consumers will be asked to make.

These major actors will have to set up and reinforce close alliances among themselves. The promotion of energy efficiency implies, moreover, the involvement of a considerable number of intervenors, whose action must be coordinated and harmonized by means of solid cooperative networks.

The Coordination of Government Action

Attaining the objectives adopted in the area of energy conservation thus requires a very high degree of harmonizing and coordinating with the main government organizations involved. A great many administrative bodies will have an important role to play in carrying out and monitoring the adopted measures. Besides the ministère des Ressources naturelles, we must mention the Conseil du Trésor, the ministère des Finances, ministère des Transports, ministère de l'Environnement et de la Faune, ministère des Affaires municipales, ministère de l'Industrie, du Commerce, de la Science et de la Technologie, as well as the Régie du Bâtiment, the Société de l'Assurance automobile and the Société d'habitation du Québec. Collaboration among the ministries involved will be facilitated by the previously mentioned interministerial action plan to optimize energy consumption. The setting up of the Agence de l'efficacité énergétique as a central outlet for everything related to energy conservation should make this coordination possible, while at the same time greatly promoting links between the administrative bodies and client groups.

It is moreover essential that the federal government be well informed about Québec's energy-efficiency needs, and certain endeavours will be devoted to this end. The federal government regulates the international and interprovincial trade in energy-consuming appliances and equipment. Furthermore, using its spending power, it devotes considerable resources to the promotion of energy efficiency, particularly in transportation and in research and development.

The Association québécoise pour la maîtrise de l'énergie

The Association québécoise pour la maîtrise de l'énergie (AQME or Québec Association for Energy Expertise) occupies an extremely important position in matters of energy efficiency. It gathers together simultaneously the suppliers

and the main users of energy, the companies that offer goods and professional services in the sector and all those who have taken on the mission of contributing to the promotion of energy control and to the optimal use and exploitation of resources, while at the same time respecting the environment.

The AQME and the Agence de l'efficacité énergétique must provide each other with mutual support, and play complementary roles. The AQME, by virtue of its vocation and its membership, seems particularly well-placed to stimulate and favour the development of the energy-efficiency industry. It could provide precious support in the promotion of Québec expertise in energy conservation on foreign markets. Moreover, because of its firm entrenchment in the greater Montreal region, it would seem logical that the AQME play a more prominent role in the business sector and emphasize the efficiency of the motor-vehicle fleet.

The government attaches a great deal of importance to efforts to increase awareness of energy conservation coming directly from the sectors concerned, such as those in which the AQME has taken the initiative. On a more general level, the cooperation established with professional and trade associations, educational institutions, non-profit organizations, citizens' groups and regional entities must be strengthened and increased. This is one of the keys to success as far as energy efficiency is concerned, and the future Agence will devote part of its effort to this cooperation.

Cooperation Established with France and French-Speaking Countries

Finally it is important to emphasize that on the international level, the government administration has privileged ties with the French agency responsible for energy conservation, the Ademe¹⁶, as well as with the Institut de l'énergie des pays ayant en commun l'usage du français, the IEPF, whose headquarters are located in Québec City. The government hopes that the Agence de l'efficacité énergétique will continue and intensify the cooperation that has thus been established.

As for relations with the Ademe, the agreements concerning areas such as information technologies in energy efficiency, regionalisation and the development of renewable energy seem to be mutually advantageous. As concerns the IEPF, Québec is able, thanks to this Institute, to promote the exporting of Québec expertise in energy efficiency. Particular emphasis is placed on technological transfer and support for developing countries. The government is eager to confirm the importance that it attaches to these orientations.

¹⁶. Agence française de l'Environnement et de la Maîtrise de l'Énergie.



Electricity Production: Choice of Energy Forms

Québec has risen to an enviable position in the electricity sector, a field in which great challenges are anticipated over the next few years. Through its new energy policy, the government is establishing orientations and defining adequate means of protecting Québec's interests in this area.

Québec, A Leading Producer of Electricity

Surpassed only by the United States and Brazil, Québec is currently the third largest producer of hydroelectricity in the world, ahead of Russia, China, Norway, and all the other Canadian provinces put together. La Grande, the world's largest hydro-electric complex, by itself supplies Québec with over 15,000 MW of power, equivalent to the amount generated by all of Belgium or Switzerland. An abundance of electricity has led industries dependent on large quantities of energy to invest in Québec. Consequently, Québec produces 10% of the world's aluminum, which ranks it third in this sector behind the United States and Russia.

A Unique Expertise Cultivated Through Dynamic Markets

Electricity production in Québec is based almost entirely on hydroelectricity. At the present time, hydroelectricity is the source of 97% of the electricity available on the Québec grid. Among developed countries that produce significant amounts of electricity, Québec is second only to Norway in this respect. The large-scale exploitation and development of hydraulic resources has created and cultivated a unique expertise in Québec, within Hydro-Québec and all the companies involved in this development. Hydroelectricity has prompted the growth of a major industrial sector, including equipment manufacturers, who are large consumers, engineering-consulting firms and a considerable number of subcontractors.

The development of hydroelectricity in Québec was made possible due to the existence of abundant resources that could be exploited under favourable conditions. To be economically feasible, however, this development had to be supported by dynamic markets whose needs justified the investments. Québec's electricity production soared rapidly in response to the basic needs of its energy consumers, the requirements of the industrial sector and, to a lesser extent, those of export markets. Over the past 20 years, the basic needs of Quebecers in the residential and business sectors have more than doubled, and industrial needs have increased by 73%. This translates into an additional demand for electricity in the 80-TWh range.

A Greatly Changed Context

As was noted above in conjunction with energy-policy objectives, the context which has allowed growth in the Québec hydro-electric sector has undergone major changes. It is expected that the increase in the internal demand for energy will not be as high over the next 15 years as in the past, at least in terms of consumers from the residential and business sectors. In fact, Québec has a surplus of power, a situation which is likely to continue up to the next decade.

On the supply side, the construction of large-scale hydro-electric developments has sparked various types of disputes, making it more difficult to get new projects off the ground. Above all, large-scale developments are less adaptable to current market needs. They require long-term planning and are dependent on a high level of consumption. However, today's markets are increasingly partial to profitable short-term investments, which go hand-in-hand with lower financial risk.

It is important to add that the cost of electricity generated by large-scale developments is not as competitive as it once was. While this cost remains low, it is nonetheless on the rise in Québec. Currently the marginal cost of electricity generated by a development of over 100 MW has been estimated

by Hydro-Québec at 4.4 cents per kWh¹⁷. This represents an increase of almost 30%, in comparison with the cost of electricity produced by the latest units of La Grande. According to estimates carried out by the state enterprise, costs related to large power stations are likely to continue rising due to the characteristics of the hydro-electric potential that still remains to be developed. However, Hydro-Québec continues to make every effort to maintain the cost-effective advantages of hydroelectricity.

The increase in production costs associated with future developments is more of a concern than ever given that North America is currently experiencing a marked drop in electricity production costs. The existence of a considerable surplus of power and energy in neighbouring grids, the decline in the price of natural gas, as well as its increased availability as a fundamental source of electricity, have lowered electricity-production costs, the effects of which have been maximized by the deregulation of and increase in competition. In British Columbia, it is currently possible to produce electricity from a natural-gas cogeneration plant for 3.7 cents per kWh, that is, 16% less than Québec's marginal production cost. Consequently, Québec's competitive economic advantage, which resulted from its low electricity costs, is not as significant as in the past, especially in industrial and commercial sectors.

Clear Objectives, Assets to be Exploited

For the Government of Québec, the objectives are clear:

- The comparative advantage of the Québec economy with respect to electricity costs must be reestablished, consolidated and strengthened.
- New openings must be created for the Québec electricity sector. It is essential that the electricity sector be able to continue developing in a manner that is both efficient and profitable. The interests of all Quebecers are at stake since this sector of activities offers important assets which are not to be wasted.

• Resources

Without a doubt, hydroelectricity continues to be one of the energy sector's assets. Untapped resources are in abundance. The total potential that theoretically could be developed in Québec from power stations of over 100 MW is almost 40,000 MW, more than the current generating capacity. This potential does not include power stations of under 100 MW, whose overall potential is estimated to be 10,000 MW.

With regard to hydraulic resources, Québec currently has a great amount of leeway. Above all, it can put its solid, world-renowned expertise into action. By discovering new and innovative ways of exploiting hydro-electric potential, the government is convinced that it can sharpen Québec's

competitive edge and even reverse the trends observed in cost curves.

However, Québec also has access to other sources of electricity production which, up to now, were used either minimally or not at all. Among renewable energy forms, wind energy is one of the most promising. Available technologies are rapidly improving and within Québec's territory lies one of the greatest exploitation potentials in North America. There are also numerous applications for cogeneration, the simultaneous production of steam and electricity, whether it be through forest biomass, urban biomass or natural gas.

In terms of supply, Québec has only partially explored the existing possibilities for lowering its production costs, addressing new market needs and adapting quickly to fluctuations in both demand and, at times, development opportunities. The new energy policy is designed to take better advantage of this situation. It will foster projects that are related to the establishment of high-value-added industries.

This will be achieved by working together with the native peoples in the implementation of strategies and by systematically involving the regions in future decisions. Native peoples, like the regions, must be able to benefit directly from the optimized use of Québec's energy resources. Naturally, the government's objective in this regard concerns, first and foremost, the electricity sector.

• Markets

Québec's assets are also expressed in terms of markets. As demonstrated in the previous chapter, the efforts made to conserve energy will have an impact specifically on the electricity sector, especially for residential users. Key issues here include being more efficient, creating additional leeway, and reducing demand where this is advantageous. Heightened needs are also anticipated in conjunction with this energy conservation, to a large extent related to industry and manufacturing. The ministère des Ressources naturelles estimates that these needs will reach nearly 50 TWh over the next 15 years, which corresponds to a generating capacity of between 7,000 and 10,000 MW depending on electric-power use. These requirements will be partially covered by current power surpluses, but this still means that there will be significant development opportunities for a number of electricity-generating energy forms.

Turning to foreign markets, Québec's interconnections of close to 7,500 MW provide it with easy access to neighbouring grids. Despite the climb in marginal production costs, the average cost of electricity produced in Québec remains one of the lowest in North America, putting us in a very good position to sell electricity on these markets or to promote its transformation within Québec companies. Here also, there are a number of development possibilities worth examining.

¹⁷. Cost of Eastmain 1, after delivery to large consumption centres.

Finally, it is important to stress that tremendous hydro-electric development needs exist in many parts of the world and must be addressed during the next few years. Québec's expertise in the field and the technologies it has refined should contribute to satisfying these needs. Despite its expertise, the Québec electricity industry does not occupy the place it deserves in the markets. Extremely interesting market opportunities await us, provided appropriate strategies can be implemented.

A New Approach to Choosing Energy Forms

The first phase of the government's strategy consists in taking a new approach to choosing energy forms. There must be greater flexibility when implementing the various ways of meeting electricity demand. The new energy context imposes it and the interests of Québec dictate it. Increased flexibility is inherent in the resource portfolio concept.

The Resource-Portfolio Concept

This concept grew out of a concern to diversify the energy forms on which we depend so that the proposed solutions can be adapted to the expressed needs, under the best possible conditions. More specifically, the resource-portfolio concept consists in ensuring that Québec uses a variety of resources that can be adapted to adequately respond to consumers' needs.

In defining a resource portfolio, a number of concerns are being addressed. Definitive assessments of the future are being avoided, as are the resulting irreversible actions that entail heavy environmental and financial consequences. The specific advantages of the different energy forms available are being fully exploited, particularly by focusing on their complementarity. It is important to be able to judge whether the various foreseeable needs are likely to arise. This will enable resource choices to be matched with demand probability.

Overall, and in light of an uncertain future, special attention is being paid to forecasts concerning financial risk posed by major long-term investments. Integrated resource-planning methods are being used to evaluate the different foreseeable resource portfolios under consideration. Such methods make it possible to systematically analyse the implications of the choices in question.

A Profound Change

For Québec, applying the resource-portfolio concept to the choice of energy forms represents a very real and profound change in comparison with the strategy used up till now, based on least-cost and lowest-environmental-impact planning.

Large-scale hydro-electric developments will no longer be given absolute priority without considering the type of demand or the level of certainty associated with them. The process that the government is implementing may lead to restricting large-scale hydro-electric developments to satisfying the needs of a low-case scenario. In this way, such projects would be used only in response to anticipated energy demands with a sufficient likelihood of materializing.

To meet the additional needs which an average scenario would entail, energy efficiency measures, small and medium-sized hydro-electric plants and new energy forms would be required. For this type of scenario, where there is a greater uncertainty about forecasts, it would seem far more logical to opt for alternative solutions. These types of solutions are generally characterized by a smaller scale, shorter implementation period, decreasing costs for new energy forms and rapid technological development. By taking advantage of these characteristics, we reduce the risks inherent in any investment decision.

Characterization of Energy Forms

The government intends to implement the new approach toward choosing energy forms quickly. The Régie de l'énergie will be called upon to hold public hearings on the characterization of energy forms. The purpose of these hearings will be to define the comparison criteria for the energy forms and establish the weight to be given to each criterion. In the recommendations it submits to the government once the hearings have ended, the Régie de l'énergie must take into account the objectives and concerns of the energy policy, and the government's priorities in this respect.

Based on these recommendations, the government will define the final criteria to be used in the study of Hydro-Québec's resource plan. Hydro-Québec will define the resource plan, which will be submitted for the Régie's approval, by applying the integrated-resource-planning method and, above all, integrating environmental, economic and social externalities. The criteria previously defined by the government, as proposed by the Régie de l'énergie, will provide the necessary framework and also ensure rigour and transparency. The Régie's mandate will therefore consist in ensuring that the resource plan submitted by the state enterprise fully respects the interests of consumers, in light of the context established by the initial process of energy-form characterization.

The way in which integrated resource planning will be implemented could change greatly, depending on initiatives taken in electricity deregulation. As was previously mentioned, the Régie must ensure, in its analysis of this situation, that the form of deregulation chosen does not call into question the implementation of integrated resource planning in Québec. The solutions found by regulatory boards in

North America could inspire the proposals put forward by the Régie de l'énergie.

The implementation by the government of a process for the characterization of energy forms and integrated resource planning will enable a new balance to be established between the decisions the government must make, the opinions expressed by the general public during the hearings and the flexibility that is essential to Hydro-Québec when it formulates development options¹⁸. Finally, it must be pointed out that energy-form characterization, should produce an analytical framework that can be used for a long period of time. This increased stability will also be beneficial to the energy forms chosen by Québec society.

River Classification

Putting its concepts of resource-portfolio and energy-form characterization into action are not the only initiatives being taken by the government. It is also taking up another major challenge, namely river classification. The regions will be entrusted with this responsibility as will the Amerindian nations concerned. The implementation of a river-classification process represents another positive response to a public consensus emerging from the public energy debate. It is founded on the Québec Biodiversity Strategy and Action Plan adopted in March, 1996 by the Québec government. By placing the main responsibility for this matter on the shoulders of the regions and by involving native peoples, the government is outwardly manifesting its desire to establish a new collaboration in the development of Québec's resources.

An Insistently Renewed Demand

The river classification issue cannot be disassociated from analyses concerning the choice of energy forms. In a place such as Québec, which has considerable hydraulic resources, the exploitation of such resources raises the question of which development option to choose for rivers. This poses a problem mainly for watercourses situated near populated areas or having exceptional heritage value.

The demand for river classification has skyrocketed over the past few years. The reasons for this are numerous and are part of the new context in which Québec's energy sector will develop. Potential land-use conflicts, such as hydro-electric exploitation versus other uses, are on the rise. Likewise, the protection of renewable resources has taken on greater importance. The regions have shown increased concern about the conditions surrounding the development of these resources. It is the combination of these reasons that has prompted the government to implement a process aimed at determining the different functions assigned to our rivers in an organized and systematic manner.

Québec has 106 hydro-electric power stations, located on 30 rivers. This means that out of a total of 525 rivers listed in studies on hydro-electric potential, just under 6% have been harnessed for hydro-electric production purposes. Approximately two-fifths of the economic potential that can be exploited, according to present classification criteria, concerns rivers already affected by hydro-electric development. Therefore, the problem lies not in the scarcity of the resource but rather in the need to establish a social consensus on watercourse development.

Characteristics of the Process

The government plan regarding river classification was formulated using a number of considerations:

- Rivers that have undergone previous development will be given priority in new hydro-electric projects.
- Ideally, river classification will promote versatility and compatibility of uses.
- Protecting rivers with significant heritage potential or exceptional features must be a priority of the process. In the hope of protecting exceptional sites, the ministère de l'Environnement et de la Faune announced its intention to establish a network of rivers with heritage value. This manner of proceeding will be harmonized with the more general river-classification approach.
- It is likewise important to designate, as early as possible, the rivers on which hydro-electric development will be authorized.
- The desired regional consensus will be determined geographically in accordance with drainage basins.
- The selected process must ensure that river classification is consistent for all regions. With respect to the allocation of resources, the government must see to it that the overall interests of Québec are taken into consideration, both at the economic and environmental levels. Moreover, the fundamental criteria governing the choice of rivers to be developed will also apply to all of Québec. This does not however exclude the possibility of applying specific criteria to certain regions.

The Various Steps of the Process

In principle, the river-classification process will be applied to all rivers with hydro-electric exploitation potential identified for this purpose by the regions. The classification method will be selected by the ministère des Ressources naturelles and the ministère de l'Environnement et de la Faune, subsequent to consultations with the other ministries involved, representatives of regional organizations, Hydro-Québec and the various intervenors interested in river allocation. A pilot project concerning the integrated development of rivers

¹⁸ The implementation by the government of a process for the characterization of energy forms and integrated resource planning is a positive response to the requests voiced during the public energy debate. See *For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy*, op cit, pp 67-70.

in the Lac-Saint-Jean area is currently underway. It is expected that the results of this project will be available by the time the classification method is ready to be formulated.

Once the process is initiated by the regions, they will have access to methodological and technical support provided by the government. The classification itself will be the responsibility of the regional development council in question, in close collaboration with MRC's (Municipal Regional Ridings) and with the participation of the Amerindian nations concerned, whose role will be defined according to the specific characteristics of the lands in question.

Establishing priorities will be a joint effort. They will be drawn up in accordance with a regional strategic plan, or in response to justified demands of interested promoters or those of organizations responsible for the development of a given hydraulic resource. It may take up to two years to determine priorities, depending on the drainage basins in question.

The regions will submit their proposals to the government, which will have the final say in the choice of river classification. It is understandable that the final decision in this matter be the government's since it is the acting public trustee of Québec's lands and hydraulic power.

Landscape Classification

Where relevant, and on a voluntary, regional basis, the possibility will be considered of classifying certain landscape units in order to rank these units according to their capacity to sustain the building of energy infrastructures – in terms of both production and transmission. This approach would apply, in particular, to regions with a high wind-energy potential, so as to identify the best possible sites¹⁹.

The Different Forms of Electricity Production

The process selected by the government to choose energy forms will allow the characteristics of each to be taken into account, and the potential of each to be fully exploited, thereby satisfying the needs of Quebecers. The energy policy provides the government with an opportunity to present a number of considerations and policy directions to the general public concerning the main types of energy forms.

Forms of Hydroelectricity

The importance of the role played by hydroelectricity in Québec's energy development has been strongly emphasized, and the priority given to large-scale projects, repeatedly underlined. A number of policy changes are essential.

Economically feasible development potential was traditionally determined in terms of nuclear energy. However, this is no longer realistic. Other energy forms, such as combined-cycle thermal power plants, are on the rise in North America and in fact constitute the true alternative to hydraulic energy. From now on, determining what is economically feasible with respect to hydraulic potential should be done on the basis of the costs associated with this alternative energy form. The results obtained will provide a more realistic picture of what will or will not be economically feasible.

Large-scale Developments

Hydro-electric energy, especially as produced by large-scale power projects, has significant advantages which are not to be underestimated. At the environmental level, they contribute to sustainable development due to their renewable properties and their minimal impact on atmospheric pollution. At the economic level, large-scale developments guarantee long-term stability in energy production costs, an important consideration given the magnitude of the investments involved. Moreover, hydroelectricity can be particularly well-integrated into Québec's industrial structure, thus producing a positive effect on economic development and job creation.

The government has postponed several hydro-electric mega-projects, including the development of the Great Whale River. This action was prompted by a reduction in demand, high construction costs, risks associated with an unexpected variation in electricity consumption and potential land-use conflicts. These projects, once downsized, segmented, and implemented according to another timetable, will still constitute the means of ensuring a minimal supply of electricity at an attractive price. The possibilities in this area should, therefore, be thoroughly explored.

Small and Medium-Sized Hydro-Electric Power Stations

Small and medium-sized hydro-electric power stations offer flexibility, which consequently facilitates plans to meet our energy needs in the face of fluctuating demands. These power stations are more easily adaptable to changing needs and can have minimal environmental repercussions. Above all, in comparison with mega-projects, they are less costly and therefore involve lower financial risk. As with their small and medium-sized counterparts, micro power stations of less than 1 MW can meet specific, exceptional needs.

It is important to remember that small and medium-sized power stations are particularly dependent on seasonal fluctuations in river flow, this being especially true for run-of-river power stations. This means that additional equipment must be on-hand to meet the peak load of winter and to counterbalance periods of low run-off. On an individual

¹⁹. A recommendation to this effect was put forward by the Consultation Panel. See *For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy*, op cit, pp 74-75.

FIGURE 6

The Main Drainage Basins in Québec



Sources: Hydro-Québec and the ministère des Ressources naturelles du Québec.

LEGEND OF THE MAIN DRAINAGE BASINS IN QUÉBEC

Name of the Basin

1	Port-Daniel	42	Petite Nation	83	Rochers
2	Grand et Petit Pabos	43	Lièvre	84	Marguerite
3	Grande Rivière et Malbaie	44	Gatineau	85	Moisie
4	Saint-Jean	45	Coulonge	86	Bouleau
5	York	46	Noire	87	Sheldrake
6	Dartmouth	47	Dumoine	88	Maggie
7	Madeleine	48	Lac Kipawa	89	Saint-Jean de Mingan
8	Mont-Louis	49	Outaouais	90	Mingan
9	Bonaventure	50	Lac Abitibi	91	Romaine
10	Sainte-Anne des Monts	51	Harricana	92	Piashti
11	Petite Cascapédia	52	Nottaway	93	Watshishou
12	Cap-Chat	53	Ashuapmushuan	94	Nabisipi
13	Grande Cascapédia	54	Saint-Maurice	95	Aguanus
14	Matane	55	Ouareau	96	Natashquan
15	Nouvelle Escuminac	56	Maskinongé	97	Musquaro
16	Matapédia	57	Loup	98	Olomane
17	Mitis	58	Batiscan	99	Petit et Gros Mécatina
18	Patapédia	59	Sainte-Anne de la Pérade	100	Saint-Augustin
19	Rimouski	60	Jacques-Cartier	101	Cokipi et Chécatica
20	Trois-Pistoles	61	Montmorency	102	Saint-Paul
21	Témiscouata	62	Sainte-Anne de Beaupré	103	Broadback
22	Saint-François	63	Gouffre	104	Rupert
23	Loup	64	Malbaie	105	Eastmain
24	Lac de l'Est	65	Noire	106	La Grande
25	Ouelle	66	Petit Saguenay	107	Grande Baleine
26	Noire	67	Mars	108	Petite Baleine
27	Sud	68	Kénogami	109	Lac Guillaume-Delisle
28	Saint-Jean	69	Métabetchouane	110	Mélèzes
29	Etchemin	70	Ouiatchouane	111	Caniapiscau
30	Chaudière	71	Mistassini	112	Baleine
31	Chêne	72	Péribonca	113	George
32	Bécancour	73	Shipshaw	114	Koroc
33	Nicolet	74	Sainte-Marguerite	115	Koksoak
34	Saint-François	75	Betsiamites	116	Feuilles
35	Yamaska	76	Escoumins	117	Innuksuac
36	Richelieu	77	Portneuf	118	Arnaud
37	Prairies	78	Sault aux Cochons	119	Povungnituk
38	Châteauguay	79	Outardes	120	Kovic
39	Lac des Deux Montagnes	80	Manicouagan	121	Déception
40	Nord	81	Godbout	122	Wakeham
41	Rouge	82	Pentecôte	123	Buet

basis, small and medium-sized power stations can have less of an impact on the land than large projects. Nonetheless, this impact is not to be taken lightly. Together, several medium-sized plants can have as many, or more, repercussions on the environment as a single large project producing the same amount of power. The government believes that the significance and extent of such repercussions can be noticeably limited if the focus is placed on developing projects situated on rivers that have already been harnessed.

In evaluating this energy form, the consequences linked to its development must be considered. During the past few years, the construction of small power stations has led to the appearance in Québec of an activity sector adapted to this type of investment, thus confirming and completing the expertise acquired in the area of large-scale hydro-electric developments. The government has placed a great deal of emphasis on maintaining these activities and encouraging their growth since they can create prosperity and employment, especially in the regions.

Thermal Energy Forms

Thermal energy forms bring with them a set of extremely diversified technologies, ranging from nuclear energy to the use of forest or urban biomass to produce electricity. The level of interest in these energy forms for Québec's energy sector varies significantly, depending on the energy form under consideration.

- **Nuclear energy**

Due to the presence of resources available on a short- and mid-term basis, Québec, like most industrialized countries, has no need to resort to nuclear energy. The deterrents to the development of nuclear energy are numerous. They include the public's scepticism and mistrust of this energy form, the absence of an adequate solution to the problem of managing irradiated fuel and the perception of potential risks associated with the exploitation of nuclear power stations. For the government, these observations make it improbable that new nuclear power stations will be built.

However, with respect to existing nuclear-power stations, these preceding points must not call into question the use of Gentilly 2. This power station, the only nuclear installation currently in use in Québec, must continue to function until it is of no further use. Gentilly 2 is superbly managed. Closing it would entail very serious economic consequences. Moreover, in the government's eyes, keeping this power station operational gives Québec the opportunity to safeguard, to some extent, its technological and industrial knowledge in this field. The concerns surrounding nuclear energy will be addressed again when policy directions concerning research and development in this area are discussed.

- **Coal-fired power stations**

As regards coal-fired power stations, it is difficult to imagine that Québec would have to resort to such alternatives in either the near or distant future. The exploitation of this type of power station has a profound environmental impact due to highly pollutant emissions containing airborne ash, toxic metals, sulphur and nitrogen oxide, and greenhouse gas. In addition, since Québec does not exploit coal, it has no particular interest in promoting technologies dependent on this resource for electricity production.

- **Use of natural gas**

Combined-cycle gas turbines and cogeneration facilities, both using natural gas and cogeneration with natural gas, will be analysed by the Régie de l'énergie when Hydro-Québec's resource plan is approved. At that time, the Régie will evaluate the respective advantages and disadvantages of both alternatives. The characterization of energy forms, to be completed prior to the Régie's analysis, is expected to shed a fair amount of light on this matter.

The government must carefully consider many elements during its analysis of this type of energy form. Satisfactory responses to environmental concerns must be provided. This is why, in any event, projects will be submitted to environmental authorization, even if they have been previously analysed in the process of energy-form examination and resource-portfolio compilation. Reference is being made here to the authorizations issued in virtue of the procedure for evaluation and examination of environmental impact contained in the *Environment Quality Act*. The intention of the government is to use cogeneration projects to reduce the pollutant load.

Moreover, with respect to natural-gas cogeneration, it is important to remember that this technology consists in the simultaneous production of electricity and usable thermal energy, the latter being used to meet industrial or heating needs. To be successful, a natural-gas-cogeneration project must have the support of promoters with sure markets so that the steam produced can be sold. The government sees this complementarity with industry as being a fundamental characteristic of cogeneration projects. In concrete terms, this means that it is imperative for the projects chosen to have a significant steam content. In the opposite case, these projects would be nothing more than masked forms of promoting gas-powered thermal power stations.

This being said, it is worth noting that the use of natural gas to produce electricity is increasing steadily in North America. Energy forms that use natural gas to produce electricity are being actively developed in North America. High-performance technologies are now available and the drop in gas prices makes them very attractive. These production methods are currently being implemented in the regions and

states bordering Québec. Interesting development possibilities also exist for Québec, despite the fact that the raw material would have to be imported. These possibilities are definitely worth exploring.

- **Urban and forest biomass**

The preceding remarks concerning the environmental effects and steam content of natural-gas-cogeneration units also apply to cogeneration power stations that use urban or forest biomass.

The use of urban biomass for energy purposes is not solely limited to cogeneration. What is more, the conversion of waste into energy, including the use of tires, further complicates the environmental problem. Adequate removal of ash and toxic materials produced by filtration procedures must be ensured. There is also a potential conflict between the conversion of waste into energy and programmes aimed at recovering and recycling this waste. This question arose during the public energy debate and will be dealt with in the future policy of the ministère de l'Environnement et de la Faune concerning the management of waste matter. The government expects that this issue will be tackled during the characterization of energy forms.

As concerns cogeneration power stations that use forest biomass, the potential in Québec is related to the availability of wood residue. This potential has already been tapped in part, but a number of projects can be carried out very quickly. Moreover, remaining potential is estimated at approximately 100 MW. The development of cogeneration based on forest biomass has encountered some difficulties. Not only has it been affected by economic constraints related to the availability of bark, but its environmental impact must be examined very carefully.

However, it should be noted that the forest is a renewable resource, and in many cases the cogeneration units that operate on forest biomass offer a solution to the problem of recycling forest waste. In economic terms, the installation of cogeneration units using forest biomass will both strengthen and increase the competitive edge of companies that belong to one of Québec's main sectors of activity.

Wind Energy

Since the early 1990's, the production of electricity through wind energy has experienced considerable growth in Europe and Asia. Not only has there been remarkable progress at the technological level but the cost of producing wind energy has seen a marked decrease. Even if in the short term it might appear more costly than other alternatives available in Québec, wind energy has reached a certain maturity, so to speak, which enables it to be integrated into Québec's resource portfolio.

Wind energy offers various types of advantages for Québec. A flexible technology, it is rapidly adaptable to the energy context. Its environmental impact is minimal. Wind energy may constitute an interesting addition to Hydro-Québec's facilities due to the concurrence observed between the seasonal distribution patterns of wind energy and electricity demand. Wind energy may also be stored in hydro-electric reservoirs. Québec has significant potential in this area. In the regions that have this potential, the promotion of this energy form is made easier by its widespread social acceptability²⁰.

The interest in wind energy is shared by the Government of Québec, which explains the different initiatives included in the new energy policy. These are as follows:

- The government will accelerate the completion of a technical-economic study programme aimed at acquiring a more precise and better understanding of the characteristics of Québec's energy potential, and will conduct preliminary demonstration projects.
- The government wants the Régie de l'énergie to authorize Hydro-Québec to include a set-aside for wind energy in its next resource plan²¹. The logic of such an approach, which has already been used in several states south of the border, is worth repeating. It consists in setting aside a block of energy for an energy form considered promising. Such a procedure targets the acceleration of the development of this promising energy form. A set-aside for wind energy will make it possible to improve production costs, to encourage the emergence of a suitable industrial context and to maximize research and development spin-offs.

Even if, in the short-term, the wind-energy production costs might seem higher than those of the available alternatives, it is time for Québec to showcase the current potential of this energy form. This initiative will open economic-development opportunities for the regions. Applying the set-aside system to wind energy represents an investment that the majority of Quebecers have agreed to make to hasten the development of an energy form in which they believe.

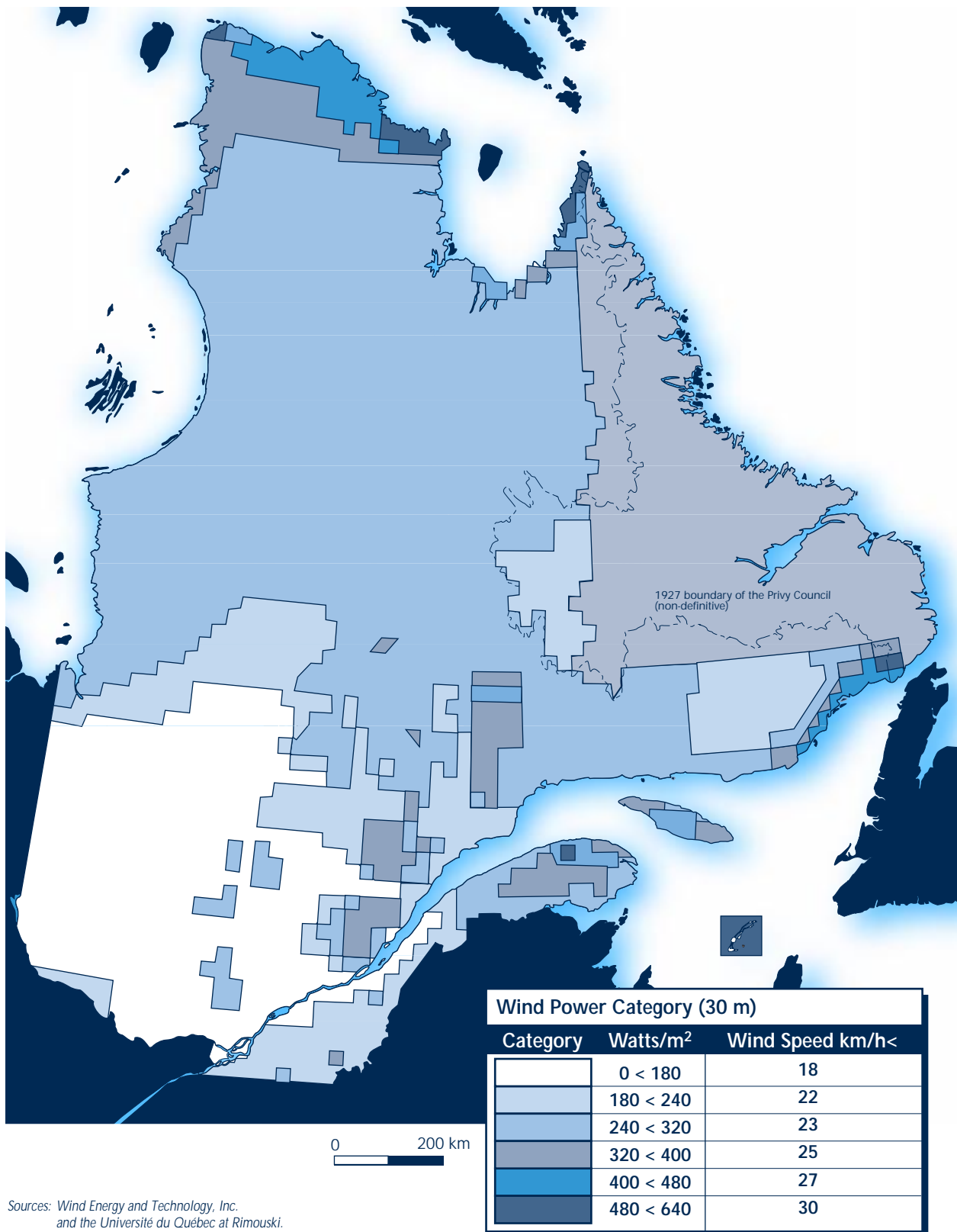
- Once the set-aside has been defined and authorized, the government will support Hydro-Québec in its launching of an appeal for partnership. The purpose of this appeal will be to urge a major intervenor in the wind-energy sector to invest in Québec and thus exploit the existing potential, while at the same time encouraging the creation and development of an equipment industry. According to government estimates, the set-aside implemented to promote wind energy should translate into a minimum purchase programme stretched over a six- to seven-year period, if the goals set in terms of industrial strategy and wind-energy distribution are to be achieved.

²⁰. The Public Energy Debate confirmed the interest shown in wind energy, particularly in regions with large potential.

²¹. The government is supporting one of the recommendations arising from the public energy debate. See *For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy*, op cit, p 74.

FIGURE 7

Location of the Areas in Québec with Significant Wind-Energy Potential



Sources: Wind Energy and Technology, Inc.
and the Université du Québec at Rimouski.

- The government wants Hydro-Québec to examine the possibility of offering consumers a green-pricing programme, applicable to wind energy, modelled after those implemented by a number of North American electric companies. These programmes involve inviting consumers to contribute to the development of environmentally friendly energy forms on a volunteer basis. To do this, interested consumers will simply authorize the electric company to add a set amount to their electricity bill. This type of approach constitutes both a means of allowing consumers to help speed up the fine-tuning of green energy, and of collecting funds for this purpose.
- It is probably too soon to pass legislation concerning wind energy. The exploitation of wind energy does, however, raise legal issues, whose implications will be evaluated by the administration²².

Solar Energy

Solar energy is at the very heart of our planet's energy potential. Photovoltaic techniques make it possible to use this type of energy directly without requiring the transformation of a fuel. A renewable energy form by definition, solar energy is probably the only long-term means of satisfying humanity's energy needs.

As a result of our present lack of knowledge and inadequate equipment in this area, however, photovoltaic energy represents a costly undertaking for Québec, one with limited applications in the foreseeable future. Even if it is difficult to imagine that photovoltaic energy could contribute to Québec's energy needs in the short- or mid-term, we must stay informed of the technological evolution in this area. The policy directions chosen by the government with respect to research and development will make this possible.

The immediate possibilities offered by passive solar energy are of a different nature altogether. In fact, passive solar energy constitutes a form of energy efficiency. Maximizing the solar fraction of the heating load through better adapted windows and building orientation often make it possible to considerably reduce the amount of energy required to heat air and water. Measures enabling the exploitation of passive solar energy will be strongly promoted in the government's energy-use strategy. It can therefore be expected that the different intervenors called upon to promote energy conservation – energy suppliers, the Régie de l'énergie and the Agence de l'efficacité énergétique – will focus special attention on the possibilities offered by passive solar energy.

²². In its report, the Consultation Panel indicated the absence of a legislative framework for wind energy, recommending that wind energy be considered as a public good. See *For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy*, op cit, p 74.



Increased Access to Electricity Markets

The restructuring of the North American electricity market constitutes one of the major changes confronting the Québec energy sector. At the same time, this change represents an exceptional opportunity for development that Québec must seize, as the efforts made up until now by Québec have made it possible to build a powerful, competitive electricity sector offering world-class performances. The goal of the new energy policy is for the Québec economy to take full advantage of this situation in opening up electricity markets, while infusing the sector with a new vitality, which can only benefit consumers as well as the whole society.

The Restructuring of the North American Electricity Market: A Challenge for Québec

The electricity industry is presently going through a period of profound change, one which is far from over. Begun in Great Britain, these changes now directly affect trade in electricity in the United States and Canada. They are inspired, above all, by a concern with liberalizing markets and fostering competition, in order to reduce the costs of electricity for the whole economy.

Profound Changes in Progress

The restructuring movement in the electricity industry began in Great Britain, where government decisions led to the organization of the sector being modified from top to bottom. The public utility, until then vertically integrated, was divided up and privatized in such a way as to create a competitive electricity market open to the operations of many regional producers and distributors. Increasing access to retail markets is, moreover, underway. Norway, a large producer of hydroelectricity, has also proceeded with the restructuring of its markets. This liberalization, which is now

in the process of spreading to all the countries of the European Economic Community, under the pressure of authorities in Brussels, is taking different forms in the various member countries.

In the United States, the process of restructuring electricity markets was launched in 1992 with the *Energy Policy Act*. It drew direct inspiration from the liberalization of gas markets, successfully carried out at the end of the 1980's. In April 1996, in order 888, the Federal Energy Regulatory Commission (FERC) defined the rules of free access to transmission grids for public service enterprises. Several states have already specified the timetables and guidelines for access to retail markets for certain categories of consumers. In this movement toward the liberalization of electricity markets, the states of the north-eastern United States play a leadership role. Moreover, Hydro-Québec is participating in a pilot project concerning open markets and transactions, an initiative of the State of New Hampshire.

In Canada, the situation is also evolving rapidly. Alberta has created an electricity power pool, namely a group of buyers, open on a competitive basis to all producers and suppliers within and outside the province, in order to respond to any additional need. In the same vein, British Columbia has just opened up its transmission grid, both for its domestic market and for exports. These two provinces have also joined regional associations of electricity transmission, covering the whole of western North America, with an eye to facilitating the integration of their markets.

Ontario has begun reviews which point in the same direction, presently examining how to follow up the report of the Consultative Committee on Competition within the Electricity Industry²³, published last spring. Decisions concerning the proposed reforms should be made by the Ontario government in 1997. Generally speaking, it is worth noting that contrary to other deregulations, the present liberalization of the electricity markets has adopted various forms, depending on individual situations.

²³. *Frame for Competition*, Report of the Consultative Committee on Competition within the Ontario Electricity Industry to the Ontario Minister of the Environment and Energy, May 1996.

Transformations Brought About By New Forms of Technology

The objective of the reforms is the same in every case: to reduce the price of electricity by placing suppliers in a situation of increased competition. The consumer, whether an individual or a firm, is thus at the heart of the restructuring process to which we are bearing witness. These transformations have, however, been accelerated and facilitated by a certain number of technological changes that have directly affected the electricity sector in recent years, profoundly modifying the planning conditions of the sector.

Over a number of years, the construction of large-scale electricity production units made low unit costs possible, while supplying the means of responding to sharply increasing demand. The massive investments that became necessary required long-term planning and the maintaining of monopolies, these alone being able to guarantee the markets and the revenue needed to complete the projects.

At the international level, the arrival of more flexible production forms, offering competitive costs and using smaller units, has made resorting to large power stations less advisable and has reduced the necessity for monopolies. Thanks to these new forms, the time allowed for planning and construction has been reduced significantly, the financial risks have been limited, and it is possible to adapt much more quickly to fluctuations in demand.

On a more general level, the very rapid progress which has been made in disseminating information also explains current movements. Data concerning the prices, needs and availability of production and transmission are currently at hand much more rapidly and in a more complete form. This information becomes a critical instrument in transactions. Its availability increases the pressure for a more competitive structuring of electricity markets.

A Special Situation

How does Québec fit into this radically changing context? Québec's situation has certain specific characteristics. Electricity production is ensured in Québec by large hydroelectric complexes; it is therefore difficult to break up supply sources to satisfy demands for true competition. The central management of these facilities provides considerable economy of scale, which would be called into question if production were broken up. Furthermore, operating costs represent only a fraction of production costs since there is a significant capital component to investments²⁴.

Above all, pressure to restructure the electricity sector developed within economies with high electricity costs and where ways of lowering the price of electricity had to be found. This is not the case in Québec: consumers benefit from electricity prices which remain among the lowest in North

America, even though this advantage has tended to decrease in recent years. The nationalization of electricity companies carried out at the beginning of the 1960's guaranteed reduced and uniform rates over the entire territory. To a large extent, therefore, Quebecers already benefit from a situation that the liberalization of markets is looking to reproduce in the United States by facilitating consumer access to the cheapest supply sources over a wider territory.

Assets to Promote

Even though Québec is in a special situation, one which makes the restructuring of markets less pertinent, there are numerous benefits to be drawn from modifying our ways of doing things. In the area of electricity rates, our comparative advantages over our competitors have decreased. Increased market access, defined in terms of our interests, probably represents the most effective incentive for reducing or reversing the growth of production costs and thus restoring the advantages upon which, to a large extent, our economy has been built.

At the same time, a greater liberalization of the electricity industry represents a tremendous opportunity to promote Québec's assets both in the United States and in the rest of Canada. One of the major effects of liberalization is market expansion. Until now, in the electricity sector, the markets of the Canadian provinces and the American states were relatively closed and cut off from one another. The structural changes now taking place involve increasingly frequent exchanges between markets, thus contributing to their progressive integration.

Logically, this movement toward integration should benefit, in the first place, low-cost electricity producers, such as Hydro-Québec, which offers the lowest prices in north-eastern United States. Hydro-Québec can also count on other assets: its large reservoirs allow it to benefit from a great flexibility in production management, which would be maximized with the liberalization of trade by taking full advantage of market opportunities at the right moment. Thanks to considerable interconnection facilities, Hydro-Québec has quick and easy access to markets characterized by electricity prices which are among the highest in North America. Finally, the profile of Québec's electricity demand complements that of the north-eastern United States where the greatest consumption takes place during summer.

Obviously, an increase in electricity sales on the American market, at an attractive price, would have a ripple effect on the entire economic activity of Québec, by permitting the construction of new facilities. This increase in sales would also have very positive consequences for the quality of the environment in the northeast, to the extent that hydroelectricity produced in Québec would replace electricity produced by thermal power stations using oil, coal or natural

²⁴. For an *Energy Efficient Québec — Report of the Consultation Panel of the Public Debate on Energy*, op cit, pp 19-20.

gas. The increased role played by Québec electricity in north-eastern North America thus brings about a reduction in the emission of atmospheric pollution which results, in the United States, from the production of electricity.

■ Private Production

The government has decided upon a first major initiative in its effort to take advantage of the restructuring of the North American market. More room will be given to the private sector and to competition for new investments in electricity production forms. To be more precise, the new energy policy involves three main initiatives in this regard:

- the government is extending the possibility for private producers to participate in the development of different forms of production, according to precise guidelines.
- In all cases, true competition must be established, based on the principle of generalized invitations to tender.
- Measures will be proposed to facilitate the participation of local and regional authorities, along with Amerindian nations, in the development of energy forms.

Greater Access for the Private Sector

Concerning the hydroelectric sector, the participation of private producers in the development of electricity-production forms will be broadened. The ministère des Ressources naturelles, which is responsible for managing hydraulic resources, will set up a management framework ensuring that hydroelectric sites are made available to the private sector. This will be done according to clearly defined rules guaranteeing equity and transparency and taking into consideration the conclusions of the Commission d'enquête sur la politique d'achat par Hydro-Québec, a committee investigating Hydro-Québec's policy on electricity purchases from private producers. These rules will be defined taking into account the river-classification process, which will be part of the management framework of the Ministry. When granting concessions, the Ministry will give preference to projects where the regions, Amerindians and local communities are directly involved. The management framework will also give priority to projects that are integrated into the local economy, comprising industrial, economic and tourism development.

These rules will apply exclusively to the private sector for sites of less than 50 MW, hence sites from which Hydro-Québec will be excluded, unless otherwise indicated by the management of the drainage basin. For hydraulic sites of over 50 MW, Hydro-Québec will have the exclusive authority to manage the corresponding projects. The Québec private sector could, however, be invited to carry out large-river

projects through a turnkey approach. Hydro-Québec would retain its prerogatives for management and ownership of large-scale works, in the areas of planning and development.

For energy forms other than hydroelectricity, the scope of private production projects will not be limited in advance. In the case of energy forms whose exploitation creates greenhouse gases, the call for private production will, nonetheless, be related to initiatives respecting the framework convention for climatic change of the United Nations. These initiatives will be discussed further on²⁵.

In all cases, the size of the projects will depend on the needs to be met. The contribution of private producers to domestic needs will be defined within the framework of the Hydro-Québec resource plan approved by the Régie de l'énergie. As we have already seen, this resource plan, established according to the resource-portfolio approach, will define the importance accorded to each of the forms used to meet electricity demand, including energy efficiency, for which private producers can likewise propose initiatives.

The involvement of the private sector in the development of Québec's hydroelectric resources is not a new phenomenon. Since 1987, Québec has been moving this way indirectly, with the adoption of an electricity purchasing policy. The first program was put in place in 1991 in order to provide a framework for the involvement of the private sector in small-river development. This program provided confirmation of how quickly the private sector was able to mobilize resources to invest in sites which were open to development. The orientation chosen by the Québec government in the new energy policy thus extends previous initiatives but modifies the rules and increases the possibilities for private-sector participation in future hydroelectric developments.

Establishing True Competition

This first initiative is accompanied by a second, equally important decision. Henceforth, wherever the private sector is able to intervene, the various projects drawn up by private producers will compete with one another through the means of invitations to tender. At the time of these invitations to tender, the Régie de l'énergie will ensure that there is full and fair competition.

The systematic introduction of an invitations-to-tender procedure significantly modifies the situation which has prevailed up until now: under the present system, when a private producer proposed a development project to Hydro-Québec, there was no competition concerning the price since Hydro-Québec guaranteed a clearly defined purchase price for the electricity produced. By imposing the invitations-to-tender mechanism in every case, the government makes it possible for competition between producers to bring down the costs of electricity production. It also brings

²⁵. See chapter 10, pp 86 and 88.

to an end the sole use of avoided costs, which has given rise to complaints.

The Participation of the Regions and Amerindian Nations

Throughout the public energy debate, the representatives of the regions and of several Amerindian nations indicated their interest in participating and being involved in the execution of electricity-production projects. In the chapters devoted to Amerindian nations and to the regions, measures facilitating such participation will be presented. This is a matter of great importance for the Québec government, and the new energy policy should pave the way for progress in this direction.

The Necessity for a General Review

By allowing increased recourse to private production in order to respond to new needs, the Québec government is opening the door to the liberalization of electricity markets. The conditions and guidelines for such liberalization are, however, far from being defined. Increasing access to electricity markets represents an historic reform whose stakes are particularly important for the Québec economy. Defining an approach adapted to the Québec context is necessarily complex and requires that everyone's interests be considered. What is more, the changes initiated by our partners have only begun: a great deal of uncertainty still remains concerning the rhythm and scope of the transformations presently taking place, as well as the consequences these changes will have for each of our partners.

Nonetheless, the government wants the first initiatives to be taken quickly. The Régie de l'énergie will advise the government concerning ways of deregulating or excluding from its jurisdiction all or part of electricity production. It will then be up to the government to decide whether or not to follow up on the recommendations of the Régie. The Régie will conduct this analysis as part of its consultation powers in energy-related questions.

The Objectives of the Government

The mandate of the Régie must be part of a larger analysis of the decisions to be made concerning deregulation. The restructuring of the North American electricity sector will probably lead to an extensive liberalization of markets and, once complete, to the deregulation of retail markets. Québec must be ready for these major changes. The government is making the necessary choices so that the most suitable strategies will be rapidly defined.

The government's objectives are clear: by choosing to deregulate in the electricity sector, Québec aims to take advantage of development opportunities that arise. The chosen initiatives should not weaken the competitive advantages of our companies. They should preserve our approach to environmental protection. They should not, however, compromise the financial health of Hydro-Québec.

Defining What is at Stake

Public hearings organized by the Régie de l'énergie will first and foremost make it possible to clearly define what is at stake with respect to the above-mentioned objectives.

- An uncoordinated opening-up of markets could affect the financial health of Hydro-Québec to the extent that the purchasing of electricity from private Québec producers or suppliers from other provinces or neighbouring states would eventually reduce the demand upon which the utility's production and transmission investments have been based. This aspect will have to be analysed.

- Consumers will no doubt be affected differently by the possible opening-up of retail markets, according to whether they are large or small consumers and based upon the significance of their purchasing power. This phenomenon has been noted in countries which have deregulated retail sales. This creates a problem of fairness with respect to the sharing of costs while also bringing into question a principle which is very precious to Quebecers, that of uniform rates. This question will be raised in fact as soon as there is any opening-up of wholesale markets, since such liberalization could very well put consumers using municipal electricity grids in a different situation from clients of Hydro-Québec.

- The goal of liberalizing markets is to reduce electricity costs for consumers, most notably for large industries, and thereby ensure our competitiveness in a context of international competition. It will also provide better access to American markets for electricity produced in Québec, which would facilitate the development of new projects and facilities. With respect to this access, we will have to keep a careful eye on the proposed reforms, since, if they are offered to competing companies, they will have an impact upon the advantage that our manufacturing industry has enjoyed in this area.

- On the environmental front, the fact that increased sales of Québec electricity on market of the north-eastern United States would have positive effects has already been underlined; these effects will be felt to the extent that they would allow highly polluting sources of production to be replaced by energy forms which pollute less. The opposite phenomenon would occur, however, if greater market access resulted in an increased use within Québec of more environmentally damaging supply sources, such as those creating greenhouse gases or acid rain, for instance.

The Expected Results

The issues before us are of great importance. They force us to deepen our analysis, a situation which must not, however, lead us to adopt a wait-and-see policy. The liberalization of electricity markets is well under way in a good many countries. In North America, it is being established at a very rapid clip, particularly in the immediate vicinity of the province of Québec. This market restructuring is in response to consumer expectations concerning the lowering of prices and the improvement of possible choices. The restructuring movement is encouraged by successes attained in the deregulation of the natural-gas industry and is a follow up to deregulation being carried out in other public services; generally speaking, it follows close on the heels of the numerous agreements concluded in the last few years in order to liberalize international trade.

An inclusive review of the restructuring of the Québec electricity industry will certainly be demanding, given the complexity of the issues. This review is unavoidable if we want to secure an advantageous position for Québec in the new economic context. It should make it possible for certain results, that the government considers essential and wants to formulate explicitly, to be attained:

- Liberalizing electricity markets must have the effect of stabilizing, if not improving, Québec's competitive position regarding the price of electricity.

Downward pressures on electricity prices are already noticeable among our partners and competitors. The price of electricity in Québec must at least follow an identical trend, and liberalizing markets should first and foremost pave the way to this end.

- The increased possibilities for exporting electricity to external markets should have positive effects both on the environment and on the Québec economy.

This signifies that increased access for Québec's electricity to new markets is only worthwhile to the extent that it has positive repercussions upon the Québec economy. It will also have to serve as an opportunity to better showcase the potential for producing renewable energy on our territory, thus making it possible to improve the environment of north-eastern North America.

Questions Which Must Be Discussed

It would seem, therefore, that the government must study the liberalization of energy markets very carefully and that it must be well understood by all concerned, both with respect to content and to the guidelines to be applied. As part of its mandate, the Régie de l'énergie will have to provide answers to a large number of questions, the main ones being immediately identifiable.

- A first question concerns the very scope of the proposed liberalization. We must decide just how much Québec electricity markets should be liberalized. We must determine which categories of buyers would be accorded the freedom to choose their suppliers. Must this be limited to distributors, industrial customers, and high-volume commercial customers, that is wholesale markets, or extended as well to residential customers, namely retail markets? The question is to know whether production deregulation can be limited just to export markets, or must it include Québec companies?

- A second series of questions concerns the orientations to which Québec society is attached but that could be called into question following deregulation. We must ensure that deregulation does not prevent our society from achieving its profitable energy-efficiency potential. In the same way, deregulation must not impede the development of energy forms with a high capital content, such as renewable energies. Furthermore, questions must be asked about how to guarantee that deregulation does not compromise environmental management through an increase in atmospheric pollution or a chaotic development of natural resources.

- Questions also arise concerning the accounting treatment to be applied to Hydro-Québec's assets. An effort will have to be made to determine how to separate assets in electricity transmission from assets in production and distribution, if all suppliers are to be guaranteed truly non-discriminatory access to transmission grids.

- Other questions are raised concerning the charging of possible revenue losses incurred by Hydro-Québec following the liberalization of markets. Should Hydro-Québec be compensated so that it may recover stranded costs, which are not financed because of lost revenue; or, if it is not, should the consumer-clients of the public utility absorb these costs? Should this compensation be larger so as to cover lost profits as well?

- One last question that must be asked concerns the size of Hydro-Québec and the potentially unequal situation which could result from the public utility facing possible competitors. Given this situation, we must determine how can we ensure that a true market will eventually emerge. Should a marketplace be established in Québec for transactions between suppliers and consumers, or might we even consider an electricity stock exchange?

The Chosen Orientations

Expanding the role of private production and initiating a profound review of the guidelines and scope of any liberalization of markets represent two major initiatives through which the Québec government has made a commitment, at one and the same time prudent and determined, to a restructuring of the Québec electricity sector. The government

wishes to round off these initiatives with certain guideposts and positions which will provide a good indication of the orientations that have been chosen.

Distribution

For the government, the existence of a monopoly on electricity distribution and its public character do not represent important issues in its review of increased access to electricity markets. In the various countries which have undertaken to reform the electricity sector, the existence of distribution monopolies has not been challenged; on the contrary, the goal has been to make sure that these monopolies are managed in such a way as to benefit the consumer as much as possible. In Québec, Hydro-Québec ensures basic distribution; however, a few municipal grids and one cooperative have retained responsibilities in this area, in certain precise territories.

The government has no wish to question this situation; on the contrary, it wants to confirm it in no uncertain terms. The *Act respecting the Régie de l'énergie* therefore stipulates that Hydro-Québec hold exclusive distribution rights for the entire Québec territory, excluding territories served by another public utility on the date the bill comes into force. To avoid all confusion, the law does not foresee guidelines for modifying electricity-sector franchises. The Québec energy policy thus explicitly ratifies the present situation, and makes no provision for challenging it; Hydro-Québec, as well as distributors already having their own distribution service, receive confirmation of their rights over their respective territories.

Access to Hydro-Québec's Transmission Grid

As is the case for distribution, the transmission of electricity constitutes a natural monopoly for identical reasons. Given the technologies which are in use, the proliferation on any given territory of several electricity transmission lines linking production centres to places of distribution and consumption does not make economic sense. In Québec, Hydro-Québec has been entrusted with this natural monopoly and no-one is challenging it.

On the other hand, the opening-up and liberalization of markets presupposes that rules be set down which permit the use of transmission grids by producers, distributors or buyers who have to resort to them for economic or simple geographic reasons.

- A first situation arises out of a geographic reality. In order for several Canadian provinces to have access to the American market, they must go through the territory of another province. Access to the transmission grid of an intermediary province is indispensable if these provinces wish to establish commercial relations among themselves or with the United States.

- Moreover, a second request for the use of a transmission grid arises directly from the needs of producers and consumers to conduct business transactions directly among themselves. Access to the relevant transmission grids is a precondition for such relations to take shape.

In order to respond appropriately to these two types of situations where Hydro-Québec has important interests to defend, the government wants both to clarify its positions and take certain initiatives.

- As regards the wheeling of electricity from one province to another or to the United States, using the Hydro-Québec grid as an intermediary, Québec has just reiterated its position within the framework of negotiations concerning the Agreement on Internal Trade. The public utilities of other provinces can already be granted an electricity transmission service by means of individual agreements concluded with Hydro-Québec, within the framework of reciprocity agreements. Moreover, Hydro-Québec is preparing to ask for the government's approval for published wheeling rates, also on the basis of reciprocity.

- As far as the use of Hydro-Québec's transmission grid by competing producers is concerned, in order to export electricity from Québec, the government has decided for the first time to envisage the possibility of imposing transmission tariffs.

The *Act respecting the Régie de l'énergie* makes a specific provision enabling the Régie to set or modify tariffs and conditions under which electricity is transmitted, upon the request of Hydro-Québec. This provision makes reference to wheeling activities and extends the jurisdiction of the Régie to these activities. Hydro-Québec will take advantage of this provision.

The initiative taken here by the government will make it possible to respect the reciprocity requirement formulated by the Federal Energy Regulatory Commission, in its April 1996 order. At that time the FERC stipulated that before foreign regions could have access at market prices and on an equal footing with competing American companies, they must first offer equivalent access to their own grids. The provisions included in the *Act respecting the Régie de l'énergie* make the setting-up of such a service possible, thus opening the door for Hydro-Québec to deal on the American market as an electricity trader.

Electricity Transmission, the Key to Market Liberalization

Access to transmission grids is the key to the liberalization of energy markets undertaken in North America and Europe. Indeed, transmission networks are natural monopolies, and access to them is essential for any producer who wishes to

reach a wholesale or retail client, in either domestic or foreign markets. A wholesale client is one who resells the electricity to another client, while a retail client is the final consumer.

- **Transmission Inside a Territory: Wheel-Within**

Within a given territory, any producer who wishes to have access to a distribution grid must use a transmission grid, unless the producer is already on the distributor's territory. This is the case in Québec, where Hydro-Québec possesses most of the facilities joining electricity producers and distributors.

- **Import-Related Transmission: Wheel-In**

The situation is the same for any producer located outside of the territory or a province, state or country who wishes to sell electricity within this territory. In this case, the transmission company must deliver the electricity from the border to the distributor or buyer.

- **Export-Related Transmission: Wheel-Out**

The access of producers to export markets must likewise necessarily use transmission grids, in as much as these grids are the only ones which are connected to neighbouring grids through interconnections. In the case of a wheel-out, two or more wheeling contracts, are necessary: one with the transmission company on the territory where the producer is located, and the other(s) with the transmission company (ies) providing the connections to the neighbouring territory.

- **Transmission Between Two Territories: Wheel-Through**

It is likewise possible that, physically or economically speaking, there is only one transmission grid that can be used to connect two non-adjacent territories. This is the case in Canada, where certain provinces which would like to have access to the markets of another province or an American state must have their electricity wheeled by the grid of a third-party province. Access to the transmission grid of this third-party province thus becomes a necessity for any producer who wishes to sell electricity on a market to which he is not directly connected.

Exports

Québec noticed the initial impacts of the current restructuring of North American markets due to the affect on its electricity exports. It is likewise in the area of exports that some of the most significant benefits are expected to be felt.

- **The short-term growth of sales**

In 1995, Québec sold a little more than 600 million dollars worth of electricity on the export markets, of which almost three-quarters went to the United States. For the past five years, there has been continual growth in these exports,

though their nature has undergone profound changes due to the evolution of markets. Throughout the 1980's, the goal of the export policy was to take advantage of high-volume, foreign electricity sales ensuing from competitive rates, by developing hydraulic resources earlier than needed for the domestic market so that they would be already built when required for Québec's own needs.

The possibilities for exporting significant units of power and guaranteed long-term energy are now very limited. This phenomenon can be explained by the slowdown of growth in energy demand on export markets combined with technological changes which have occurred at the production level. This does not, however, rule out the signing of long-term contracts. Rather, these contracts now depend on the delivery of seasonal surpluses. Furthermore, the last several years have actually seen a significant growth of short-term sales on the American market. An absorption of surpluses on the American market should normally open the door to higher value-added exports from Québec.

- **Foreseeable modifications**

The opening-up of American electricity markets and the liberalization of trade will accelerate these developments. In the first place, it is to be expected that increased access to wholesale markets in the United States will make it possible for Hydro-Québec and other Québec energy suppliers to have easier access to distribution grids which have been difficult to reach until now given that they are not directly connected to the Hydro-Québec grid.

However, the most important impacts will occur in the second stage, when the presently projected liberalization of the retail markets of the north-eastern United States becomes a reality. Québec suppliers, including Hydro-Québec, will thus have direct access to industrial, commercial, and residential customers in the northeast. Summary evaluations indicate that the potential offered by this new market structure could allow Hydro-Québec to increase sales to a considerable extent.

For private producers, external markets currently represent the most promising opportunities, given the present surplus on the Québec energy market. The development of these markets would enable a renewal of private production, on hold since December, 1994. However, it is once again worth noting that these development possibilities must respect environmental constraints. The projects of private producers must therefore be submitted to procedures in force, namely authorizations delivered by the ministère de l'Environnement et de la Faune and the advisory opinions of the BAPE.

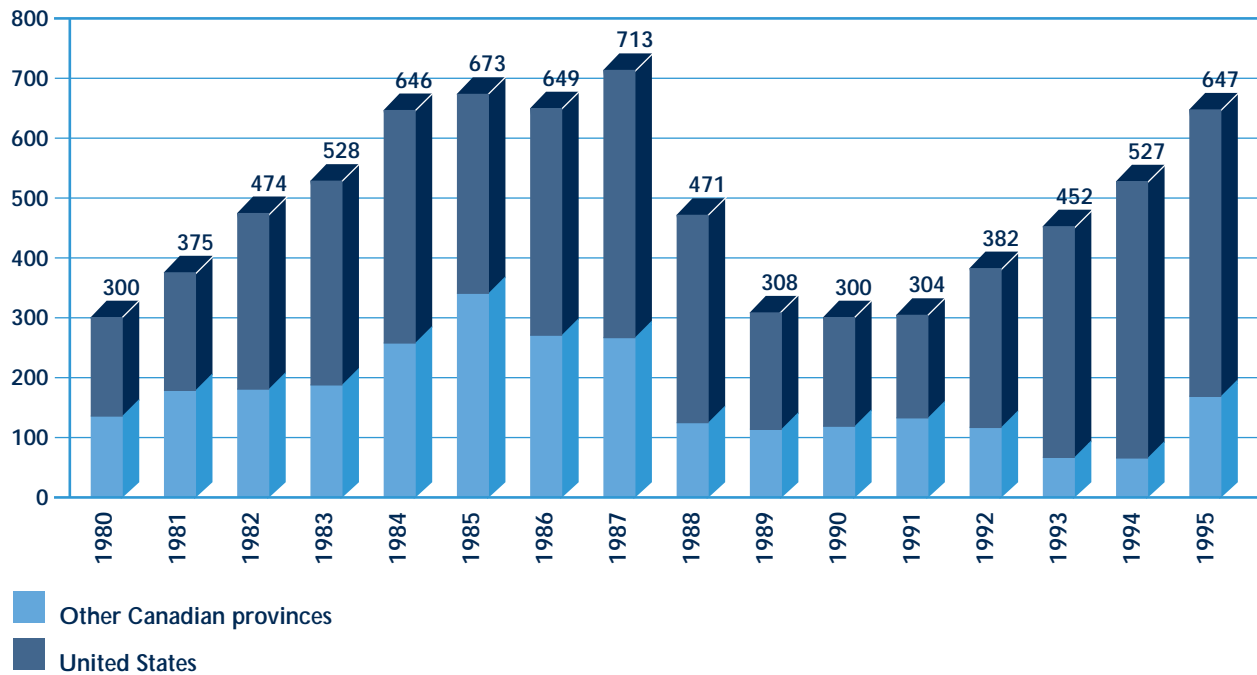
- **Possibilities to be developed, strategies to be devised**

On the technical level, new market characteristics offer all sorts of possibilities to production grids such as that of

FIGURE 8

Export-based Revenue of Hydro-Québec 1980-1995

In millions of current dollars



Source: Hydro-Québec.

Hydro-Québec. Short-term sales represent an excellent way for Hydro-Québec to enhance the value of that portion of energy reserves that it makes economic sense to develop, without at the same time putting regular needs at risk. In this regard, the low cost of marketing hydraulic-production surpluses represents an important advantage compared to the alternative offered by thermal power stations. Strategies based on the purchasing, stocking and re-sale of electricity could also be developed, using hydraulic reservoirs to this end, and playing with the complementary nature of loads between American and Québec grids.

The challenge for Hydro-Québec consists in devising appropriate strategies, securing its position on the new markets, and establishing mutually advantageous relations with partners in certain unusual cases. To this end, the public utility can be expected to call upon a wide range of means, up to and including the possible acquisition of American transmission assets. The challenge for Hydro-Québec will be to pursue its efforts to expand the territory and markets which are traditionally accessible to it, in order for economically advantageous business opportunities to proliferate.

• Government control over exports

In order to take into account the rapid evolution of export markets, the government has decided to bring about a certain easing of regulations now in force. As we have seen, Hydro-Québec's electricity exports will be submitted to the Régie de l'énergie so that it can verify their possible impact upon the rates paid by Québec consumers, making sure these exports do not run counter to consumers' interests. The law will provide the Régie with the possibility of easing these regulations, for instance through the granting of «umbrella» authorizations.

For its part, the government will maintain its present authority over electricity exports. This government jurisdiction in the area of exports does not duplicate that of the board since it is based on different reasoning, namely, to protect natural resources and to amplify the impact of their development upon employment. Thus the government will continue to exercise control over Hydro-Québec's exports and those potentially made by private producers, which will not be submitted to the board unless they have an impact upon rates. The control of exports exercised by the government

should not in any way call into question the authority of the Régie over transmission rates. Moreover, the exports of private producers must thus receive authorization, in keeping with the *Act respecting the exportation of electric power* in addition to the previously mentioned environmental analyses.

The government has, moreover, decided to simplify and reduce its control over Hydro-Québec exports. The law will

make only exports of power and firm sales of energy subject to government authorization. Thus, with this modification to the present law, exporters will no longer need authorization for sales made on the short-term market, whose delivery can be interrupted when necessary.



An Industrial Strategy for Electricity

The new energy policy includes a section that is explicitly devoted to the electricity industry and the activity sector that has grown up around the development and use of our hydro-electric resources. Government initiatives in this sector are indispensable, since the contribution of the electricity industry to the growth and development of Québec is considerable, and the changes now taking place require major reorientations, which government intervention can speed up and facilitate.

Energy Policy and Industrial Strategy

The most recent statistics make us aware of the evolution taking place and highlight the issues in question.

The Industrial Structure Linked to Large-Scale Projects

In Québec, in 1994, over 300 companies were involved in operations related to electricity. These were mostly manufacturing companies, but there were also engineering-consulting firms and installers. More than 10,000 jobs were linked to this industry, of which one-third involved hydraulic production and one-half, the transmission and distribution of energy. In this same year almost 82% of the turnover of these companies took place in Québec. Their activities were thus closely linked to the setting-up and managing of energy facilities, above all to the construction of large dams under the direction of Hydro-Québec.

The rapid decrease in investments by Hydro-Québec thus directly affects these companies, since they are witnessing a gradual reduction of what was their main, or, in some cases, their only outlet. As late as 1993, Hydro-Québec's investments amounted to more than 4 billion dollars. They reached 2.8 billion dollars in 1995, and the proportion of

investments for building hydro-electric sites and transmission infrastructures went from 73% to 63%.

This represents a permanent change. As has already been emphasized, the foreseeable evolution of the Québec energy context does not allow us to anticipate an impending and pronounced resumption of this type of investment. On the contrary, even though considerable needs will have to be met eventually, due to the growth of domestic demand or the opening-up of new markets, the preferred strategies for meeting them are evolving rapidly. Investments in the construction of large blocks of energy are not the only option available for Québec. There are alternatives, and it is in our interest to take advantage of them.

Companies whose growth and prosperity are based on carrying out large-scale projects thus are faced with a major challenge. This challenge concerns all of us, due to the position that electricity-sector companies have carved out for themselves within our economy. To take up this challenge, these companies have a considerable asset: they have built up, over the years, a remarkable degree of expertise. Our success in developing our hydro-electric potential is in large part attributable to them. In the process, they have built up competencies whose high quality is recognized the world over. This achievement is fundamental. It must be used first and foremost to help this sector adapt to new market realities.

Incentive Effect on Investments

At the same time that companies were expanding in order to contribute to hydro-electric development, the availability of abundant, low-cost energy sources triggered or speeded up the growth of a whole series of industrial activities in Québec. These energy-intensive industries include pulp and paper, iron and steel, smelting and refining, chemical products and cement. These industries represent one-fifth of the industrial added value of the Québec economy. In contrast to companies linked directly to electrical energy, they are very active on export markets. They actually carry out close

to two-fifths of Québec's industrial exports, which enables Québec to occupy a significant position on several international markets, such as those of aluminum and newsprint.

In the case of these companies, the challenge facing Québec is not the same as that involving electricity-related industries. Over the past decade, the development of energy-intensive industries has been based largely on electricity. By granting favourable rates, Hydro-Québec has supported the development of the Québec industrial fabric in the regions. The public utility has thus participated in the modernization and expansion of various industrial sectors, such as mines, the processing of raw materials and chemistry. Companies on the leading-edge of the aluminum, magnesium and iron alloy fields have been attracted. Several investment projects have been triggered by the risk-and-profit-sharing programmes offered by the public utility.

Québec is still in a position to offer stable supplies over a long period of time, at a competitive price. However, Hydro-Québec's room to manoeuvre in encouraging this type of investment has decreased. The increase in production costs for new facilities must be taken into account in proposing rates. Moreover, formulas such as risk-and-benefit sharing have turned out to be risky for the public utility, due to market fluctuations that were greater than expected. The energy policy must take these realities into consideration, in order for our energy heritage to be managed in the best possible conditions. At the same time, this policy must enable the Québec economy to get the maximum benefit from the ripple effects stemming from its energy resources.

A Change of Direction for the Electrical-Equipment Industry

The industrial strategy proposed by the government in its new energy policy is aimed first of all at changing the orientation of the electrical-equipment industry, in order to ensure its growth and prosperity, in spite of the slowing down of its emerging Québec markets. This strategy will be developed in three directions: concerted steps will be taken to export Québec expertise and thus open up new markets; special efforts will be devoted to the development and marketing of products; and special attention will be given to Hydro-Québec's purchasing policy for goods and services.

In all three cases, Hydro-Québec will have a key role to play in adaptation efforts. This is normal, since the electrical-equipment industry has been set up to meet Hydro-Québec's needs. It is now up to the public utility to pave the way for the necessary changes in direction, through an appropriate use of the economic power the company has acquired.

Turning Toward the International Scene: Exporting Québec Expertise

Important hydro-electric development projects are being planned in various countries where energy needs are growing rapidly. Moreover, deregulation, the liberalization of markets and environmental pressures are creating new challenges, but also giving rise to additional needs, of which renewable energy forms should take advantage.

• Concerted actions

Québec companies must get their fair share of these new markets, which could be accomplished by exporting the expertise developed here to these growing markets, and thereby creating new jobs. With this end in mind, a specific mandate has been entrusted to the GrapÉlec group, which conducts the Table de concertation sectorielle des équipements de production, de transport et de distribution d'énergie électrique (Sector-based Panel for Equipment for the Production, Transmission and Distribution of Electricity). With the support of Hydro-Québec, the GrapÉlec group will coordinate efforts by intervenors from financial, university and government circles. Concerted actions on foreign markets are being worked out. They will be based in particular on the initiatives taken by Hydro-Québec, through its subsidiary Hydro-Québec International. The government expects Hydro-Québec to be dynamic and establish the tools needed to promote Québec companies abroad. Hydro-Québec must increase its ability to aggressively develop international markets in order to disseminate Québec expertise.

At the same time, a collective effort will be devoted to the trademark image that Québec can project on foreign markets with the concept of "green energy". The marketing of this concept, centred on hydroelectricity and possibly on wind energy, could be even more inclusive and make use of equipment, technologies and energy efficiency, as concerns both production and consumption of energy. In the case of several energy forms, Québec is particularly well placed to meet the needs of industrializing countries, where the greatest increase in energy demand will occur in the next few decades. Collaboration with the AQME, the IEPF and other international organizations will contribute to the endeavours of Québec industries.

• Forming business consortia around Hydro-Québec

Concerted actions should lead rapidly to the formation of business consortia that can offer a complete product on international markets. In the electricity-development industry, the tendency all over the world is to set up these types of consortia which can offer "B.O.T." (Build, Operate and Transfer) contracts. The consortium offers to set up, finance and operate the project for a fairly long period before turning it over to the client according to conditions agreed upon in advance.

Hydro-Québec will have a pivotal role in setting up these consortia. That is why the government will ask the public utility to adapt Hydro-Québec International to this type of endeavour and to restructure its subsidiary with this end in mind. The government considers it essential for Hydro-Québec to take on a genuine leadership role in reorienting the electrical-equipment sector towards international markets, without calling into question its commercial objectives. Hydro-Québec has made a name for itself all over the world. The public utility can play an effective role as an integrator in setting up these consortia and can take part in financing projects. Its links to large international electricity companies will make it easier to establish a partnership between Québec industry and foreign companies. During the Summit Conference on the Economy and Employment, Hydro-Québec announced its intention to invest 300 million dollars, between now and the year 2000, with its financial and business partners. This money will be devoted to the purchase of assets or to participation in new energy projects on international markets.

Giants in the electricity industry such as EDF in France, National Power in the United Kingdom and Southern Electric and Southern California Edison in the United States are particularly dynamic in the new context growing out of the liberalization of markets. These companies are now investing in the acquisition of electricity transmission and distribution grids, in order to occupy a strategic position when the grids are modernized and developed. Hydro-Québec must take the lead in seeing that similar strategies are implemented and alliances contemplated with these large companies, in order that Québec occupy its rightful position on these new markets, via the Québec electrical-equipment industry.

Product Development and Marketing

In the electricity industry, research and development is ensured principally by the Hydro-Québec research centres, as well as by a few large companies. Small and medium-sized companies have also managed to make significant breakthroughs in this area, in spite of their more limited means.

Hydro-Québec research centres thus play a strategic role in product development and marketing. The Institut de recherche d'Hydro-Québec (IREQ), the Laboratoire des technologies électrochimiques et des électrotechnologies (LTÉE), and other Hydro-Québec units involved in research make it possible to develop electricity technologies here in Québec and reinforce our expertise in advanced technologies. They also participate in the marketing of products derived from research and development in the production, transmission, distribution and use of electricity. Product marketing is part of Hydro-Québec's effort to diversify, which

also enables the entire Québec economy to take advantage of important spin-offs.

In order to export Québec expertise, our industry must adapt its technologies to meet new needs. These technologies, and the products resulting from them, thus represent strategic elements for penetrating world markets. This means that the position of Québec companies with respect to exports cannot be dissociated from research and development efforts. With this end in mind, systematic cooperation must be established between Québec research institutes and companies operating in this sector. In its research and development activities, Hydro-Québec will thus be called upon to give priority to agreements associating the private sector with the entire process, that is, both the actual research and the manufacturing and marketing of products.

Within the GrapÉlec group, communication mechanisms are already being set up between Hydro-Québec and representatives of small and medium-sized businesses, in order to pave the way for future alliances. The government considers these efforts to be fundamental and would like them to be extended to the financial sector. Each partner will reap dividends from the process. The electricity industry will open up new markets, while Hydro-Québec will be able to take advantage, at one and the same time, of private sector experience in manufacturing and marketing, and of a source of risk capital which is readily available in Québec.

Purchase of Goods and Services by Hydro-Québec in Québec

The reduction in Hydro-Québec's investments has a direct repercussion on its purchases of goods and services; the overall amount has gone down by about 40% over the past five years. In spite of this significant reduction, the public utility's purchasing power remains considerable. Guidelines have been put in place to maximize the economic impact of these purchases, especially in the regions. By way of the contractual clauses that it requires, Hydro-Québec ensures the Québec content of purchases, while efforts have been made to decentralize acquisition procedures.

Hydro-Québec must manage its purchases of goods and services rigorously. The reduction in production costs sought by the government cannot be brought about otherwise. However, at the same time, a certain number of orientations can be respected, with a view to reinforcing Québec industries that are Hydro-Québec clients. These orientations are as follows:

- Companies involved in the sector will be given major support by Hydro-Québec, which will give preference, in its business relations, to long-term collaboration with suppliers, at the same time making sure that there is a minimum activity level so that the viability of the industry is maintained with respect to jobs and expertise.

- Local economic spin-offs will be increased by encouraging cooperation between Hydro-Québec, regional partners and industry, in particular through government strategies for economic development.
- Hydro-Québec has announced its intention to improve the process for making purchases from regional suppliers. Some of the possible reforms include setting up local offices for maximizing project spin-offs, as well as increased autonomy for the purchasing centres with respect to non-strategic acquisitions.
- Through its purchasing policy, Hydro-Québec will contribute directly to the creation of specialized jobs to meet the new needs of the electricity sector. The idea is to promote the development within Québec of expertise in such promising fields as intelligent systems, controls, protective devices and automatic control systems.
- Current negotiations concerning international trade tend to consider commercial state enterprises, such as Hydro-Québec, to be the equivalent of public-sector institutions and to impose similar constraints on them. By the very nature of its activities, Hydro-Québec cannot be compared with a government administration. If it were, Hydro-Québec would find itself in an unfair situation with respect to its private-sector competitors, which do not have to respect the same rules. The Government of Québec is thus opposed to imposing public-market rules on Hydro-Québec, as concerns the purchase of goods and services.

■ Electricity-Intensive Industries

The industrial strategy integrated into the new energy policy also deals with electricity-intensive industries, whose importance for the Québec economy has already been strongly emphasized. The industries set up in Québec are very active on international markets, and the results obtained confirm their competitiveness. All the efforts undertaken as part of the new energy policy to reduce the growth of electricity costs, and even to reverse them, can only strengthen their situation.

The areas where the government must give clear directives lie in the encouragement of new industries of this kind, and in the major development of existing industries. The new energy policy provides the opportunity to do so.

Refocusing Priorities

Québec favours the arrival of new electricity-intensive industries, as well as the development of those already in place, but only insofar as both parties derive commercial benefits in a transparent way.

With this end in mind, preference will be given to companies promoting the manufacture of value-added products, as

well as to the diversification of Québec's industrial park. The goal will thus be to create more jobs per energy consumption unit, to improve technological transfers favouring Québec, and to maximize regional benefits.

Facilitating Access to Resources to Foster the Development of Companies

Several energy-intensive companies currently have access to hydro-electric resources, in return for fees paid to the State. Historically, these auto-producers have developed large production capacities, especially in the sectors of pulp and paper, electrochemistry and electrometallurgy. In 1995, their generating capacity reached 3,126 MW, of which Alcan alone developed 2,350 MW.

As was seen in the preceding chapter, the new energy policy provides for an increased role for private producers in developing Québec's hydraulic resources. These policy changes will be used to foster the development of companies. As regards the establishment or expansion of companies that Hydro-Québec is not interested in serving, not even with special contracts, the government will be able to facilitate direct access to resources by allowing companies to become auto-producers. As was already pointed out, the allocation of hydraulic sites will be carried out as part of a site-management programme, under the responsibility of the ministère des Ressources naturelles that will guarantee fairness and transparency. This programme will also give preference to projects that involve the regions, Amerindians and local communities, as well as those integrating the local economy, with its industrial, economic and tourism facets.

Resource access that fosters company development could also be made possible by authorizing direct transactions between private producers and industrial developers, with Hydro-Québec ensuring the transmission and distribution service. It is obvious that from a deregulation perspective, this possibility must be considered. The Régie will analyse this possibility in its review of market liberalization, and will determine the necessary parameters.

Setting Fair Rates

Rates schedules are a useful tool for attracting new electricity-intensive industries or for encouraging additional investments. However, the rates must be defined in a way that is fair and mutually advantageous for all partners.

Traditionally, the rates granted to electricity-intensive industries establishing themselves in Québec have been determined by special contracts, under direct government control. This is the case for the shared-risks-and-profits contracts signed in particular with certain aluminum smelters at the end of the eighties. Companies may still be offered competitive rates inasmuch as there is a beneficial impact on job

creation and economic development. According to the evaluation presented by Hydro-Québec at the Summit Conference on the Economy and Employment, creation or expansion totalling a load of 500 MW could bring about, through the characteristics of participating companies, more than a billion dollars in investment. Hydro-Québec will give preference to formulas that guarantee companies a certain degree of stability in the evolution of rates. This is one of the advantages of hydro-electric energy that must be maximized.

Moreover, with the creation of the Régie de l'énergie, the government is considerably modifying the way that these contracts are analysed and approved. As in the case of all rate conditions, contracts will, as a rule, be submitted to the Régie, which will verify their impact on consumers, except in the case of certain special contracts for which the government retains the right to make choices for reasons of industrial development. The Régie will have decision-making power to authorize or refuse the contracts. If a contract is authorized, the Régie will also have to decide whether or not it is included in the overall rate base. In the former case, the risk involved in the contracts will be assumed by all consumers; in the latter, by the shareholder alone. As was the case for the Régie du gaz naturel, the Régie de l'énergie will be able to analyse the contracts confidentially, in order to take into account the special nature of certain information as well as the interests of third parties. In its analysis, the Régie

will have to take into account the economic, social and environmental effects, including possible impacts of these contracts on job creation and regional development, according to directives issued by the government.

The government will maintain a right of withdrawal for special contracts in order to establish rates and conditions fostering development in Québec. The goal of the government will be to maximize economic benefits and foster high value-added projects, so as to have the best impact on job creation. It goes without saying that this will be a transparent process. For instance, the government will make public the analysis grid that it will use. In any case, as a shareholder, the government will continue to exercise control over Hydro-Québec's special contracts at an early stage.

The new method for approving special contracts meets at one and the same time the objectives of transparency and fairness formulated by the new energy policy, and the necessity of taking full advantage of the assets available to us to reinforce economic development and job creation. The process adopted by the government, which, moreover, is in line with North American practices, signifies a considerable change from the approaches traditionally preferred in Québec. It should guarantee that the incentive effect that our electricity resources represent for investments, from which we must continue to benefit, will be used in our own best interests.



CHAPTER 7

An Essential Asset: Hydro-Québec

Hydro-Québec is an essential asset that enables Québec to attain its objectives in the electricity sector and to benefit from all the economic advantages available to it. However, this asset must be used to full advantage and it must be given the right orientations by the State.

Among World Leaders in the Electricity Sector

At the present time, Hydro-Québec is the number-one electricity company in North America and fifth in the world, as measured either by amounts of energy sold or generating capacity. The Québec public utility controls the largest electric transmission grid in North America, as well as the largest hydro-electric complex ever built. Hydro-Québec has acquired world-renowned competence in such areas as long-distance electricity transmission, the building of large-scale dams, and distribution techniques in northern climates. The first 735 kV and 765 kV transmission lines were constructed under the responsibility of Hydro-Québec, as were some of the world's highest-performing interconnection facilities.

The hydro-electric dams and transmission grids controlled by Hydro-Québec represent a heritage of considerable economic interest. At the moment, 45% of the electricity distributed by Hydro-Québec is produced and transmitted for less than 1 cent per kWh, whereas in Massachusetts and New York State, the average cost for the production and transmission of electricity is 9.7 and 10.6 Canadian cents per kWh. A significant number of Hydro-Québec's installations have largely been paid for already. Moreover, and in contrast to thermal power stations, the production costs for hydro-electric stations are very stable once the initial investment has been made: capital costs represent the bulk of this investment, whereas in the case of thermal power stations, the cost of the electricity produced depends to a large degree

on the price of the fuels burned in the station in order to produce this electricity. Thus it is easy to understand why Hydro-Québec holds a very advantageous position in the competition unfolding on the electricity market. According to a recent study carried out by the firm Moodys, Hydro-Québec is in fact the electricity company which offers the lowest production costs among 29 public and private electricity companies in north-eastern North America.²⁶

In spite of this very favourable situation, several causes for concern have already been expressed. The production costs of new Hydro-Québec developments are regularly on the increase, and are higher than its average costs. Thus, for Hydro-Québec, each new production initiative means an increase in the price of the electricity produced. Hydro-Québec's average production costs have increased fivefold in twenty-five years: these costs were 0.78 cents per kWh in 1971, and are now 4.35 cents per kWh²⁷. There is also a productivity problem: the performance of the public utility leaves something to be desired, when comparing certain elements of its exploitation costs with those of other electricity producers. Finally it is worth noting once again that according to the State-shareholder, the public derives a far from satisfactory rate of return from Hydro-Québec. In 1995, the return for Hydro-Québec was 3.3%, compared to 12% for Gaz Métropolitain.

Due to the national heritage it controls and the expertise that it has built up, Hydro-Québec represents the main asset Québec can count on given the deregulation and restructuring movement affecting the North American electricity sector. This restructuring also offers Hydro-Québec the opportunity to improve its management style and to review its approaches, in order to make sure that the remarkable results of the past extend into the future. On a more general level, the energy policy specifies certain of the public utility's responsibilities and determines new rules of the game which are going to have repercussions for the firm's organization and operations. The energy policy provides the

²⁶. *Northeast Break-Even Analysis, Magnitude of Stranded Investment in Region Highlights Credit Concerns*, Moodys Investor Service, December 1995.

²⁷. Evaluation conducted for 1995. Production costs are obtained by dividing sales revenues, minus the net income, by total sales in kWh.

government with an excellent opportunity to set down its expectations in this area.

The Property and Mission of Hydro-Québec

According to the Hydro-Québec Act, the mission of the public utility is “to supply power and pursue endeavours in energy-related research and promotion, energy conversion and conservation, and any field connected with or related to power or energy”²⁸. The act thus defines Hydro-Québec’s mission in a broad manner, providing the public utility with all the latitude needed to perform its operations. Furthermore, its assigned mission already includes the mandates and responsibilities defined by the government in its energy policy.

The deregulation of markets and the integration of energy forms means that Hydro-Québec will have to increasingly consider the overall needs of a client, in terms of products or energy services, in order to optimize the overall energy bill on the Québec and foreign markets. Hydro-Québec will, in this way, confirm its vocation as a world-class commercial firm in energy services. In light of market restructuring, Hydro-Québec must increasingly see North America as its veritable operating zone.

The Obligation to Serve

A discussion of Hydro-Québec’s mission raises the question of its “obligation to serve”. The *Act respecting the Régie de l’énergie* specifies that the public utility must supply electricity to any person who asks for it, within the territory for which it has exclusive distribution rights. This provision explicitly specifies an “obligation to serve”, which until now only followed implicitly from the Hydro-Québec Act. Specifically, this provision means that Hydro-Québec must ensure a connection to, or extension of, its grid in order to supply electricity to any person who wants it. The obligation to serve is justifiable given the essential character of the basic needs which electricity alone can meet, such as lighting for example.

This obligation must, however, have a given framework if it is to be applied with a consideration for the costs of the connection or extension to which a consumer might lay claim. Until now, this framework was set down by a government regulation. Henceforth, the Régie de l’énergie will specify the conditions governing how this obligation will be applied. According to the government, these conditions will have to be determined by taking into account the specific nature of electricity uses, but likewise by setting down equivalent principles for all regulated energy distributors. One of the goals of the new energy policy is to create a level

playing field for energy market initiatives. An important application of this objective is to be found here.

Hydro-Québec, a Public Utility

As concerns the ownership of Hydro-Québec, the government recently had the opportunity to confirm its position. The possibility of privatizing the state-owned company is not on the agenda. Privatizing Hydro-Québec would be akin to holding a “fire sale” for which there is absolutely no economic justification; hence this prospect does not enter into the government’s plans.

This clear position, which represents nothing new, must not exclude any restructuring of assets that might appear advisable in order to strengthen and open up new development possibilities for Hydro-Québec. The manifold partnerships which have been formed in the electricity sector and, more broadly, in the energy sphere, have already been underlined in the preceding chapter. We will come back to this point a little further on. Joint enterprises are created and partnerships defined, leading to the establishment of financial ties which are often very solid.

Given this context, the government does not wish to exclude any possibility right away. If any such operations do take shape, however, they must be carried out in a completely transparent manner. This is necessitated by the public character of Hydro-Québec and by the importance of the collective issues at stake. The government thus promises that any transfer of Hydro-Québec’s assets which could be advantageous and profitable in terms of the interests and development of the state enterprise will be subject to public debate before any decision is reached.

• The nationalization of electricity

Hydro-Québec, an entirely government-controlled utility, was created in 1944. In 1962, what has come to be known as the “nationalization of electricity” consisted, for the Québec government, in considerably increasing the assets placed under Hydro-Québec’s responsibility by expropriating most of the companies then carrying out the electricity trade in Québec. Following this transaction, Hydro-Québec was handed the lion’s share of Québec’s electricity-production operations and a near-monopoly over transmission and distribution.

The nationalization of electricity marked the end of a very important stage in the contemporary evolution of Québec. Quebecers were guaranteed complete control over their hydraulic heritage. From the economic point of view, consolidating most production, transmission and distribution activities under state authority made it possible to exploit our hydro-electric resources much more rationally and to distribute the wealth among all Quebecers – thanks especially to the uniformization of rates.

²⁸. *The Hydro-Québec Act*, R.S.Q., Chapter H-5, Article 22.

- **The discussion undertaken**

In industrialized countries, the liberalization of markets and deregulation were accompanied by a movement to privatize public companies which touched most activity sectors. The objectives of this movement were two-fold: over the mid-term, it paved the way for the State to withdraw from operations which were often very far removed from the public interest and where private management could prove more efficient. On a short-term basis, the sale of public assets represented a significant financial contribution reinforcing the cash flow of the State. Thus it is normal that this privatization movement would lead to discussions concerning the ownership of Hydro-Québec and its status as a public utility, and that this question would be tackled during the public energy debate.

The suggestions made to the Consultation Panel concerning this matter were accurately summarized in its report²⁹. A number of intervenors proposed a privatization which would be limited to 10% of capital, in order to safeguard Hydro-Québec's crown corporation status vis-à-vis federal tax authorities while instilling the logic of private enterprise into company management. Conversely, other intervenors expressed categorical opposition to any form of privatization, which was seen as calling into question one of the main accomplishments of the Quiet Revolution. A consensus position was drawn up from these contradictory views. Many of the objectives sought through privatization can be reached by other means. Above all, privatizing Hydro-Québec should not be put on the agenda for commercial and financial reasons; given its present profitability, it would be bad business to privatize the public utility, in whole or in part, whatever the amount of capital in question.

Generally speaking, the government is in agreement with this position. Quebecers control their hydraulic wealth through Hydro-Québec and benefit from it through the rates they pay and the dividends they receive as citizens. Above all, the government wants to make better use of this common heritage in order to strengthen development and growth.

■ **Goals to be Reached**

Hydro-Québec takes on a dual role in the government energy policy. As Québec's major energy producer and distributor, the public utility represents the number-one tool available to Quebecers for managing their energy interests. The development of our hydraulic wealth depends above all on Hydro-Québec, on how it takes advantage of the opportunities created by the restructuring of the North American electricity market.

Hydro-Québec must also exercise another more general responsibility, resulting directly from the power it has acquired.

Given its size, the economic and financial clout it has amassed and the initiatives available both inside and outside of Québec, Hydro-Québec is called upon to play a fundamental role in redeploying and strengthening the Québec energy industry. In the past, the public utility provided powerful support for the development of this industry. While it still respects its commercial nature, Hydro-Québec now represents the mainstay of the government's industrial strategy as defined in the new energy policy.

The following objectives, arising out of this dual responsibility, have been set down for Hydro-Québec by the government:

- Hydro-Québec must become North America's most efficient electricity company.
- The government expects Hydro-Québec, through its own initiatives, to ensure the promotion and development of Québec expertise.

Hydro-Québec: North America's Most Efficient Electricity Company

For Hydro-Québec, and thus for all of Québec society, the restructuring of electricity markets represents both an opportunity and a challenge. Considerable development possibilities have been created by the movement to deregulate, as has been previously underlined. To take advantage of them, however, Hydro-Québec will have to comply with much more demanding market conditions than it has ever faced before. This observation applies not only to external markets, but also to domestic markets, which could be liberalized.

- **Reducing costs and increasing profit margin**

In order to meet upcoming competition under the best possible conditions, Hydro-Québec must resolve a sizeable challenge, namely to lower overall costs, including production, development and operating costs. Québec consumers will be the first to benefit from this effort which will restore and strengthen the comparative advantage conferred by low energy prices.

Results will be measured in financial terms as well. Initiatives taken by Hydro-Québec should restore the company's profit margin, increase its rate of return on capital investments and, in the final analysis, provide greater profits for the State-shareholder. Moreover, it must be realized that, all things being equal, an increase of one percentage point in the public utility's profit margin brings about an increase of 80 million dollars in net income for the State. This brings into perspective what is truly at stake here.

In order to become North America's most efficient electricity company, Hydro-Québec will first have to cut back on its various responsibilities. The public utility must review the

²⁹. For an Efficient Québec — Report of the Consultation Panel on the Public Energy Debate, op cit, pp 132-133.

relative importance of all its subsidiaries and administrative units, and have another look at how they function. Hydro-Québec has already begun to take measures with this end in mind, especially through its total-quality program, endeavours to achieve greater flexibility in collective agreements, and the reorganization of business processes. There are many other conceivable initiatives as well.

- **Bench-marking and subcontracting**

One of these initiatives involves the establishment of a system of “bench-marks”. Used as a management tool, this system consists in devising, establishing and following benchmarks which serve to compare the company in question with other comparable production units. In the case of Hydro-Québec, the bench-mark system should, on the one hand, establish comparisons between the utility and its public-sector competitors, and on the other, between Hydro-Québec and private firms involved in analogous spheres of activity. The setting-up of a bench-mark system would make it possible for the public utility to better understand its competitors’ methods and to identify their strengths and weaknesses in a systematic and rigorous manner. Hydro-Québec would thus be able to target its administrative actions in a more effective manner and readjust them rapidly according to results obtained.

Subcontracting might be another way for Hydro-Québec to improve its results by stimulating the pursuit of productivity gains. Subcontracting must not be an end in itself. Rather it must be a means of increasing efficiency to which the public utility must be able to resort whenever it is justified by an improvement in results. Moreover, subcontracting has the advantage of creating more activity in firms linked to Hydro-Québec. It is, however, essential to respect the rights of the public utility’s employees. Openings are possible in the collective agreements which should lead to an acceptable balance between having work done in or outside the company.

- **New business relationships and possible alliances**

For Hydro-Québec, becoming North America’s most efficient electricity company involves more than just reducing its responsibilities. The company must also show imagination and initiative in determining its various strategies, to be defined by using its sphere of excellence as a starting point. Acquiring foreign assets and participating in commercial consortia are two examples of initiatives for which the government wishes to see proposals. The government thus encourages endeavours which could lead the public utility to acquire equity participation in electricity-production, transmission and distribution companies, for instance in the United States.

Natural gas and electricity complement one another in a number of uses and in certain markets, particularly outside

of Québec. This complementarity must be developed if Hydro-Québec is to penetrate the markets in question. With the collaboration of brokers, the goal is to offer large-scale consumers personalized and targeted formulas for multi-energy products. If Hydro-Québec concluded other partnerships of this nature, it would be possible for the public utility to gain an advantageous position in as yet untapped markets and would lead to an optimal use of electricity and natural gas in the industrial sector.

For Hydro-Québec, moreover, the establishment of these alliances represents a better way of developing its assets. Hydro-Québec’s telecommunication network is one such asset which has not yet been used to full advantage. Telecommunications represents, for Hydro-Québec, both a possibility for growth on the domestic market and an option for diversifying its assets and sources of revenue. Given the transmission grids they use and the customers they both serve, synergies already exist between public services in electricity and vocal and visual transmission. By linking up with private-sector partners or renting its facilities, Hydro-Québec could better profit from its communications equipment. At the same time, the public utility would benefit from the technological expertise of its partners in the area of research and development of new services, expertise that it would then be able to offer to both domestic and international customers.

- **Developing related services**

On domestic markets, as well as in the area of exports, Hydro-Québec can improve both public well-being and energy performance by developing a range of services related to the energy field. Reference is being made here to automated services which Hydro-Québec should call upon more often both to carry out its own operations and to meet the energy needs of its customers.

The considerable progress made in the area of home automation has led to the conception of the “intelligent house”. Consumers are offered all sorts of capabilities for controlling heating, refrigeration, lighting and home security. These controls rely on cable-, telephone- or computer-distribution technologies. To manage its own grid, Hydro-Québec also has access to ever-improving automated services, such as remote control used for making power cuts to certain consumers, for direct broadcasting of information to consumers, or for consumption measurements, metre reading, and billing.

In order to offer these services, Hydro-Québec must have a rapid telecommunication system at its disposal, one which efficiently reaches all its customers. Thus Hydro-Québec must be urged to continue modernizing its communications grid as a pre-condition for offering new services.

Promoting and Developing Québec Expertise

The government has assigned Hydro-Québec a second objective, namely to ensure the promotion and development of Québec expertise. The industrial strategy defined in the energy policy gives Hydro-Québec an important role to play in this area. Through its initiatives, the public utility must promote and develop Québec expertise in all its activity fields. Moreover, the government expects Hydro-Québec to take on a true leadership role in this area.

The government is convinced that Hydro-Québec's presence on foreign markets and its excellent reputation can both be used to further the interests of Québec firms. Hydro-Québec can serve as a technological showcase that helps promote and sell Québec energy products other than its own, in particular manufactured goods and engineering-consulting operations. Naturally, this promotion and sales activity presupposes a better linking of the private and public sectors.

• Coordinating business alliances

In fact, it is necessary to go further and have Hydro-Québec take on the responsibility for such alliances, an initiative which would open up markets to Québec firms. The government wants Hydro-Québec or one of its subsidiaries to become more directly involved in the construction and use of power stations and grids found outside of Québec and to involve Québec companies in this process. This refers to the establishment of development consortia by Hydro-Québec, which would take on the integrating and coordinating functions which are essential to promoting the Québec electricity industry. Hydro-Québec's strategic investments in neighbouring grids will thus have to be systematically accompanied by actions mobilizing Québec firms from that sector.

• Marketing technologies

Promoting Québec expertise also involves a special effort in the area of marketing technologies. Hydro-Québec has a dual responsibility in this regard. Through its own efforts, the public utility has built up a considerable technological heritage; this must be developed with all the openness incumbent upon any public corporation. Hydro-Québec will therefore make public the rules concerning the general conditions of partnership, stock ownership and profit sharing for employees and the disclosure of information related to technology marketing.

Moreover, the government expects Hydro-Québec to make sure there are maximum economic spin-offs within Québec of investments made to market technologies it has perfected. This will be made possible once again by establishing multiple partnerships between the public sector and private Québec firms in order to involve Québec partners in each stage of the product research, development and marketing process.

The Structure of Hydro-Québec

The initiatives taken by the government in the new energy policy and the objectives directly assigned to Hydro-Québec will have important implications for the public utility's structure. In this area, the government does not have to dictate the sort of structure it wishes to see for Hydro-Québec. In so doing, it would usurp the role to be played by the firm's administration, and trespass upon the mandate of its management.

During the review process that Hydro-Québec will have to initiate in order to restructure itself, certain guideposts can however be pointed out.

- The establishment of the Régie de l'énergie and the Régie's consideration of requests for rate modifications will lead Hydro-Québec to change its structure and organization. Henceforth, Hydro-Québec will have to make a clear distinction between its regulated and non-regulated activities. As is the case with all companies subject to a regulatory board, the public utility will clearly identify within its organization the services which will be subject to review, so that their cost can be included in its rates. A separate accounting procedure for production, transmission and distribution services will have to be foreseen, again with the goal of facilitating the Régie's analysis.

- The public utility's assigned objective in the area of efficiency will also have repercussions upon its structure. In fact, there are several ways that a restructuring of operations could be used to improve and measure the utility's productivity. For example, Hydro-Québec may be expected to turn towards management by business units as a precondition for better cost control.

- Moreover, the responsibilities conferred upon Hydro-Québec by the government concerning the promotion of Québec expertise in the international arena will necessitate the establishment of better-adapted structures. The mandates of Hydro-Québec International and Nouveler will have to be reviewed, their organization transformed and the innovations introduced in this area extended to the whole public utility. The mandate conferred by the government is a demanding one, and Hydro-Québec will have to be provided with suitable means to fulfill it.

- Special attention must be paid to the organization, administration and mandates of Nouveler, which will be examined from top to bottom. The operational structure of Nouveler must be redefined and its management completely transformed. It is a matter, for the government, of establishing genuine commercial partnerships with the private sector, guaranteeing better protection for public interests and fostering complementary relationships with partners to maximize economic spin-offs in Québec. During this thorough review,

Hydro-Québec must study the possibility of establishing a partnership between Nouveler and Hydro-Québec International and identifying common activities.

Over the next few months, Hydro-Québec will be called upon to propose a restructuring of its operations to the government. The public utility will have to follow up on the orientations specified in the energy policy and thus prepare to

meet the many challenges facing the Québec electricity sector. The proposed restructuring will be analysed in the upcoming strategy plan of the public utility, which will specify the entire range of its orientations and policies. It would seem logical for this strategy plan to be studied by a parliamentary commission and therefore submitted to public discussion.

A New Partnership with the Amerindian Nations

Previous Québec energy policies have never dealt with the question of the native peoples. This will not be the case with the new government policy, which will discuss relations with the Amerindian nations. Above all, proposals are formulated which could open the door to other sorts of relations, based on true collaboration in concert with the development of the Québec energy sector.

Establishing a True Partnership

The proposals put forward by the government to the Amerindian Nations are based first of all on commitments made by the National Assembly.

The Commitments of the National Assembly

On March 20, 1985, the National Assembly became the first legislative assembly in Canada to pass a resolution to recognize native rights. This resolution was backed by the then Premier, René Lévesque. The fundamental principles guiding government endeavours continue to be defined on the basis of this resolution. The goal of the Québec government is to allow native peoples to "develop as distinct nations, with their own identities, while exercising their rights within Québec"³⁰.

It is understood that it is not the prerogative of the energy policy to set forth new principles in matters of relations with native peoples. The implementing of the new energy policy will, however, make it possible to apply the March, 1985 resolution of the National Assembly, and to undertake several initiatives in this regard.

A Partnership That Benefits Everyone

As concerns energy development, the government has the final say with respect to fundamental policy decisions. The government assumes this responsibility and thereby proposes

that a genuine partnership be established with the Amerindian nations. This partnership means that the participation of native peoples should be conducted on an equal footing in the various processes involved, or be ensured through special consultation. By offering this partnership to the Amerindian nations, the government wishes to promote a harmonious energy development that not only benefits all concerned, but is also respectful of their rights and priorities.

The government is therefore proposing several concrete methods which represent an equal number of opportunities for the peoples and communities involved.

The spirit of these proposals reflects an attempt to win the approval of these peoples and communities. Isolation often serves to impede the economic development possibilities of Amerindian nations, and the execution of energy projects represents in many cases a viable option for spurring development. In spite of the slowdown in demand growth, the energy sector is still a powerful tool for economic development, and must be used as such. The goal is not, however, to impose energy development upon Amerindian nations and communities but rather to encourage them to initiate it, to draw up and carry out projects corresponding to their interests, in tandem with suitable intervenors.

The Amerindian Nations and the Energy Development of Québec

During the public energy debate, native representatives emphasized how important energy development was for them, how it represented both a source of upheaval and an opportunity to take charge of their own destiny. The signing of the James Bay and Northern Québec Agreement, which took place twenty years ago, and the challenges to the Great Whale project at the beginning of the 1990's, serve to illustrate the close links that exist between the native question and Québec's energy development.

³⁰. *Résolution de l'Assemblée nationale*, put forward by René Lévesque, Premier of Québec, Québec City, March 20, 1985.

A Major Issue for Native People

Energy development remains a source of particular constraint for several of Québec's Amerindian nations. Following the construction of dams, the filling of reservoirs brought about the flooding of trapping areas and the modifying of local ecosystems. The completion of large-scale hydro-electric facilities situated deep within the interior of these lands sparked or accelerated the opening-up of the Québec north to modern ways of life, and by this very fact caused major social disruptions in certain communities.

Of course, the Amerindian nations also benefited from energy development in many respects. The access routes necessary for the construction of power plants, dams and transmission lines made for easier access to the territory; and the consequences of these changes upon community life were not wholly negative. The development of energy potential made possible the extracting of resources, which served to finance initiatives respecting native culture; the income-security program for Cree hunters and trappers comes to mind in this regard.

Today, the Amerindian nations have to reconcile the maintaining of their culture and traditions with the challenges of the modern world, and energy development seems like a good means of reaching this goal. Creating employment for young people and ensuring a viable future for the generations to come represent a special challenge for communities where the population is growing quickly.

The James Bay and Northern Québec Agreement

It must be recalled that the James Bay and Northern Québec Agreement was negotiated, then signed, above all for reasons linked to energy development. The Northeastern Québec Agreement, which was greatly inspired by the James Bay and Northern Québec Agreement, was signed in 1978 with the Naskapis. Developing the hydro-electric potential of the James Bay region indeed proved to be what led the Cree, Inuit and the Québec and Canadian governments to negotiate the James Bay and Northern Québec Agreement, the first full-scale modern agreement signed with Amerindian nations in Canada.

Ratified in 1975 by the various signatories, the agreement specifies the administrative organization of the Cree and Inuit in order to harmonize the native way of life and culture with the need to plan and ensure the development of the territory and its resources. Moreover, by establishing a system for protecting the environment and the social sphere, a particularly innovative endeavour for its time, the agreement put into practice the concept of sustainable development long before it became an established term.

The James Bay and Northern Québec Agreement and Northeastern Québec Agreement made it possible for the Cree, Inuit and Naskapis to take charge of their own educational, social, health, police and local administrative services, as well as their hunting, fishing and trapping activities.

The Great Whale Project

Fifteen years later, at the beginning of the 1990's, the opposition of Cree leaders to the Great Whale hydro-electric project left a deep mark upon the discussions concerning its implementation, even causing them to be shifted into international forums. After having evaluated the consequences of signing, the Inuit, for their part, chose to conclude an agreement-in-principle with Hydro-Québec concerning the carrying out of the project, as a prelude to signing a final agreement aimed at providing social, economic and cultural guarantees. Concerning the Sainte-Marguerite project, the Montagnais people of Uashat and Malinotnam have also chosen this same path.

The Participation of Native Peoples in the Public Energy Debate

The questions raised by the native peoples contributed to setting in motion the public energy debate. From the very outset of the debate, the government granted native people an important role in the process of developing the new energy policy. Two prominent members from the Québec native communities were invited to sit upon the Consultation Panel. Several native communities were given a favourable hearing during the regional consultation tour. Moreover, representatives of these communities were actively involved in the debate, making possible constructive discussions about past lessons, as well expressing their vision of future energy development. They likewise emphasized their desire to be full-fledged partners in this development.

Following these discussions, several recommendations were made which specifically concerned Amerindian nations. It is the Panel members' opinion that Québec must make room for its native peoples, as full partners in energy development³¹. Until such time, the dialogue must be pursued by means of specific agreements concluded as projects are carried out, as well as by the tabling of development proposals made by the Amerindian nations, and by considering their needs and realities.

Participation in River Classification

Native people will have a specific role to play in the first important initiative, the river-classification process. This will make it possible for their preoccupations and preferred

³¹. For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy, op cit, p 63.

options to be systematically taken into consideration. The process initiated by the government calls for the participation of Amerindian nations in regional discussions. Amerindian nations and communities will be able to make known the type of land use they prefer, to disseminate the knowledge they have acquired and to defend their orientations concerning conditions for future development. It will thus be possible to fully integrate native culture and the impact upon traditions into the analyses.

The objective of the river-classification process is to reach a social consensus concerning the choice of development for specific drainage basins. By ensuring the participation of Amerindian nations and communities, the government involves them in defining the basic orientations which will determine how the rivers of a given region will be developed. The classification process will have to be adapted to each region in order to meet the specific needs of the nations and communities living there. It is, moreover, obvious that this process will have to respect agreements in effect, such as the James Bay and Northern Québec Agreement.

Supporting Native Entrepreneurship

Another government priority is the continued development of an entrepreneurial spirit in native communities. Native populations are confronted with difficult socio-economic conditions which can be explained by a whole series of factors: increasing problems associated with the practice of traditional activities, the isolation of communities, and the presence of a very large proportion of young people within these same communities. However, the Amerindian nations have expressed the desire to take control over their own destiny, to ensure their own development, to create jobs through their own initiatives and to put an end to situations of dependence. The Québec government supports these objectives and proposes to put them into concrete form by emphasizing the development of native entrepreneurship.

With this goal in mind, the government will underline the conditions which will make it possible to develop the entrepreneurial spirit in native communities. It will offer these communities more opportunities to take their fate into their own hands, to establish and ensure the prosperity of their own enterprises. The government will also encourage their linking up with other Québec enterprises, with an eye to promoting the transfer of knowledge and expertise.

Examples of Accomplishments

These initiatives are directly applicable to the energy sector, and for certain communities, they have already become a reality. When its village was built in 1992, the Cree

community of Oujé-Bougoumou broke new ground by setting up a community network in order to meet heating and hot water needs through means of a thermal power station fed by wood residue from the local sawmill. For its part, the Montagnais community of Mashteuiatsh has chosen to build small hydro-electric plants by means of an economic-development corporation.

Possibilities

In Hydro-Québec's autonomous grids, which supply several native communities, electricity is produced by fuel-driven electricity generators, in most cases at a prohibitive cost. With the experience acquired over the last few years in the area of private production, native communities could find more economical solutions, in order to completely or partially replace production by generating sets.

Partnerships will have to benefit native people as much as Hydro-Québec; the latter will be aiming to reduce its exploitation deficit within the autonomous networks. The aforementioned possibilities represent concrete opportunities to develop an entrepreneurial spirit in native communities and economic partnerships with experienced private-sector enterprises, as well as with Hydro-Québec.

In the same vein, the government encourages the active participation of native populations in the public invitations to tender which will be initiated as part of the development of small hydro-electric plants. As was previously mentioned, the ministère des Ressources naturelles will give priority, when granting concessions, to projects that directly involve the regions, Amerindians and local communities, as well as those that integrate the local economy, with its industrial, economic and tourism facets.

Moreover, the government has committed itself to providing concrete support for several of these projects, certain of which are already in advanced stages. This is the case, for example, with the Hydro Innu project, which is run by the Montagnais Lake St. John Band Council (Piekuakamiulnutsh). Other projects of this type could be rapidly implemented. Discussions are under way to create semi-public companies involving several native communities. The government has a very open-minded approach to these files. With this type of initiative, Amerindian nations and communities will be able to take charge of their own destiny and break their current economic dependence.

A Government That Listens

During the public energy debate, representatives of the Amerindian nations emphasized the fact that they were not opposed to all forms of energy development. Quite the contrary: they underlined their interest in energy-resource development that takes into account their needs and realities.

The Québec government is ready to pursue the dialogue with Amerindian nations concerning ways of developing Québec territory, particularly the North. The government keenly wishes to receive proposals from the nations and communities concerned. These proposals must take the present energy context into consideration.

■ Concluding Specific Agreements

Agreements are often reached between the developer and the concerned native community prior to beginning specific projects. In the eyes of the government, such agreements must allow each of the parties involved in the project to assume its responsibilities. They must encourage the participation of native communities in the construction of projects, in the carrying-out of evaluation measures, as well as of remedial work intended to ensure environmental protection and improvement.

The government considers that agreements must serve to support the socio-economic development of native communities and expects these agreements to be discussed in a spirit of openness and dialogue. Finally, it must be restated that questions of governmental autonomy and territorial negotiations will not be tackled as part of these agreements.

■ Energy Efficiency Within Native Communities

One of the objectives of the energy policy is for Québec society to become more energy efficient. Native communities

have a role to play in this collective effort. Energy efficiency, just like demand management, makes it possible to improve the individual's quality of life while strengthening respect for and protection of the environment and natural resources. Native communities must benefit from these advantages.

Better knowledge of the consumption and energy-use behaviour patterns in native communities is required if we wish to put into practice adequate measures for sensitizing affected populations. However, not all native communities live under identical geographic and climatic conditions. The location of certain communities gives rise to disparities as regards consumption. The particularly harsh climatic conditions prevailing in northern Québec dictate a higher energy consumption than in the south and lead to behaviour patterns which are sometimes difficult to modify.

Priority is to be given to raising this clientele's awareness of energy efficiency, as well as to information, education and training. The Agence de l'efficacité énergétique will pay particular attention to existing possibilities for action and will propose partnerships to intervenors in the sector. A specific section of the PRIME programme (Programme to Recognize Investments in Energy Efficiency) will be devoted to initiatives taken in native communities, in order to meet needs in an adequate manner. The goal, for native communities, and for all of Québec society, is a general improvement in the quality of life thanks to a reduction in our energy bill.

Increased Responsibilities for the Regions

Satisfying the expectations of the regions is a priority for the Québec government. The regions, particularly the net-producing ones, are faced with a difficult socio-economic situation, characterized by high unemployment, the exodus of young people and insufficiently diversified activities that are vulnerable to considerable fluctuations. At the same time, the regions want to take charge of their own future, take part in decisions concerning them and intervene directly in the deliberations of planning bodies. Indeed, what regional intervenors want is to define regional solutions for the development problems that their regions face.

Regional Participation in the Public Energy Debate

These expectations were expressed in a particularly forceful way during the Public Energy Debate. The net-producing regions place a great deal of hope in energy development. This is quite understandable given the potential of their territory, whether we are talking about small-river development, large dams, wind energy, cogeneration facilities or investments in energy efficiency. What is more, the net-producing regions feel that they are not getting enough out of the already completed development of their territory, beyond the direct impact of the investments made when the installations themselves were implemented. This perception takes on an added dimension as Hydro-Québec, in its downsizing, makes the regions support more of the burden than the head office, a situation which must be corrected.

There are two essential elements in the regional expectations: first, the regions want the new energy policy to let them benefit from the economic spin-offs related to energy activities; and second, they want to take part in the energy decisions that concern them³². The Québec government has taken due note of these claims, which coincide with the priorities that the government itself has set down for the

regions. The evolution of the energy context and the setting up of a new regulatory and institutional framework provide an opportunity to move forward in the desired direction.

Taking Part in Decisions

Two aspects of the energy policy, the initiation of a river-classification process and the creation of a Régie de l'énergie, reserve a significant role for the regions. In defining these aspects, the government wanted to give the regions a chance to take part in energy planning and to become involved in the decision-making process. The government is therefore setting up mechanisms that make it easier to consider the regional point of view on energy development, at the same time providing the regions with the means to obtain the maximum local economic spin-offs when the next stages of energy production are defined.

River Classification

Mention has already been made of the initiatives taken by the government in order to start up a river-classification process here in Québec. This process could also be extended to landscape classification. The main characteristics of this process have been defined. The different phases have also been described³³. The government wants the regions to play a major role in this process.

Indeed, it will be up to the regions to start the process for a given river, as part of a project concerning the entire drainage basin. The regions will conduct the analysis with the support of the government, which will provide the necessary methodological framework. The process will be placed under the responsibility of the regional development council, in close collaboration with the MRC's. As was mentioned in the previous chapter, the participation of Amerindian nations will be defined according to the specific characteristics of the territories in question. At the end of

³². For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy, op cit, p 55.

³³. See above, chapter 4, p 42 ff.

the process, the regions will determine their priorities. These priorities will be passed on to the government, which will make the final decision.

The regions are thus being entrusted with considerable responsibilities, since they will set the process in motion and determine its course, and will themselves formulate the conclusions. These responsibilities are all the more important because they will have a direct and immediate impact on the conditions governing the exploitation of hydraulic resources, on which Québec's main energy form is founded.

The Choice of Electricity-Production Forms

The demands of the regions go beyond questions of hydraulic developments. For a long time the regions have been claiming the right to take part in decisions on the development of local resources. They want to assert their interests concerning both energy supply and demand, so that they may promote local and regional expertise, further the development of existing potential, and make decision-makers aware of the specific needs that they must satisfy. The regions thus wish to be consulted more often and as early as possible when energy-production projects are being defined.

The role entrusted to the regions in the future river-classification process is a partial response to this demand, as far as hydraulic forms are concerned. By creating a Régie de l'énergie, the government is giving the regions a chance to intervene in a more general way with respect to all energy forms. Because of the powers entrusted to it, the Régie de l'énergie will be a major forum, authorizing the resource plans of Hydro-Québec and the natural-gas distributors. In the case of Hydro-Québec, this will lead the Régie to undertake a characterization of energy forms in the very near future. The Régie could be called upon by the government to organize public hearings on questions concerning the oil sector, or even the whole energy sector.

In all cases, the analyses carried out by the Régie de l'énergie will be based on an examination made during public hearings. The regions which so desire will be able to take part in these hearings, and the government encourages them to do so. In the *Act respecting the Régie de l'énergie*, a clause provides for the possibility of holding hearings throughout all of Québec. The Régie will thus have the necessary powers to organize public hearings in certain specific regions outside of Montréal or Québec City, due to the questions under discussion. For instance, public hearings organized by the Régie in order to clarify the specific characteristics of wind energy might take place, at least partially, in the regions possessing a considerable wind-energy potential.

Finally, it must be emphasized that the *Act respecting the Régie de l'énergie* stipulates that in its analyses and decisions, the institution will take into account environmental,

economic and social "externalities", on the basis of information provided by the government. The government wants to emphasize from the start that, of these external factors, it places a particular importance on the regional impact of decisions.

As regards energy conservation, the government has also provided for the participation of the regions in the decision-making process. The advisory committee that will be set up for the Agence de l'efficacité énergétique will therefore include, by regulation, several regional representatives. The representatives of these regions will thus contribute directly to drawing up the Agence's orientations, which will then be proposed to the government. They will be able to call attention to regional problems and make sure that the regions fully benefit from the priorities adopted.

■ **New Development Possibilities**

The increased involvement of the regions in energy-related decisions, as desired by the government, is being put into practice in a context where new development possibilities are opening up at the regional level.

More Decentralized Energy Forms and a Better-Distributed Potential

An important feature of the present energy context is the advantage found in energy forms that use small production units. Not only do these forms require investments that are smaller and therefore less risky, they can also satisfy market needs more quickly. They are likewise more decentralized, and their potential is better distributed throughout Québec.

This phenomenon of decentralization and better geographical distribution of potential is intensified by the possibilities offered by energy conservation, which is, for the most part, implemented on the consumption site itself. This will make it possible in the long run to find a new equilibrium for the present situation, where energy production is strongly centralized. It is worth noting, for example, that at the present time, the La Grande complex alone represents half of the generating capacity of the Québec electricity sector.

The regions are already very much aware of the possibilities that are available to them, as was confirmed by various interventions during the Public Energy Debate. Thus, the initiatives taken by the government to develop each of these energy forms are directly in line with the priorities expressed by the regions.

- The potential of small and medium-sized hydro-electric power stations was stressed earlier in the document. Considerable expertise in this activity sector has been rapidly built up in most of the regions of Québec.

By significantly expanding this activity sector and opening it up to private production, the government clears the way for important development possibilities. As was previously mentioned, the ministère des Ressources naturelles will give priority, when granting concessions, to projects that directly involve the regions, Amerindians and local communities, as well as those that integrate the local economy, with its industrial, economic and tourism facets.

- In the case of existing power stations, repair work on installations represents a potential for jobs that should not be underestimated, and that should bring with them considerable regional spin-offs. These include not only the professional services involved, but also the products needed to carry out the repairs.
- In the wind-energy sector, major initiatives should speed up the expected investments. The establishment by the Régie de l'énergie of a "set aside" system favouring this energy form, in its approval of the Hydro-Québec resource plan, will supply the incentive needed for its development. In the evaluations that we have quoted, this "set aside" should justify a minimum purchasing programme, spread over a period of six to seven years. Regions such as the Gaspésie and the Bas-Saint-Laurent are counting a great deal on wind energy to stimulate industrial development and create jobs in a most promising field.
- The regions are quite interested in cogeneration power stations using forest and urban biomass and natural gas, given the investments they require and their energizing effect on industries using them. The possibilities offered by these forms will be taken into account and analysed during the energy-form characterization process undertaken by the Régie de l'énergie. In the opinion of the government, the expected economic benefits for the regions are an important factor to be evaluated during this characterization process.
- Moreover, in the case of natural gas, the government is paying close attention to projects intended to serve regions that do not yet have access to it. Québec has always been in favour of a widespread, efficient natural-gas network, which would maximize the industrializing effects of this energy form. The preferred orientations of the government on this question will be discussed further on. Here we simply want to underline the fact that the objective of these orientations is to provide additional development support for regions which do not yet have access to natural gas.
- The government is greatly counting on regional involvement in the promotion of energy efficiency. The combined actions of energy suppliers, the Régie de l'énergie and the Agence de l'efficacité énergétique should speed up the development of existing potential.

This represents significant development opportunities for the regions, given the strongly decentralized character of energy

conservation measures. The regions will be able to take full advantage of these opportunities by going before the Régie de l'énergie and the Agence de l'efficacité énergétique in the identification of measures. For example, initiatives such as energy forums should have an important place in the future action plan of the Agence de l'efficacité énergétique.

The energy forums, which have existed since 1986, provide opportunities for regional dialogue. Their mandate is to set up consciousness-raising and information activities that directly meet the needs of the regions. Thanks to an agreement between the ministère des Ressources naturelles and the chambers of commerce, the forums gather together the main economic agents of a given region. There are at present nine energy forums in the various regions of Québec. Once the Agence de l'efficacité énergétique is set up, the mandate of these forums could be broadened, their number increased and their interventions reinforced.

Finally, it is worth noting that the government will pay particular attention to endeavours encouraging energy efficiency in regions where uniform rates could lead to a poor use of electricity. In these regions, Hydro-Québec will be asked to put together more aggressive programmes to reduce energy bills to a minimum.

Regional Intervenors

Future energy projects should offer the regions new development opportunities. The government would like the various regional intervenors to take a direct part in this development, with greater ease than in the past.

Changes in legislation have been initiated in order to allow municipalities to invest in the projects that they have chosen, using semi-public companies as intermediaries or other possible options. Even before these changes are completed, municipalities and MRC's (Municipal Regional Ridings) can become involved in energy-efficiency measures, either as consumers or within the scope of their normal jurisdiction. They can, for example, integrate energy-conservation objectives and concrete measures into their land-use-development plans. Moreover, the government wants the regional socio-economic organizations to play a more important role in carrying out energy projects. Here, too, initiatives are already being carried out in the area of energy efficiency, through the implementation of community-based pilot projects.

Regional intervenors will be rapidly informed of development possibilities so that they may prepare appropriate strategies and thereby maximize their impact. Hydro-Québec will therefore have to involve regional representatives as early as possible, once equipment-planning decisions have been made. In this way, the regions will be able to design appropriate training programmes, so that a local workforce will be available once work is begun. The

regions will also be able to develop specific expertise and well-adapted production capacities, since they will have been informed early of the investments that the public utility is planning to make. Initiatives must be taken so that economic benefits will extend beyond the actual construction, for example by planning tourism development around completed projects.

Additional Financial Means

In addition to participating in the decisions allowing them to benefit from the development possibilities offered by the present energy context, the regions are also demanding additional financial means, linked to the presence of the energy resources being exploited on their territory.

Excluded Options

This question was taken up with a great deal of prudence during the public energy debate³⁴. The government agrees with the resulting analysis with respect to variable rates. Variable rates would call into question uniform electricity rates, which are considered to be a gain resulting from the nationalization of electricity, and to which Quebecers are quite attached. It is for this reason that the government does not wish to establish variable rates according to the regions.

A regional royalty on energy-production was suggested, accompanied, nonetheless, by several caveats. It is because of these caveats that the government has not followed up on this proposal, at least not for the moment.

The government feels that regional royalties on energy production would have more drawbacks than advantages in the present context. Such royalties would suggest that regions have right of ownership over resources, which is not realistic. Furthermore, these royalties would inevitably place the regions in situations of serious inequality, given the current pronounced disparity in the distribution of energy resources. These royalties could have the practical result of stimulating efforts on the energy-production level, to the detriment of energy conservation. Above all, they would add to existing levies, increase their complexity and in the final analysis increase the price paid by the consumer.

Redistributing Tax Substitutes

In order to free up financial resources for the regions that produce a large amount of energy, the government suggests a return to the system of “in lieu of taxes” which are actually tax substitutes collected from telecommunication, natural-gas and electricity companies, in relation to existing installations, and paid back to the municipalities as compensation for nuisances arising from these facilities. Equalization payments would allow these tax substitutes to be redistributed to

all Québec municipalities, with preference being given to the central municipalities of cities.

The government wants to initiate discussions with the Union des municipalités de la province de Québec and the Union des municipalités régionales de comté, in order to study reform possibilities. It would be a matter of freeing up additional resources, using the tax substitutes solely for regions having energy installations on their territory. For example, these additional revenues might be calculated on the first 25 MW produced by an electric power station. In any case, the government feels that the reform should not bring about any decrease in revenues for core cities.

The additional revenues that might be freed up, if an agreement is reached, would be used for development. It is important for the government that the additional financial means be used to create or maintain jobs, or to carry out structurally modifying projects likely to promote private investments and reinforce the capacity of the regions to accommodate them.

The Hydro-Québec Integrated Development Programme

The Hydro-Québec integrated development programme is another way of freeing up resources for the regions. This programme was set up by Hydro-Québec in order to compensate for the residual impact of the production, repair, transmission and distribution projects conducted by this public utility. For projects worth more than 500 million dollars, company authorities establish the funds allocated on a case-by-case basis. For projects worth less than 500 million dollars, the sums spent as part of the programme can amount to as much as 2% of the funds foreseen for production and repair projects and up to 1% for transmission and distribution projects.

When it was created in 1985, the programme applied only to environmental development. Since 1993, Hydro-Québec has broadened the programme’s application: it now also includes regional and native-community development. The resulting initiatives have been incorporated into the strategic planning of each region as well as into framework agreements concluded between regional development councils and the Québec government.

- The government believes that these modifications are a step in the right direction. However, it is possible to go further by devoting an increased portion of this programme to projects and activities that create genuine structural modifications, in line with a long-term vision of regional development. Other than the establishment of regional development and investment funds that support, for example, the start-up or development of companies, these might include investments in the training of engineers through the creation of

³⁴. For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy, op cit, pp 56-57.

engineering chairs, or support for technological development. These investments will be optimized if, as previously mentioned, the regional intervenors are rapidly informed of development possibilities. Indeed, the regions will be able to prepare all the more efficient strategies if they are informed early about equipment planning at Hydro-Québec.

- What is more, the reasons that led to the creation of this programme and the principles on which it is based can be

applied to private production as well as to Hydro-Québec. The government will therefore extend the integrated-development programme to private sector projects that use public-sector hydraulic power or that have concluded a long-term sales contract with Hydro-Québec. This extension will free up considerable additional funds for the regions. It is also a matter of fairness, if all energy producers are to be on an equal footing.



CHAPTER 10

The Role of Fossil Fuels

Together, petroleum and natural gas provide for a little over half the energy needs of the entire Québec population and represent two-thirds of the conventional energy consumed by Quebecers. The availability of these two sources of energy at competitive prices is indispensable to the health of Québec's economy. Moreover, the different goals the government has set for itself as part of the new energy policy directly affect fossil fuels. If these goals are to be achieved, appropriate initiatives must be defined in the gas and petroleum sectors, on the applicable markets.

Fossil Fuels and the Québec Energy Policy

In implementing its new energy policy, the government hopes to ensure that Quebecers receive the energy services they require at the best possible price. Aimed at strengthening and multiplying our means of economic development, the policy has been formulated to respect or reestablish environmental equilibrium, and guarantee both equity and transparency.

The above objectives all directly affect the natural-gas and petroleum sectors and constitute the basis of the orientations and initiatives of the government in the fossil fuel area.

Policy Orientations

With regard to fossil fuels, the new energy policy revolves around three essential concerns:

- **Ensuring the optimal use of fossil fuels in Québec**

Ensuring the optimal use of fossil fuels means that petroleum and natural gas must occupy the place they deserve in Québec's energy markets, in the best interest of Quebecers. To this end, the government will in all cases encourage the operation of the market, in such a way that all energy forms

are subjected to the same conditions, in keeping with the principle of the "level playing field", that is, the same rules must apply to everyone. The government must also ensure that petroleum and natural gas are available at the lowest possible cost. Its initiatives in this respect will likewise affect upstream and downstream activities of the petroleum and natural-gas sectors, namely exploration, transportation, storage, refining, petrochemistry, distribution and utilisation, with the intention of strengthening Québec's performance in these sectors.

- **Making Québec a hub of the North American fossil-fuel trade at the international level**

Québec currently has at its fingertips many possibilities that would enable it to confirm and solidify its desired role as hub of the gas and petroleum industries. Initiatives at the infrastructure level and an appropriate strategy have been defined for this purpose.

- **Rising to the environmental challenge**

The use of fossil fuels gives rise to particular environmental challenges, especially with respect to greenhouse-gas emissions and other substances causing urban smog. Québec must meet these challenges head on, its international commitments making this all the more imperative. A number of approaches can be taken and an action plan is already underway. The energy policy proposes certain guidelines geared toward finding solutions to an issue that is of the utmost importance to Québec.

An Optimal Position for Fossil Fuels

During the past 20 years, the evolution of Québec's energy balance sheet has been marked by a notable decrease in the importance of petroleum and a simultaneous increase in that of natural gas.

Despite a lower market share, petroleum, together with electricity, remains one of Québec's main energy forms. It ensures that one quarter of residential and commercial energy needs are met, and provides for close to 15% of energy needs in the industrial sector. Most importantly, it holds centre stage in the transportation sector, where it is the source of almost all the energy required. As regards natural gas, its share in the Québec energy balance sheet has tripled since the mid-seventies. Natural gas satisfies 16% of conventional energy needs. It is second only to electricity in the commercial and industrial sectors.

The Almost Exclusive Role of Petroleum Products in the Transportation Sector

One of the goals of the government's energy policy is to optimize the role played by petroleum on Québec's various markets – to put it on a par with natural gas. In the transportation sector, the role of petroleum is not an issue for concern. Given the prevailing technological and economic conditions, only petroleum products are capable of satisfying essential needs in this area. There are interesting possibilities for fuel alternatives which Québec must explore. These options will be examined further on. However, in the foreseeable future, it is unlikely that petroleum products will be upstaged by alternatives in the transportation sector, where they play the leading role.

The Heating Market

There is strong competition among the different energy forms available on other markets, especially the heating market. It alone represents approximately 60% of the energy consumption of the residential, commercial and industrial sectors, and approximately 45% of the total energy consumption. On the heating market, the competitive position of electricity, natural gas and petroleum varies, depending on the type of consumer, the type of installations and the conditions applicable to distribution. The heating market is of particular importance to natural gas. The proportion of natural gas consumed in Québec for heating purposes reached 99% in the tertiary sector.

In the government's eyes, the presence of fossil fuels on the different markets is imperative if Québec's energy needs are to be satisfied with a maximum degree of flexibility. Moreover, in some cases, electricity is not always the best choice – either technically or economically. Making room for fossil fuels at the centre of Québec's energy markets means that the advantages offered by all energy forms must be fully exploited; the overall impact must be taken into account and the appropriate energy form used in the right area.

A Level Playing Field and Prices That Reflect Costs

The market constitutes the most neutral and efficient means of optimizing the use of the various energy forms, provided, however, that two conditions are met: prices must reflect the real cost for consumers, and energy suppliers and distributors must compete on a level playing field for a given market.

The energy policy of the Government of Québec has been defined so as to fulfil both these conditions, with which the different initiatives announced up to now are in keeping. To date, it is mainly regulated energy that has been subjected to reforms. In fact, Québec has seen major differences between the regulatory framework of natural gas and that of electricity, despite the fact that these two energy forms are direct competitors on a number of markets.

The creation of the Régie de l'énergie will make it possible to establish identical rules when defining natural-gas and electricity rates. In the electricity sector, Hydro-Québec will be required to meet certain criteria, equivalent to those applied to gas distributors by their shareholders, but in return, it will have the corresponding room to manoeuvre. In terms of regulated energy, the Régie, when setting rates, must see to it that external economic, social and environmental factors are taken into consideration, in accordance with government policy. The means to ensure this will also be at its disposal. The Régie will thus be able to better ensure that prices reflect true costs.

The new rules implemented by the government will quickly and drastically modify the marketing strategies to be used for the different energy forms, and especially the prevailing competition conditions that apply to natural gas and electricity. The government is convinced that by allowing the energy market to fully play out its role, according to fair rules, consumers will make wise decisions concerning the choice of energy form for a given use.

Available Resources at Competitive Prices

The availability of natural gas and petroleum at the lowest possible price must be ensured in markets that operate on the basis of transparency and equity. To this end, the energy policy proposes a number of initiatives.

- **Guaranteeing Québec inexpensive access to natural-gas and petroleum resources**

The sale price of fossil fuels is the sum of the price of the product plus transportation and distribution costs. For the petroleum-product sector, the cost of refining crude oil must also be included. Competition normally ensures Québec an optimal purchase price.

As for natural gas, its transmission makes for a natural monopoly and transmission rates are therefore defined by

the National Energy Board. The Government of Québec plays an essential role in defending the interests of Québec consumers before this regulatory board. In future initiatives, Québec will give priority to defending the maintenance of the eastern toll zone of the Trans Canada Pipelines.

In the case of the transmission of petroleum as for natural gas, Québec's main objective is to ensure that supply conditions for the Québec industrial sector are at least as favourable as those accorded to its competitors.

- **Reducing natural-gas distribution costs in Québec**

In the natural-gas sector, the consumer sale price has decreased slightly since the mid-eighties. Between 1984 and 1994, the average sale price of natural gas in Québec dropped by 1%. This can be explained by deregulation along with an improved use of the transmission capacity on the Canadian grid. The decrease in gas prices would have been even greater, however, if the same trend had been seen in distribution costs.

This was not to be. From 1985 to 1995, the share of distribution costs in consumer prices went from 28% to 37%. On average, these costs currently represent 20% of the consumer price in the industrial sector, and a bit more than 50% in the commercial sector. Overall, natural-gas costs are appreciably higher in Québec than in Ontario.

Several factors explain this gap. Ontario consumers benefit from the presence of large storage facilities and are supplied by a distribution grid that is largely paid for and which has a higher utilization rate than in Québec. As for Québec gas distributors, they have put a great deal of effort into improving their productivity and efficiency. Despite this, however, prices here are not yet as low as in Ontario. This can be partially explained by the type of distribution grid recently installed in Québec and by the fact that it is not used completely. The government hopes that steps will be taken toward improving the use of the grid to reduce the costs users are currently forced to assume. This is a matter that requires the active participation of both the gas distributors in question and the members of the Régie de l'énergie, whose decisions must keep in sight the current situation and its impact on the competitive potential of Québec companies.

- **Ensuring genuine and fair competition between petroleum-product distributors**

The government's concerns regarding competition conditions in the petroleum market have already been underlined³⁵. Québec experienced very strong competition in gas prices in 1996. As a result, the financial viability of a number of independent distributors has become endangered. The government wants to reaffirm its position. Competition between distributors in this market must be genuine, which implies maintaining a dynamic network of independent

distributors offering consumers a real choice in comparison with large-scale companies. The competition must also be fair, and this is where caution is required. Independent distributors do not have the financial capacity enjoyed by large integrated petroleum companies. They will not be able to withstand for long those strategies aimed at forcing them out of the market, strategies based on price-related practices that do not abide by the standard rules of competition.

At the present time, under the *Act respecting the use of petroleum products*, the government has a certain degree of supervisory authority and the option of establishing a price ceiling for the various petroleum products. This can be applied to all of Québec or to a given region. Once the Régie de l'énergie has been set up, the supervisory authority will be extended to include all petroleum products. Most importantly, this power will be transferred to the Régie, which may be called upon, moreover, to propose recommendations to the government on the initiatives to be taken with respect to the price of petroleum products.

To avoid abusive practices in the sale of gasoline and diesel fuel, the government is proposing a major modification to the *Act respecting the use of petroleum products*. This proposal has already been explained. A retailer is presumed to be exercising his rights in an abusive and unreasonable manner if gasoline or diesel fuel is sold below a certain price. The Régie will conduct an analysis of this price and annually define the amount covering operating costs. The goal of this provision is to keep wide price swings, as happened in the spring of 1996, from reoccurring. Though the provision represents an approach that is well adapted to Québec's context, it is not, however, to be used to regulate prices, nor to put an end to competition. When defining the amount that represents operating costs, the Régie de l'énergie should keep this concern in mind.

In order to foster the continuous presence of a dynamic network of independent distributors, in the long-term interest of consumers, the government has asked SOQUIP (Société québécoise d'initiatives pétrolières), a state enterprise specializing in petroleum initiatives, to facilitate access to the international supply market by acting as a consultant firm. Moreover, funds will be set aside for soil decontamination by the ministère des Ressources naturelles and the ministère de l'Environnement et de la Faune. These funds will facilitate market rationalization by reducing the cost of closing service stations.

The government is also concerned about consumers who reside in remote regions and who may be confronted with high prices or simply a lack of accessibility to petroleum products. Distance and the absence of competition place these people in a difficult situation, all the more unsettling since petroleum products often constitute basic necessities. The Régie de l'énergie will provide consumers in remote

³⁵. See above, chapter 2, pp 24-25.

areas with a means of making their situation known and understood. Like all petroleum-product users, they can ask the Régie for information about the prices set by petroleum-products distributors. The government is convinced that, by approaching distributors in an appropriate manner, the Régie will be able to settle a number of the problems that arise. For situations it cannot rectify alone, it will submit the recommendations it deems relevant to the government.

An Industry to Be Reinforced

An optimal place for fossil fuels in the Québec energy sector also entails reinforcing the activities directly related to petroleum and natural gas, and upon which part of our growth and development are based. Refining, petrochemistry, exploration and fossil fuel production as well as the gas-industry sector generate prosperity and employment. The government's policy directions in this regard must be specified.

- **Refining and petrochemistry**

The presence of dynamic, successful refineries has made Québec a net exporter of petroleum products, regardless of the fact that it does not produce crude oil. In 1995, Québec showed a profit to this effect of \$271 million. The value of shipments arising from refining activities reached \$3.5 billion in 1994. Close to 1,500 well-paid, highly specialized jobs are associated with these activities. Investments of an average of 15 to 30 million dollars are made every year by each of the three Québec refiners. In addition, the refining industry provides the primary petrochemistry sector with a large part of its supply. In particular, it supplies Petromont, Petresa and Coastal with liquefied petroleum gas, benzene, xylene and toluene. It is therefore clear that Québec's refining industry plays a key role in its economy.

Despite a high rate of installation use, enviable technical performance and an advantageous geographic location, Québec refiners are faced with a number of problems that may have an impact on their financial situation in the long run. The most worrisome of these stem from powerful international competition, costs related to environmental constraints, and the size of the strategic investments refiners are required to make. Furthermore, the low rate of increase in internal demand in the last few years forces these refiners to evolve within a context in which they have equally little flexibility.

Environmental questions will be specifically dealt with further on. By and large, the government will use its powers to support projects geared toward strengthening the Québec refining industry, especially in the area of transmission infrastructures. The government will also support projects aimed at increasing Québec's hydrogen production capacity. Like refineries, the petrochemical industry is reliant on a

greater availability of hydrogen to enable it to respect certain environmental demands. Investing in hydrogen production would therefore make it possible to meet the needs of refiners and the petrochemical industry, while at the same time creating business and employment.

Finally, it is important to recall the government's supportive participation in endeavours to coordinate the industry, during meetings of the Table de concertation raffinage et pétrochimie. Due to the presence of this group, new synergies have been developed that must soon be transformed into concrete collaborative action if these endeavours are to bear fruit in the near future.

- **Fossil-fuel exploration and production**

Since 1990, exploration in the petroleum and gas sectors has made a very strong comeback in Québec, for many reasons. New subsurface exploration technologies and interesting discoveries in Newfoundland, in sedimentary basins with geological features similar to certain Québec regions, have rekindled interest in exploring the possibilities offered by Québec's subsurface, about which little is known.

To encourage development in these areas, the government has decided to increase financial aid for petroleum and gas exploration as part of a flow-through-shares programme. The deduction applicable to spending on petroleum or gas exploration in Québec for such ventures, including the drilling and completion of wells, has been raised, as of this year, from 125% to 175%. This financial aid has thus been brought to a par with that given to the mining industry.

To further encourage exploration, the government will ensure easier access to geoscientific data currently held by SOQUIP. This data will be centralized in the geoscientific database of the ministère des Ressources naturelles. It will be possible to consult this data for a fee³⁶.

Moreover, the government proposes to lighten and simplify the legislative framework affecting exploration companies. This initiative could take the form of an act specific to petroleum and gas exploration. To date, the legislative framework has been defined by certain sections of the *Mining Act*. In particular, the passing of a new act will make it possible to harmonize the provisions in effect in Québec and those defined in competing regions, with a view to obtaining funds for exploration.

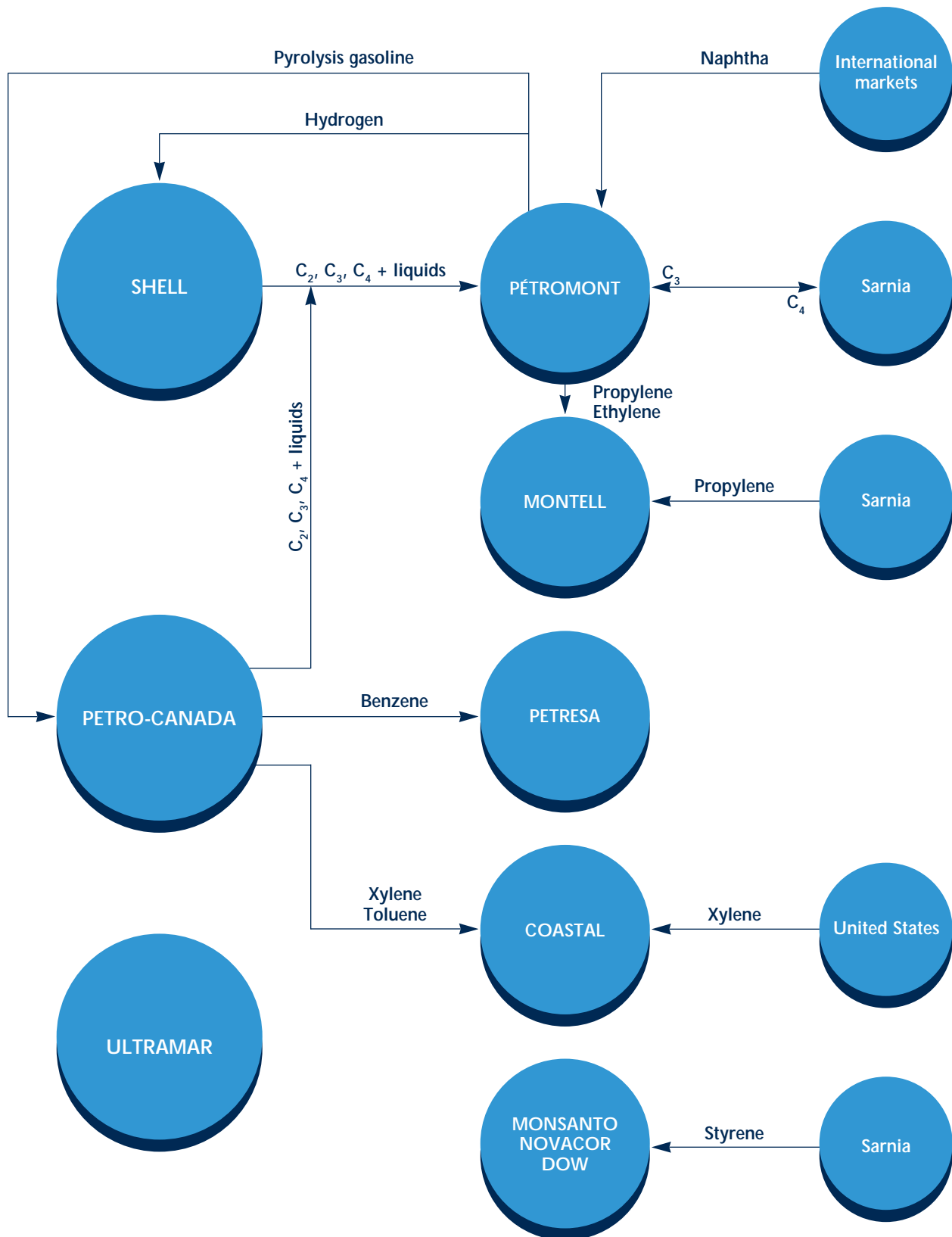
- **The gas industry sector**

Natural gas is a key player in the industrial sector, where it meets over a quarter of energy needs. Several energy-intensive industries make heavy use of natural gas for heating or processing. Among these are the pulp and paper, iron and steel, smelting and refining, cement, and chemical industries. Most of them have taken advantage of the deregulation of natural gas to negotiate their buying directly with

³⁶ This decision is further to one of the recommendations set forth by the Consultation Panel for the Public Debate on Energy. See *For an Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy*, op cit, p 80.

FIGURE 9

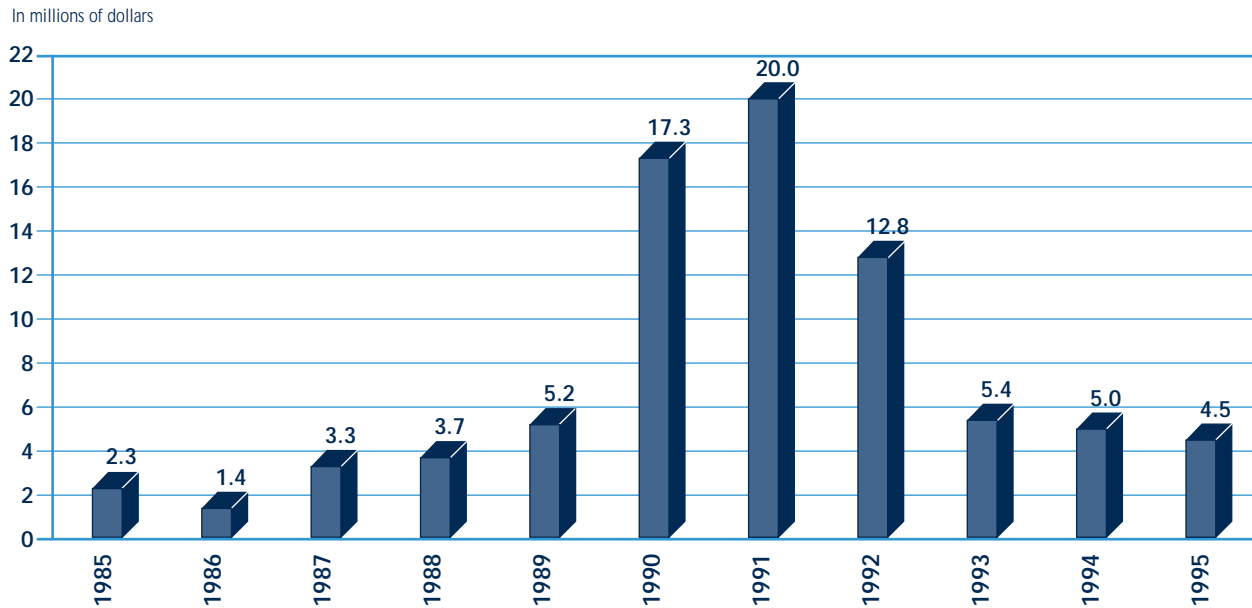
Simplified Diagram of Québec Refining and Petrochemical Industries



Source: Direction du gaz et du pétrole of the ministère des Ressources naturelles du Québec.

FIGURE 10

Investments in Fossil-Fuel Exploration, Québec 1985-1995



Source: Direction du gaz et du pétrole of the ministère des Ressources naturelles du Québec.

producers in Western Canada. The government is in favour of these initiatives and hopes that such large-scale consumers will benefit fully from attempts to reduce distribution costs.

The penetration of the natural-gas market in Québec has entailed the development of a sector of activities directly related to the gas trade, in such areas as consulting-engineering, corporate services, and heating equipment installation and repair. The establishment of the Centre des technologies du gaz, which will be discussed in the section on research and development, has given Québec access to foreign techniques that can be adapted to its specific needs. Endeavours, prompted by Gaz Métropolitain and its subsidiary Consulgaz, are currently being made to export the knowledge and expertise acquired in Québec in grid installation and development. This is a step in the right direction. When necessary, the government will provide its support.

Québec, a Hub of the North American Fossil-Fuel Trade

As in the natural-gas sector, Québec has several advantages in the petroleum sector. These include a favourable geographic location and diversified infrastructures, advantages

which enable it to play a role as a hub of the North American fossil-fuel trade, whether one refers to petroleum, petroleum products, natural gas or NGL³⁷. Through its initiatives and an appropriate strategy, the government intends to confirm and reinforce this role, one Québec is capable of assuming.

Petroleum Supplies

Québec refineries have access to a diversified set of infrastructures, providing them with a high level of flexibility in terms of supply management. Imported crude oil may be carried from the world market along the St. Lawrence Seaway or the Portland-Montréal pipeline and from the west via the Sarnia-Montréal pipeline.

The Sarnia-Montréal oil pipeline has seen only marginal use over the last few years. A study is currently underway to examine the feasibility of reversing this oil pipeline. The purpose of this would be to offer Ontario refineries access to the international market via the Portland-Montréal-Sarnia route. However, as it now stands, this project means that Québec refineries would lose their access to western reserves, access that proved very important, both strategically and economically during the eighties. On the other hand, it would allow Québec refiners to play a strategic role on the north-eastern North American market: the refiners could have competitive

³⁷. Natural Gas Liquids.

advantages by being at the crossroads of the Portland-Montréal-Sarnia pipeline. Nevertheless, when examining these economic interests, it is important not to forget supply security. From this perspective, a continued access to Canadian resources is essential. Towards this end, the Government of Québec will demand, in talks with the National Energy Board, that “re-inversion” equipment be planned, enabling quick use of the pipeline from west to east.

As regards maritime transportation, the government will ensure that the interests of the Québec refining industry are defended in the new maritime policy of the federal government. Indeed, some of the measures under consideration might have an impact on the cost of transporting fossil fuels, to the detriment of the Québec refining industry.

Québec, a Commercial Hub of Natural Gas

A process designed to continentalize gas-pipeline grids is currently underway in North America. Québec intends to participate fully and thus reinforce its role as a hub of the natural-gas trade.

As regards this reinforcement, a project currently underway, the Portland Natural Gas Transmission System, will link Québec to the Boston area when completed. This new gas pipeline will improve the integration of Québec’s network to natural-gas-transmission facilities in North America. This new infrastructure will allow Québec to offer natural-gas producers access to New England markets. This would be the case for natural gas coming from western Canada but also for the project at Sable Island off Nova Scotia.

Indeed, the possibility of developing new gas resources in the Sable Island region is inciting Gaz Métropolitain and Trans Canada Pipelines, through TransQuébec and Maritimes, to work together on another project having the support of the government of Québec. This would be an extension of the Canadian natural-gas-transmission system towards the Maritimes. This initiative would allow Québec and other consuming regions to obtain complementary supplies. Regions which currently have no access to the Gaz Métropolitain grid would also have access to natural gas. This project likewise has the merit of giving the Sable Island producers access to more diversified markets.

Storage

The conditions for storing natural gas constitute a central issue in the development of the flow of the gas trade. Indeed, storage capacity provides flexibility of choice, which is at the heart of the concept of a commercial crossroads. The government is sharply aware of this and wants to ensure that the possibilities for geological storage in the Québec subsurface are explored; SOQUIP has a mandate to this effect.

Geological storage is still somewhat in the initial stages in Québec. Nonetheless, there is good potential for geographical rent due to our proximity to the north-eastern United States, which represents a major opening for storage services during peak periods. Furthermore, SOQUIP has acquired considerable expertise in storage infrastructure installation, especially as a result of the conversion of the Pointe-du-Lac natural-gas resource into an underground storage reservoir. A similar project, which also involves Gaz de France, is currently in progress to convert the Saint-Flavien natural-gas resource into a storage reservoir. The government will ask SOQUIP to continue its development of various forms of storage for natural gas and natural-gas liquids.

SOQUIP’s Mandates

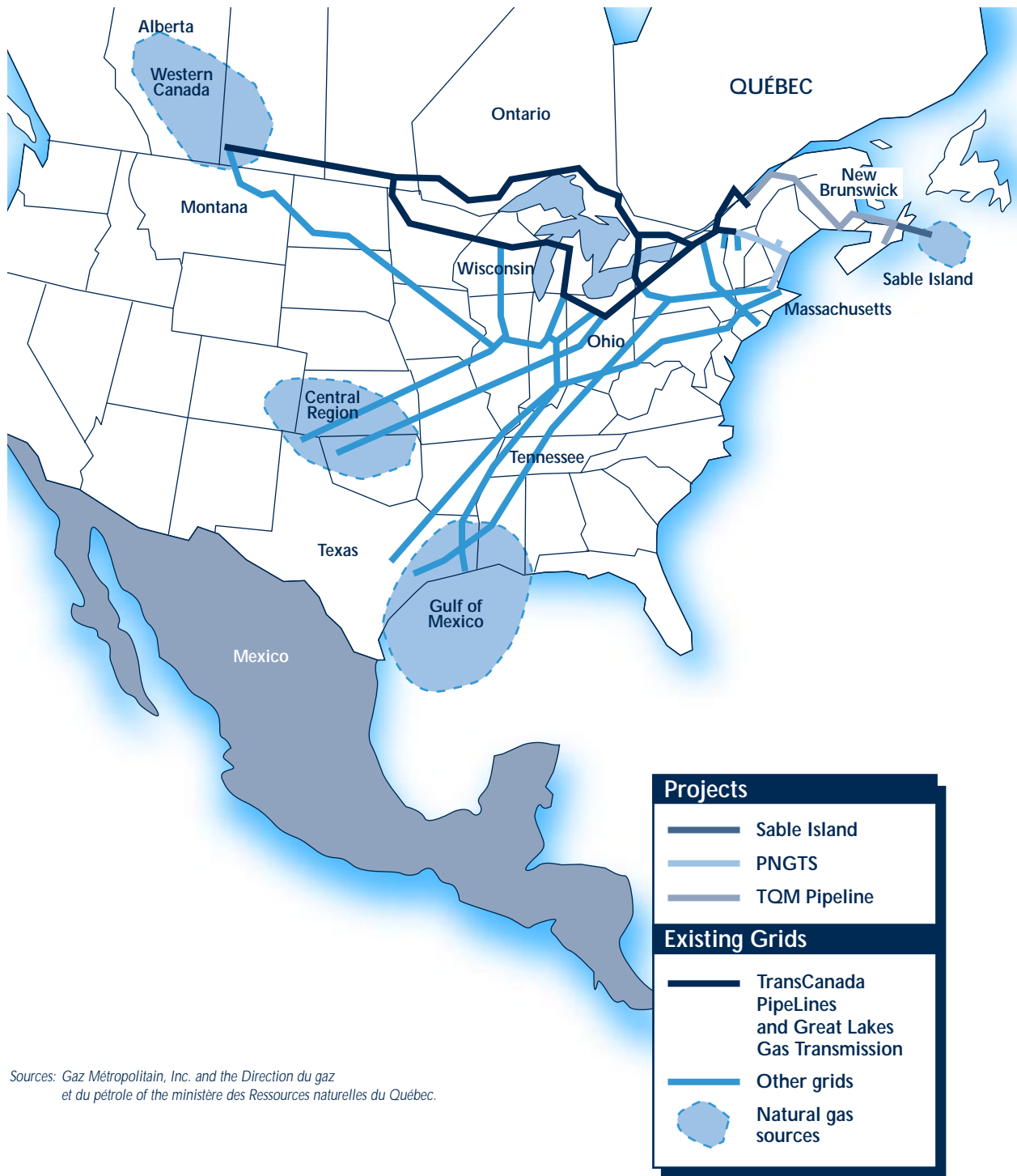
In addition to its storage mandate, SOQUIP will be asked to play a major role in reinforcing the position occupied by Québec in the North American gas and petroleum trade, and to do its part by taking advantage of the liberalization of the energy markets.

SOQUIP is in fact well prepared to play this role. As defined in its original act, its scope is quite wide. Indeed, all economic activities associated with fossil fuels are included, from the exploration phase right up to marketing. When it first came into existence during the seventies, SOQUIP was given a mandate to promote exploration of the Québec subsurface. However, this was changed when the natural-gas transmission and distribution grids were extended, since the state enterprise was responsible for managing Québec’s interests in Gaz Métropolitain. SOQUIP then began working closely with this private company, fostering strategic alliances that allow it both to position itself on the continental market and to encourage sound business relations likely to promote projects that target Québec’s economic development.

We must take full advantage of this experience. SOQUIP’s mandate will thus be confirmed and expanded so that the state enterprise can contribute, through its endeavours, to the optimization of Québec’s infrastructures in the fossil fuel sector and so that Québec’s expertise can be exported. SOQUIP will therefore focus on activities that promote the commercial, industrial and technological influence of the various companies with which it is involved, especially in north-eastern North America. During the past few years, SOQUIP has been working hard at developing the complementary services these companies could offer jointly. SOQUIP’S mandate is in keeping with the direct extension of this operation.

FIGURE 11

**Natural-Gas Transmission Grids in North-Eastern North America
Existing, Under Construction or in the Planning Phase – October, 1996**



Sources: Gaz Métropolitain, Inc. and the Direction du gaz et du pétrole of the ministère des Ressources naturelles du Québec.

Rising to the Environmental Challenge

One of the objectives targeted by the new energy policy is to respect or reestablish the environmental equilibrium. This goal applies in particular to the fossil fuel sector, where its achievement represents a genuine challenge. The transmission and distribution of petroleum products goes hand-in-hand with environmental risks, which must be dealt with appropriately. Above all, petroleum and to a lesser extent natural gas constitute Québec's main sources of greenhouse-gas emissions associated with energy. In order to stabilize greenhouse-gas emissions, Québec has decided to fully participate in worldwide endeavours in this area. This commitment therefore requires the implementation of suitable measures and strategies, especially if Québec hopes at the same time to maintain and reinforce the role played by fossil fuels in the energy sector.

Progress and Anticipated Problems

Climatic warming and the greenhouse effect at its source can be attributed mainly to carbon-dioxide emissions. The results obtained by Québec in this area are far from insignificant.

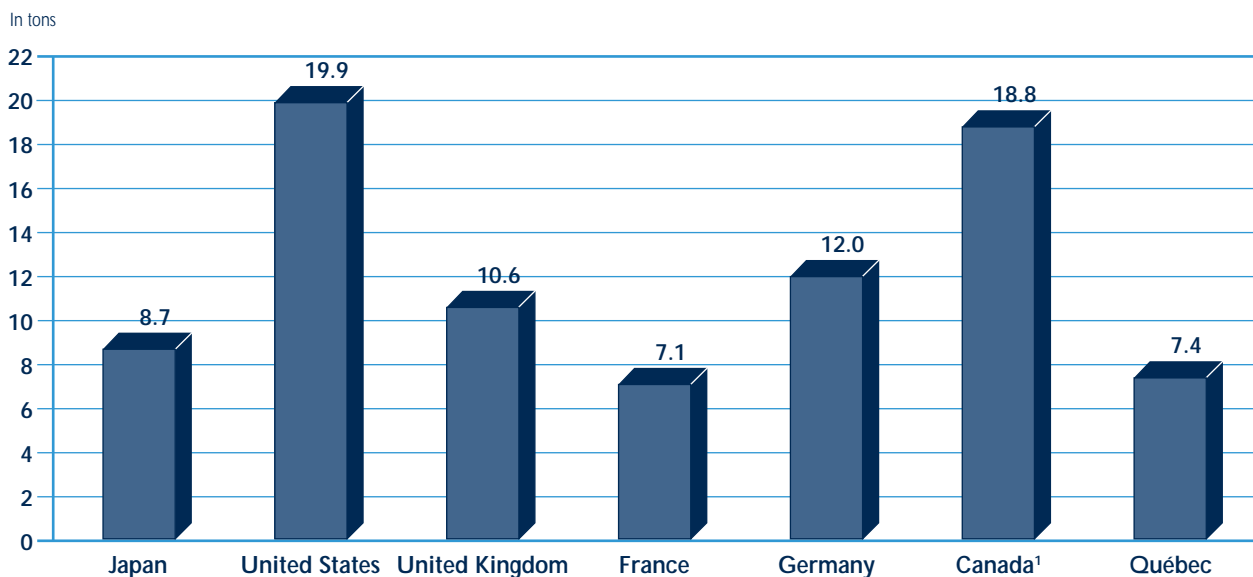
In 1994, carbon-dioxide emissions reached 7.8 tons per Québec inhabitant, compared to 18.6 tons in the nine other Canadian provinces. Québec was even in a relatively strong position internationally. Its emissions were higher than those in France but lower than in Germany, Japan and the United States.

In fact, carbon-dioxide emissions decreased by approximately 35% in Québec between 1974 and 1985. The observed reduction accompanied the replacement of petroleum by electricity as well as progress in energy conservation. During the mid-eighties, the trend was reversed and carbon-dioxide emissions began to increase again. In 1990, which is to be used as a target for the year 2000, these emissions rose to 57.4 million tons. They are currently at 56.5 million tons but, according to estimates of the ministère des Ressources naturelles, are expected to surpass 67.5 million tons in 2011.

This data can be interpreted to mean at least one thing: according to the trends currently observed, and like several other industrialized countries, Québec runs the risk of drifting away from the goals it has set for itself regarding greenhouse-gas emissions. It is essential that current initiatives and additional measures be pursued if we are to live up to our commitments and reverse the forecasted evolution.

FIGURE 12

Carbon-Dioxide Emissions Per Inhabitant Québec, Canada and Main Industrialized Countries 1991

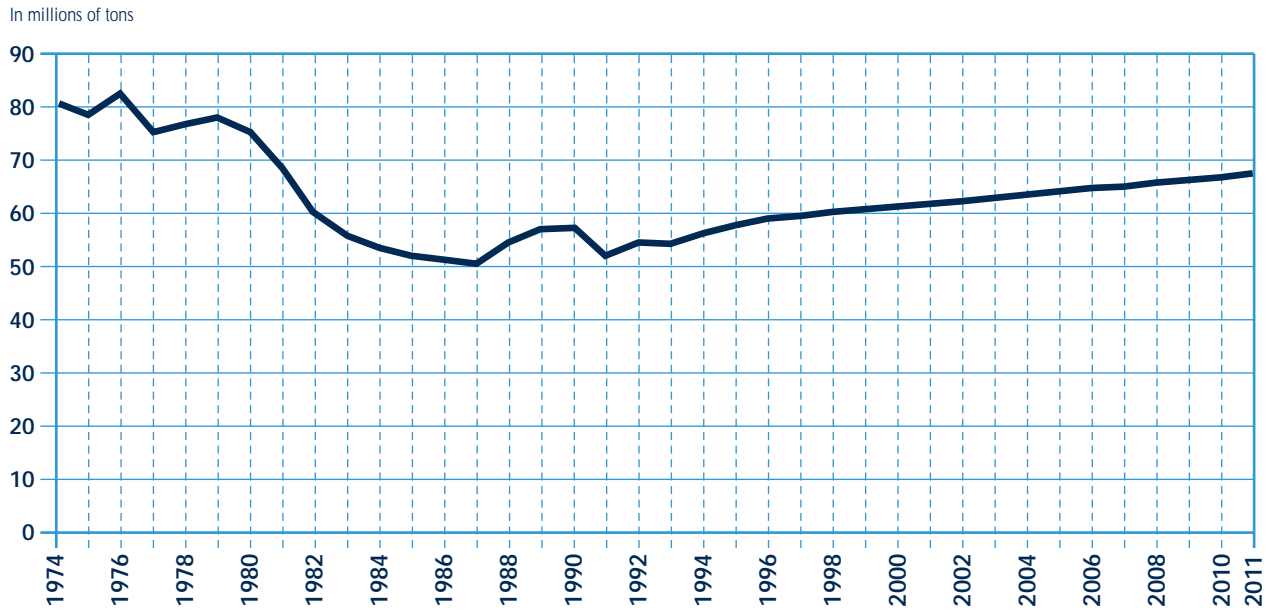


1. Does not include Québec.

Source: Direction des politiques, des études et de la recherche of the ministère des Ressources naturelles du Québec.

FIGURE 13

Carbon-Dioxide Emissions in Québec 1974-2011



Source: Direction des politiques, des études et de la recherche of the ministère des Ressources naturelles du Québec.

The Reduction of Greenhouse-Gas Emissions

In April 1995, Québec publicized its plan of action on climatic changes, in accordance with the framework convention of the United Nations adopted in Rio in 1992. This plan aims for a stabilization at the 1990 carbon-dioxide levels by implementing measures in various economic sectors, including agriculture, forestry, energy and transportation, and by applying a voluntary initiatives programme for companies. The plan, which includes energy conservation measures, will be put into action by the recently created Bureau québécois d'enregistrement des mesures volontaires. The Bureau is under the joint responsibility of the ministère des Ressources naturelles and the ministère de l'Environnement et de la Faune. Québec's plan of action is based on measures implemented by most of the Canadian provinces and the majority of Western countries. Its success is dependent on the implementation by the consumers in question of cost-effective measures.

In September, 1996, "ÉcoGeste", an initiatives registration programme, was launched as part of the Québec plan of action. The purpose of this programme is to encourage companies, associations, organizations and municipalities to take steps toward stabilizing greenhouse-gas emissions and thus contribute to the achievement of Québec's goal. Voluntary participation and partnership as opposed to

coercion form the basis of Québec's plan of action. In setting up this voluntary initiatives registration programme, Québec is banking on the participation of all Québec partners, while giving them the freedom to choose the most adequate means of stabilizing greenhouse-gas emissions, taking into account their administrative, technical and financial capacity.

The priority given to energy-conservation measures within the new energy policy will contribute directly to attaining the greenhouse-gas objective. However, the government is aware of the presence of a number of key issues and of the difficulty involved in reversing a trend that is gradually cancelling out all the gains recorded during the seventies. Consequently, the government has made two commitments:

- In the immediate future, the greenhouse-gas situation — especially that of carbon dioxide — will be monitored closely and made public. This will make it possible to quickly evaluate our ability to reach the goal set for the year 2000.
- As of 1997, the government will perform an in-depth analysis of the relevance of implementing stricter measures, in the form, for example, of a tradeable emissions market³⁸. The government believes that alternative solutions such as imposing a tax on carbon or implementing regulatory measures are not advisable.

Given the advantages of such a system, which uses the market to attain objectives, without cumbersome administrative

³⁸. The implementation of such a system in Québec is one of the main recommendations of the Consultation Panel. See *For An Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy*, op cit, pp 117 ff.

control, a more in-depth analysis of the advantages and disadvantages will be undertaken in the updating of the Québec action plan. This analysis must notably specify the sort of impact a tradeable emissions market would have on the competitive nature of our companies. The ministère de l'Environnement et de la Faune is responsible for the analysis and has in fact already begun the process. It is expected that initial conclusions will be available as of 1997.

Petroleum-Distribution Safety and the Quality of Petroleum Products

Petroleum-product equipment, distribution and storage have far-reaching environmental effects. Petroleum products are responsible for the majority of cases of contamination reported to the ministère de l'Environnement et de la Faune. Related activities and equipment also pose a considerable amount of risk to the safety of intervenors and the population as a whole. As previously mentioned, the setting aside of funds for soil decontamination attempts to resolve some of these problems.

It was because of these affects on the environment that, beginning in the early seventies, Québec decided to control commercial petroleum equipment on its soil by enforcing relatively strict legislation. In 1991, the *Act respecting the use of petroleum products* was modified and applied to all petroleum-equipment users.

Once the legislation was passed, the regulatory control that accompanied it brought about a reduction in the risks associated with petroleum equipment. However, the control measures applied as part of this legislation proved to be both costly for the State and quite inflexible for the various client groups. What is more, it did not take into consideration the level of risk represented by the different types of equipment and petroleum products in question.

• Responsible intervenors

Since the early seventies, intervenors have become increasingly aware of the problems related to the safety and quality of petroleum products. In Québec, as in all industrialized countries, intervenors have acknowledged the risks and socio-economic consequences associated with the handling and storage of dangerous products.

The public energy debate and the different hearings conducted by the ministère des Ressources naturelles on the above issues have confirmed this heightened awareness. Intervenors want to actively participate in risk management. A number of petroleum companies have set up monitoring, maintenance and preventative replacement programmes for their installations. Other intervenors, such as financial institutions, have expressed their great concern over the financial consequences of petroleum-product leakage.

• The foundations of a new partnership

Conscious of a new reality, the Government of Québec has decided to review the very basis of the *Act respecting the use of petroleum products* and its underlying regulations. The goal here is to define a new method of sharing responsibilities where public safety is concerned. The purpose of this overhaul is to introduce flexibility, reduce regulatory costs and adapt control measures in terms of risk level. Also on the agenda will be the definition of the liability to perform with respect to public safety and environmental protection. The review will have significant consequences for the respective responsibilities of the government and user-intervenors. As a result, in a few months time, the government will submit an outline of its intentions at hearings to be held specifically for this purpose.

• The role of the State

In keeping with the modifications under study, the State will continue to establish and implement norms applicable to petroleum-product equipment and quality. Regulatory control will take into account the risk associated with each type of equipment and product. Consequently, the government is considering the deregulation of the trade of products and low-risk equipment. For higher-risk equipment, the responsibility for control could be shared by the government, manufacturers, installers and users. Inspection services, managed by the State up to now, will be handed over to the private sector and their integrity guaranteed by means of an accreditation procedure for inspection companies.

• The role of those affected

According to these proposals, the various user-intervenors must take complete charge of the quality control of the petroleum products and equipment under their responsibility. This will require some effort on their part, including the specification and improvement of the processes or methods used to control the risks associated with the use of petroleum products. To facilitate the tasks involved, the ministère des Ressources naturelles will set up adapted continuous-training programmes for the personnel responsible for products and equipment.

• Credibility of the regulatory process

The transfer of the responsibility for equipment inspection to the private sector constitutes a major turning point, which should be accompanied by clear guidelines. It is through this transfer that the ministère des Ressources naturelles will implement the various information-access measures, making it possible to evaluate the results and efficiency of the new regulatory control regarding safety and environmental protection.

In addition, the current Direction des produits pétroliers of the ministère de Ressources naturelles, responsible for applying the legislation, will be transformed in order to apply the legislation more efficiently. A new approach will allow the various types of clientele affected to have a more direct influence on the choices and challenges involved in protecting both the population and the environment.

- **Applying norms to imported products**

Moreover, the proposed reform will make it possible to ensure that all petroleum products distributed in Québec, including imported products, respect the Québec norms that refiners must meet. These standards must be re-evaluated regularly, and, if necessary, reinforced³⁹.

Alternative Fuels

One of the main causes of atmospheric pollution attributable to fossil fuels is the use of petroleum products in the transportation sector. In 1994 in Québec, petroleum products represented 99.7% of the energy used to transport people and goods. The transportation sector alone is responsible for close to 51% of all carbon-dioxide emissions.

For many years, significant attempts have been made in Québec and elsewhere in the world to find alternatives to petroleum products in the transportation sector. Québec is particularly involved in research associated with electricity, hydrogen exploitation and the production of alcohol fuel (ethyl alcohol and methyl alcohol) from forest biomass or urban waste. We will take a closer look at Québec's endeavours and favoured orientations in these areas in the following chapter, which deals with research and development in the energy field.

It can be stressed from the outset that alternative fuels such as natural gas, propane, and methyl and ethyl alcohol are interesting in terms of environmental protection since they offer long-term possibilities to considerably reduce greenhouse-gas emissions and other pollutants. However, their use also raises certain questions. For some of the energy forms contemplated, such as ethyl alcohol made from grain-corn, the production of alternative fuel interferes with agricultural production and may entail other problems at the environmental level. Furthermore – and this is essential – the economic conditions enabling these energy forms to be competitive have, for the most part, not been fully determined, inciting the promoters in question to request specific tax breaks. Propane, however, is already used in commercial and industrial vehicle fleets. There are several possible uses for this fuel in other markets, such as in construction, agriculture and mining. Propane can likewise play an important role in the development of future natural-gas markets.

In this context, the government will take a dual approach:

- Endeavours to develop alternative fuels must continue, given both the interest their exploitation would represent for Québec in environmental terms and the economic impact anticipated in certain regions.
- For the time being, it is essential that an in-depth analysis of all aspects to be considered in developing and promoting alternative fuels be available. The government thus intends to undertake an evaluation of the elements needed to characterize the different fuel options, based on the characterization process used for electricity-generating energy forms, but limited to the specific possibilities of alternative fuels. Once this evaluation is completed, the government will be able to base its decisions on a complete and rigorous analysis.

³⁹. The proposals being studied correspond directly to recommendations put forward by the Consultation Panel. See *For An Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy*, op cit, p 75.

Research and Development: a Window Into the Future

Improvements in technology, the invention of new products and the appearance of new ways of doing things are among the driving forces in human evolution. The history of energy and the industrial revolution in the automobile age is particularly eloquent in this sense. As was the case in the past, our future will be determined, in large part, by the effort we are currently putting into research and development. Research and development projects help train young researchers and thereby develop the next generation. Investments in research and development are, moreover, an essential element in industrial strategies, designed to open up new markets and enhance different energy forms.

In the energy policy defined by the Government of Québec, research and development thus opens a window into the future and creates additional possibilities, while providing fundamental support for the economic and industrial priorities of each energy form.

■ A Strategic Field

The current energy context is, for the most part, the result of recent technological changes. Exploration and production costs for oil and natural gas have decreased considerably, thereby modifying the relative position of different energy forms. New techniques for combined-cycle electricity production have made the use of natural gas still more attractive. Due to new technologies, electricity and natural gas have penetrated markets where they were non-competitive or unheard of before. It is likewise due to technological change that important progress has been made towards better use of energy in all consumption sectors. We would not be mistaken in saying that current research and development efforts will define our future context.

However, research and development is also a strategic element in all industrial policies, this being particularly true in the energy sector. Research and development enables a

greater enhancement of the different energy forms available to a society. It gives rise to new products and processes, and adds new characteristics to existing products. It thereby gives rise to competitive advantages, creates new jobs and directly contributes to the economic development of the whole society. A research and development policy is thus an integral part of a strategy to open up new markets and to benefit fully from the different energy forms available to us.

The Investments in Question

In the Québec energy sector, considerable resources have been devoted to research and development. In 1994, investments in energy research and development reached 223 million dollars, a bit less than 2% of total energy sales. All things considered, Québec invests more in energy research and development than the average among OECD countries, but less than the United States, Japan and Germany.

• Electricity

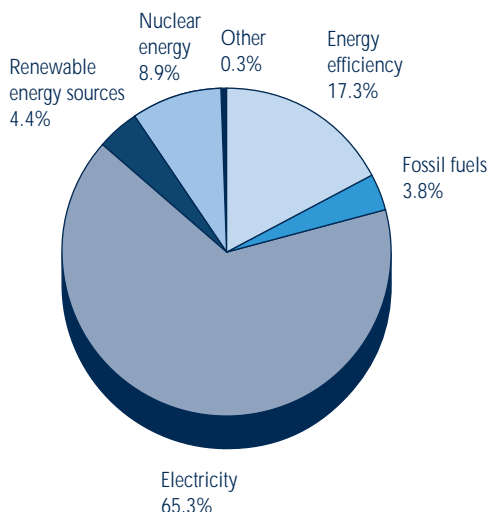
The majority of the investments made in Québec involved the electricity sector: in 1994, they reached 146 million dollars, almost two-thirds of the above mentioned total. As early as 1967, the Québec government decided to equip Hydro-Québec with an international-calibre research centre. The commitment of the public utility to research and development, which has remained at a constant level, has allowed it to develop world-class expertise and obtain some impressive results.

• Fossil fuels

A bit less than 4% of research and development investment is devoted to natural gas. Even if this seems like a small amount, Québec is in a better position than the other Canadian provinces and several industrialized countries, including the United States. Much of the explanation for this can be attributed to the creation of the Natural Gas Technologies Centre. By investing in this centre, Gaz Métropolitain

FIGURE 14

Allocation of Investments in Energy Research and Development in Québec 1994



Total Investments in Energy R&D: 224.1 million dollars

Source: Direction des politiques, des études et de la recherche of the ministère des Ressources naturelles du Québec.

has confirmed that in a context of strong competition, research and development can be an essential tool for market penetration and customer satisfaction.

The petroleum industry, however, conducts very little research, development or demonstration work in Québec, despite the presence of a considerable refining industry. The industry has a high degree of international integration, and research investment, which is of a highly strategic nature, is located in a few specific areas.

• **Energy efficiency and alternative energy**

Energy efficiency and alternative energy represent 17% of Québec's research and development investments, with three-fourths of this total being devoted to energy conservation. A large part of these investments is made by Hydro-Québec. The rest is, in general, highly dispersed and fragmented, which is a reflection of how fragile the industrial tissue is on which new energy forms and energy conservation activities are based.

• **Nuclear energy**

In Québec, more than 10% of the investments in energy research and development is devoted to nuclear energy. This research is carried out for the most part at the Canadian

Centre for Magnetic Fusion, whose financing has, until now, come from Québec, through Hydro-Québec and INRS-Énergie et matériaux, and the federal government, from the research budget of the Canadian Department of Natural Resources. Research into nuclear fusion has long-term strategic interest with respect to Québec's energy supply. In the short-term, it contributes to industrial development in Québec. The difficulties associated with this funding, which represents, moreover, the main contribution of the federal government to energy research and development in Québec, will be discussed further on.

Various Activities and Objectives

In 1994, Hydro-Québec set aside an annual budget of approximately 140 million dollars for research, or the equivalent of 1.8% of its gross revenue from electricity sales. In terms of percentages, Hydro-Québec comes in second among large electricity production companies, just behind Ontario-Hydro, at 1.9%, but ahead of Électricité de France and Tokyo Electric Power Company.

• **IREQ**

The majority of the research and development of Hydro-Québec is conducted at IREQ, its research institute. These activities are mainly concerned with the development and improvement of equipment and systems for electricity production, transmission and distribution, and essentially meet the needs of the public utility. Hydro-Québec's research institute also invests in work that is less directly related to the present needs of the public utility, such as the development of components for electric vehicles and other uses, most notably through work on the motor-wheel and batteries.

• **Industrial research**

At LTÉE, the Laboratoire des technologies électrochimiques et des électrotechnologies, research is turned more towards the development and improvement of new and existing technologies in industrial processes, as well as in the housing and commercial sectors. The Natural Gas Technologies Centre has a similar objective in its own field. These two industrial-research centres play a major role in energy-technology development in Québec. By facilitating the production and marketing of goods and services, they provide strategic support for the manufacturing companies with which they are associated.

• **University research centres**

University research centres play their role at an earlier stage, by concentrating their work on more fundamental subjects. In the last few years, however, there has been an increased interest in these centres for applied-research projects. It is worth noting, moreover, that university research centres have been responsible for a growing regional involvement in

energy research, a trend which the government intends to encourage.

Hydrogen research is conducted, for example, at the Institut de recherche en hydrogène of the Université du Québec à Trois-Rivières, at the science and engineering faculties of McGill University and the Université de Sherbrooke, and at the Institute of Magnesium Technology. As concerns natural gas, the Groupe de recherche en gazotechnologie de l'École Polytechnique plays a key role. INRS-Énergie et Matériaux is involved in energy planning, alternative energy and nuclear fusion. The École Polytechnique, the Brace Institute at McGill University and the Université Laval are quite involved in alternative energy forms, as is the Université du Québec à Rimouski with respect to wind energy. The Centre for Building Studies at Concordia University and researchers at the Université de Sherbrooke are very active in energy conservation technology.

There is thus substantial diversification in Québec in energy research and development. Even though electricity plays a major role, these activities involve most energy fields, and concern fundamental and applied research as well as development and demonstration.

■ General Orientations

In its energy policy, the government has given two main orientations to questions of research and development:

- Hydro-Québec must maintain its current investment level, despite the impact that the creation of the Régie de l'énergie might have on the financing of research.
- The fields of research in Québec must be widened so as to adapt better to the current energy context.

Hydro-Québec: Maintaining Investments

As the main actor in energy research and development in Québec, it is essential that Hydro-Québec maintain, over the next few years, its general level of investments. The creation of the Régie de l'énergie, and the distinction that must be made between regulated and non-regulated activities must not weaken investments that are essential to the smooth operation of the company and the development of the Québec energy sector. The commitments that Hydro-Québec made public during the Summit Conference on the Economy and Employment go in the same direction: above and beyond an annual envelope of 120 million dollars, the public utility announced its intention to contribute, during the next three years, investments of up to 50 million dollars to partnerships that will total 100 million dollars for the whole period.

Indeed, it is important that the public utility continue its research efforts both in activities essential to the operation of

its network and in those that might help improve or promote electricity use. In this respect, research into electric-vehicle components is of particular interest, as is environmental research, another field in which Hydro-Québec shines.

Because of its size and duration, the research of Hydro-Québec is undoubtedly the largest investment of its kind by a Québec company. It is important that Québec society benefit fully from the results of this research. To accomplish this, research planning in Hydro-Québec should give greater consideration to marketing possibilities and links with industrial partners in order to increase industrial and business spin-offs. The government feels it is essential that researchers and research managers integrate marketing potential from the start, that is during project definition.

Widening the Fields of Research

An assessment of energy research reveals that, outside of the electricity sector, additional effort must be made in most of the other fields of research, so as to adapt better to the evolving context.

- The development of energy conservation products, materials and processes is an absolute priority. More must be invested in technologies that will allow us to satisfy our energy needs while protecting the environmental equilibrium, especially through technologies that make better use of energy. There are numerous energy-efficiency possibilities in the transportation field, in particular.
- New forms of renewable energy are likewise at the heart of sustainable development. Their breakthrough into energy markets depends on technological improvements and a reduction in production costs, so that they can compete with conventional energy forms. A full contribution on their part to the satisfaction of our energy needs therefore depends directly on the investments in research and development that we make.
- Hydro-Québec already devotes considerable effort to environmental research, specifically with respect to the effect of dams on the environment. There are, however, other challenges that research and development must help us to meet. There is of course the accumulation of greenhouse gases, an issue which forces us to better understand the interactions between the biosphere and the atmosphere so as to better understand their effects. Research efforts must be increased, with respect to both absorption mechanisms and adaptation.
- In the field of hydrocarbons, research and development investments in Québec have specific targets. Investments should be devoted to a better understanding of the environmental impact of their use, as well as to an improvement of refining, transportation, distribution and utilization technologies.

There are thus numerous fields where the research and development carried out in Québec is still insufficient in relation to current possibilities. These fields must be better examined, since they represent potential that could be exploited in a not-too-distant future.

■ Research Priorities

Research priorities cannot be determined in a detailed manner within a government policy. The choices to be made depend on many decision centres, which is a good thing, since the government must not dictate directions at this level. Nonetheless, an energy policy provides an opportunity to indicate the main priorities that must be carried out, based on objectives that are applicable to the whole energy sector.

Electricity

The priority for Hydro-Québec in research and development is to protect its assets, that is, to invest in endeavours to provide greater reliability and productivity in its present facilities. This point was justifiably noted by the Consultation Panel for the Public Debate on Energy, in one of its main recommendations concerning research activities. In the case of Hydro-Québec, research and development must be seen, above all, as a way of keeping the utility competitive and at the cutting edge.

This should not keep the public utility from examining the possibility of more decentralized production, such as wind turbines, micro- and mini-hydraulic-power plants and fuel cells. Likewise, technologies that permit the promotion and better utilization of certain energy forms must be developed. This refers in particular to electric-vehicle components which, once perfected and made available, would make it possible to increase the value of our resources and improve the overall efficiency of the sector.

Moreover, the government attaches a great deal of importance to the development of technologies likely to promote the establishment of high-tech jobs and industries in Québec. This refers in particular to high-performance electro- and electrochemical technologies. Even though Québec has a considerable manufacturing sector for electrical equipment and material, technological developments leading to manufacturing applications are still too rare. The government thus feels it is important that our research efforts focus on technologies likely to meet the needs of Québec companies or to benefit the electrical apparatus and equipment industry.

Energy Conservation

The increased role that research and development should play in relation to energy conservation, and its importance in

the government's eyes, has already been underlined. Certain types of research take precedence:

- Energy-intensive industries account for a large part of our energy balance sheet. Research into the equipment and processes used in these industries allows for both a better use of large quantities of energy and an improvement in the competitive position of these companies in international markets.
- At a more general level, energy-conservation investments by the research centres of Hydro-Québec and Gaz Métropolitain must be pursued. They contribute to the mission of distributors, which is to ensure that consumers receive their energy services at the lowest possible cost.
- Specific initiatives are necessary in the petroleum sector and, in particular, in the transportation sector. They must contribute to a reduction in greenhouse gases and other atmospheric pollutants.
- The residential sector is another branch of research to be explored. There is significant potential here for improvements in energy-efficiency, in particular in home automation.

Alternative Energy Sources

Research and development into alternative-energy sources provides options that contribute, over time, to a better diversification of our resource portfolio. Given that the energy policy is based on sustainable development, this research and development is of particular interest to the government, since several alternative-energy sources are also renewable. Furthermore, they are often decentralized, which allows for an increased participation of local communities. This refers, in particular, to biomass, wind and solar energy, and small and medium-sized hydraulic-power plants. The decentralized and highly diversified nature of these alternative-energy sources makes them particularly interesting for developing countries.

There are three new energy forms on which we should concentrate, namely biomass, wind energy and hydrogen, given the comparative advantages that Québec enjoys, and the environmental and energy advantages of these forms.

• Biomass

Biomass already makes a considerable contribution to Québec's energy balance sheet, accounting for 7% of energy consumption. As was previously mentioned, it presents some significant environmental advantages, such as the enhanced use of forest, agricultural or urban biomass.

Three types of research would seem to have priority:

- In thermal conversion, the production of steam and electricity is currently accomplished through classical combustion, whose energy efficiency and environmental performance can still be perfected. There are technologies

under development, such as gasification and pyrolysis, which make sizeable improvements in energy efficiency and environmental performance possible.

- As for biological conversion, the process for producing ethyl alcohol from biomass is not yet at a commercially and technically viable stage. Given the interesting possibilities it offers as an alternative fuel, emphasis should be placed on development and demonstration endeavours.
- Silviculture could provide additional revenue for agricultural producers, and thereby contribute to regional dynamism. The government is particularly interested in techniques that would make it possible to restore the value of abandoned agricultural land.

• Wind energy

Québec's wind-energy potential, and the importance the government attaches to it, have already been pointed out. A detailed evaluation of wind-energy potential should be a priority. Research must likewise make it possible to adapt wind-energy techniques to our weather, to transfer the technologies we wish to use and to conduct demonstration projects. By asking the Régie de l'énergie to reserve "set-asides" for wind energy in the future resource portfolio of Hydro-Québec, the government directly stimulates research and development activities so that this source of energy can make a rapid and significant contribution to Québec's energy needs.

• Hydrogen

There are several uses for which hydrogen is now considered to be a strategic alternative fuel that could replace petroleum products, and that would make a reduction in greenhouse-gas emissions possible. In the last few years in Québec, there has been particular interest in making a combined use of hydrogen and natural gas for vehicles. The environmental advantage of hydrogen is amplified if it is made using clean and renewable sources, such as hydraulically produced electricity. Producing hydrogen with natural gas can likewise be environmentally acceptable, thanks to new procedures. Research efforts in the hydrogen sector must begin by trying to reduce production, storage and transportation costs, and thereby increase the competitiveness of this energy form.

Fossil Fuels

The priority for natural gas is easy to define. The introduction of high-energy-efficiency technologies for natural gas into the industrial and business sectors will reinforce and improve current use of natural gas and its transmission grid. Given the amount of research being conducted in certain countries such as Japan, France and the United States, a large part of the research and development effort in this field will necessarily focus on technological transfer.

Most of the research conducted in the petroleum sector is conducted outside of the province of Québec. The government would nonetheless like to ensure a close monitoring of the evolution of these technologies so that the Québec refining industry will remain up to date on the improvement of processes. The government is, moreover, quite interested in research into hydrocarbons used as alternative fuels, such as natural gas, propane, ethyl and methyl alcohol and heathen.

■ Government Programmes

To implement the policy orientations it has defined and the priorities it has identified, the government will turn first of all to Hydro-Québec, which is the number one intervenor in energy research and development. At the same time, these orientations and priorities send certain signals to all the institutions involved in research and development activities, by indicating the initiatives that the government would be ready to support and encourage.

At the financial level, the involvement of the Government of Québec in research and development will be carried out through a certain number of programmes, concerning which the government must clarify its intentions. The question of federal support for energy research and development must also be discussed, since, though it is important in terms of volume, it is significantly less than Québec has the right to expect, and it is currently being questioned.

Fiscal Credits

It is naturally worth noting the important role that tax credits play in research and development investments. Advantageous fiscal measures actively contribute to the development of technologies in companies. Very few investments made elsewhere in the world benefit from fiscal credits that are as generous as those granted in Québec for research and development. The Québec tax system, in conjunction with the corresponding federal tax measures, can, in certain cases, increase the return of a research and development project to a level above what it would have been if it had been exempted from direct taxation. The Québec government is aware of the motivating effect of these fiscal measures, and the extremely positive effect that they have on the involvement of companies in research and development.

Direct Financing

Fiscal measures such as tax credits represent the most common and, generally, the most efficient way of supporting the research and development of companies. It is, nonetheless, necessary that direct financing be accorded through government programmes. This will provide more direct support for companies and research centres working in new fields, especially for the scale-up, and experimental stages. There are,

moreover, fewer tax credits available for these stages. This is the case for emerging industries in energy efficiency and alternative energy. This type of assistance fosters collaboration between businesses, research centres and government institutions, thereby increasing the benefits and spin-offs of investments.

The Programme d'aide au développement des technologies de l'énergie

Direct support from the Government of Québec for energy research and development is granted as part of a specific programme, the Programme d'aide au développement des technologies de l'énergie (Energy Technologies Development Assistance Programme). This programme, which is administered by the ministère des Ressources naturelles and has a budget of two million dollars, focuses on new energy technologies. Its goal is to accelerate the effort put into these technologies in order to make them available and competitive.

Despite these limited resources, direct government action has many implications: at present, the government contributes financially to 70 projects. The total investments have reached 30 million dollars, which, most often, would not have been brought together without the initial government assistance. Indeed, the programme makes it possible to begin research in fields where private companies are not in a position to find the necessary financing on their own.

The government will retain the Programme d'aide au développement des technologies de l'énergie, as justified by its results and the consensus attained during the public energy debate⁴⁰. The government will, however, accentuate its vocation. This Programme was above all designed to be a catalyst for Québec research and development in alternative energy forms. This can be accomplished by taking greater advantage of available research assistance mechanisms, including direct subsidies, tax credits, technological transfer assistance and the dissemination of technological information. Cooperation will be reinforced with several other research assistance institutions, such as the Fonds pour la formation des chercheurs et l'aide à la recherche (Fonds FCAR), the Société de développement industrielle (SDI), and Innovatech in Montréal and Québec. Moreover, the programme will remain under the direct responsibility of the ministère des Ressources naturelles.

The Agence de l'efficacité énergétique

The government considers that increased research and development in energy efficiency is a priority. The main intervenors in energy research and development, including, first and foremost, Hydro-Québec, already invest in research into a better use of energy. It will be the specific mandate of

the future Agence de l'efficacité énergétique to stimulate and accentuate these endeavours.

As was previously mentioned⁴¹, the energy-productivity programme entrusted to the Agence will be increased beyond the present task of demonstrating technology. It will integrate the overall activities of energy-efficiency research and development and devote greater resources to it. Funding will be granted to the highest performance technologies. The Agence will conduct its endeavours in partnership with energy companies, university centres, and institutions specialized in joint development and demonstration programmes that focus on both technology and behaviour.

The Euro-Québec Hydro-Hydrogen Project

In the last ten years, Québec and the European Union have established a cooperation programme, involving more than thirty companies, in order to specify the conditions for hydrogen development and to promote this development. This cooperation was established as part of the Euro-Québec Hydro-Hydrogen project, whose first phase was devoted to the study of the possible creation of a large-scale electrolysis factory in Sept-Îles.

The project is now in its second phase, which is devoted to demonstrating the use of hydrogen for energy purposes. It was determined that city buses and the aeronautical industry are two particularly promising niches. The government intends to transfer the technologies developed in this project to the industrial and business sectors in the near future. Steps have already been taken in this direction, and a corporation will be created to market the technologies and continue the research and development. State enterprises, including SOQUIP, will be asked to participate.

Federal Government Contributions

The federal government subsidizes research and development in the energy sector through the Programme of Energy Research and Development (PERD). This programme has a budget of one hundred million dollars, of which Québec receives only a limited amount: less than 15% of subsidies of this programme is granted to Québec companies. In reality, the imbalance in federal funding is even greater, since the PERD does not include the budget that finances the research work of Atomic Energy of Canada. In 1994, this budget reached 175 million dollars, most of which was spent in Ontario.

By announcing its intention to stop funding for the Canadian Centre for Magnetic Fusion, the federal government is making the problem worse still. These subsidies alone account for approximately a quarter of the federal assistance for energy research and development in Québec. Furthermore, the federal government seems to have no intention of redirecting

⁴⁰. For *An Energy Efficient Québec — Report of the Consultation Panel for the Public Debate on Energy*, op cit, p 128.

⁴¹. See above, chapter 3, p 34.

these subsidies towards other energy-research sectors in Québec. The federal government is thus preparing to dramatically reduce the financial resources on which the Québec energy sector counts, and, in so doing, further

increase existing disparities, to Québec's detriment. The Government of Québec can only be opposed to such choices, which compromise our future and directly undermine our society.



Government Administration: New Ways of Doing Things

Though the Québec energy context is undergoing profound and rapid changes which necessitate a period of adaptation, new paths for development are opening up, and it is up to us to take advantage of them. In so doing, we must protect the quality of life of future generations, and in their interest ensure a form of sustainable development that respects the values that we cherish. The energy policy set down by the Québec government is designed to meet these many challenges. The directions defined by this policy, the reforms it involves, and the initiatives that it announces all have the goal of enabling us to prepare for the future and to carry out the transformations that are necessary, while taking full advantage of our assets.

The government is applying this policy first and foremost to itself, within its own administration. The announced change in direction also means new ways of doing things for the government administration in charge of the energy sector. Institutions are being created that modify the mandates directly under the responsibility of the ministère des Ressources naturelles. Preference will be given to different approaches by the Ministry as well as by the public institutions that are active in managing the energy sector. Placing energy at the service of Quebecers means, above all, doing everything possible so that the government administration gives Quebecers the benefit of modern, efficient and transparent institutions adapted to their needs and expectations.

Modern Institutions and Clear Mandates

The new energy policy signifies, first of all, a major overhaul of institutions that manage energy-related activities. This overhaul was called for during the public energy debate. A very clear consensus emerged in favour of the creation of a regulatory board for energy, thereby guaranteeing fairness and transparency. Likewise, the fundamental importance of

energy conservation needed to be concretely expressed in the form of an energy efficiency agency. The Régie de l'énergie and the Agence de l'efficacité énergétique, by their very existence, modify the role and mandates the government administration has directly taken on until now.

The energy policy defined by the government goes even further, and provides for renewed mandates for these new institutions. Relationships which are new to Québec must be defined. A new distribution of responsibilities must be thought out. Moreover, the modification of each player's role goes beyond the framework of public institutions alone; suppliers of regulated energy forms must obey the new rules of the game. In a context where markets play an increasingly important role, producers and distributors are being entrusted with social responsibilities that they have not previously taken on. Native peoples and regions are invited to play a larger role in Québec's energy development.

The initiatives adopted by the government and the ensuing transformations have been specified throughout this policy document. Now that all the elements of this policy have been presented, it is important to explain their implications for public institutions, and first of all for the ministère des Ressources naturelles.

The Mandates of the Ministère des Ressources Naturelles

The ministère des Ressources naturelles will henceforth take on three mandates in the energy sector:

- under the authority of the minister in charge, it will have to define the government's energy policy and supervise its application.

This first responsibility is considerable. The government will have to make major decisions over the next few months in matters of deregulation and electricity trade with our Canadian and American partners. These decisions will be based first of all on analyses carried out within the government

administration. The application of the energy policy requires close coordination with other ministries and public institutions. This is a strategic responsibility, given the impacts of energy upon a large number of government policies and actions. This responsibility belongs logically to the ministère des Ressources naturelles.

The energy policy has many facets, namely legislative and regulatory initiatives, fiscal and financial decisions, assistance in an advisory capacity to the State-shareholder in its relations with the public corporations of the energy sector, support in the management of relations with all partners in the sector, the application of an industrial strategy in collaboration with the companies involved, the definition of actions undertaken at the Canadian and international levels, and the granting of support for research and development. In all these instances, we are referring to projects under the guidance of the minister in charge of the energy sector, who will need to have access, within the ministère des Ressources naturelles, to all the necessary tools.

- The ministère des Ressources naturelles has a second mandate, related to the management of the public resources for which the government is trustee.

In keeping with this mandate, the ministère des Ressources naturelles will continue to manage the various programmes and legislative provisions governing the use of public property. The extension of the role played by private producers in the use of Québec's hydraulic resources and the development of wind energy potential will present a particular challenge in this area. The government administration will give direct support to the regions during the river-classification process and will advise the government when the final decision is made. The orientations chosen concerning the exploration and use of Québec's subsurface will also be implemented by the ministère des Ressources naturelles, which will, for instance, be called upon to make available the geoscientific data managed until now by SOQUIP.

- The third mandate entrusted to the ministère des Ressources naturelles in the energy sector is to ensure the protection and safety of consumers, for certain activities where specific legislation seems to be necessary.

This is in reference to the responsibility of the ministère des Ressources naturelles to guarantee the safe distribution of petroleum products. As has been specified previously, the government prefers a new approach, based on an adaptation of control measures to the real risks involved, and providing for greater responsibility on the part of intervenors. It will be up to the Ministry, however, to check on the implementation of the new legislative provisions, to ensure their supervision and to evaluate regularly the results obtained.

Relations with the Régie de l'énergie

The responsibilities entrusted to the Régie de l'énergie and the mandates taken on by the Agence de l'efficacité énergétique have been presented in detail. In both cases, new relations will be established with the ministère des Ressources naturelles.

As concerns the Régie de l'énergie, certain activities will be transferred from the ministère des Ressources naturelles to the new institution. Essentially, they involve setting electricity rates and supervising the price of petroleum products. As we have seen, the powers entrusted to the Régie are extremely important and the mandates that the government is about to entrust to it will play a strategic role in our future development. However, in the areas that will henceforth fall under the authority of the Régie de l'énergie, the government will still have to exercise control and take on responsibilities. These tasks will be carried out with the support of the government administration.

The decision-making and advisory power entrusted to the Régie de l'énergie have been described in detail. In the first case, the ministère des Ressources naturelles will propose to the government the instructions that will possibly be transmitted to the Régie in order to orient its work. Without going so far as exercising the right to issue directives, for such involvement must remain an exception, the *Act respecting the Régie de l'énergie* gives the government the option of pointing out the economic, social or environmental effects that it would like to see taken into consideration. These instructions, which will probably take the shape of orders in council, will be based on analyses carried out by the ministère des Ressources naturelles.

However, the right to issue directives will probably be exercised as stipulated by the transitional provisions of the act, that is to manage the implementation of the recommendations expressed by the Régie concerning methods of allocating costs and the rates of return applicable in electricity rate schedules. Here too, the directives transmitted to the Régie will be based on work done by the ministère des Ressources naturelles, which will therefore have to retain the power to carry out analyses for this purpose.

In all areas where the Régie has an advisory capacity, the government's final decision will be made after the ministère des Ressources naturelles has played its rightful advisory role. This is the case for jurisdiction involving the awarding of franchises, the supervision of oil product prices, and general powers of investigation and analysis. During the process of characterizing electricity-production forms, which is a prelude to the application of integrated resource planning, the government will decide on the final characterization based on the recommendations of the Régie, but relying on the Minister's advice.

The act foreseen by the government thus provides for a balance between the recommendations or decisions of the Régie, expressed according to rules that guarantee rigour, transparency and public participation, and its own responsibilities that it must continue to carry out fully and directly, in our democratic system. In both cases, the government administration will have a role to play, in order to allow our democratically elected government to give voice to the public interest that it represents. The government is convinced that this new distribution of tasks corresponds to the interests of the society, and at the same time fulfils the wishes of the population.

Links with the Agence de l'efficacité énergétique

In contrast to the Régie de l'énergie, the Agence de l'efficacité énergétique will not be an institution which is legally distinct from the ministère des Ressources naturelles. Created from one of the directorates of the Ministry, the Agence de l'efficacité énergétique will be a government administrative unit, under the supervision of the ministère des Ressources naturelles, and directly under the authority of the deputy minister. As a consequence of this, it will continue to exercise the administration's authority in the identification of legislative and regulatory measures.

The Agence de l'efficacité énergétique will actually be an integral part of the ministère des Ressources naturelles, even if its resources and budget are set down according to specific rules, outside of the normal budgetary process. This is an essential point; in this way, possible duplications, giving rise to waste and confusion, can be avoided. The Agence will be the central outlet as far as energy conservation is concerned, since no other administrative department is liable to have an overlapping mandate. In the area of energy efficiency, the decisions made by the government do not involve any transfer of activities outside of the administration, but rather usher in a new approach, guaranteeing autonomous operations and increased and protected budgetary resources.

■ Acting for Quebecers

The new energy policy, based on sustainable development, aims to put energy at the service of Quebecers. The entire philosophy behind government endeavours must henceforth be inspired by this ambition.

New Approaches

Putting energy at the service of Quebecers means that we must try to meet needs by using the most efficient and economical methods, without losing sight of societal concerns. This means that we must ask questions about the types of services expected, and in so doing consider all the social

and environmental costs attached to the different solutions proposed.

The technological choices are no longer the same, whether they involve production or consumption of energy. Numerous technical changes are modifying our life style and offering new, simpler and more economical ways of satisfying our energy needs. The global economic context and the market structure are themselves in a state of upheaval, requiring our society and institutions to adapt more and more rapidly.

These changes, this determination to create sustainable development, oblige us to be imaginative and visionary at one and the same time, to invent new approaches that respect both the values that we cherish and the rules of the game that are gradually being set down. In fact, by being sufficiently creative we can use the new rules of the world that surrounds us to strengthen our development, create jobs and improve our quality of life.

Better Use of Our Society's Resources

To meet this challenge, the government is convinced that it must place greater reliance on the numerous resources offered by society. The new energy policy is an illustration of this conviction. The government cannot by itself open up all avenues and decide on all actions. Only through a genuine partnership with the various intervenors can the most adequate answers be applied to a situation in constant evolution.

The energy policy set down by the government offers individual citizens and companies in Québec and its regions new possibilities to participate in development choices and their implementation. Native peoples will be more closely associated with these developments, which directly affect them. The creation of a Régie de l'énergie will allow all Quebecers to express their concerns on every important question relating to energy development. A more decentralized and better-diversified resource portfolio, and the importance given to energy efficiency, will bring about new alliances and stimulate initiatives that are more in tune with people's needs.

At the same time, the intensified role of markets and their opening-up to fair competition will provide the stimuli needed to help the Québec energy sector perform in our best interests. The energy policy adopted by the government also provides an incentive for efficiency and dynamic action, so that Québec can improve its competitiveness and lay claim to its fair share of the international market.

The Energy Policy and Government Action

The importance of energy in our modern world, and particularly in Québec society, gives a special dimension to the energy policy. The energy policy is at the centre of

government concerns about the economy, development and the environment. It challenges approaches to land use, resource management, dealings with native peoples and relations between the government and the regions. It thus presupposes an overall vision of society and the challenges facing it, as well as the cooperation of the entire government system, in its implementation and application.

The government is aware of this reality. The energy policy proposed to Quebecers is a government policy, whose dimensions and implications go beyond the sole concerns of the ministère des Ressources naturelles. It is first of all an economic policy, upon which the government bases its strategies for growth and development. It is part of the industrial policy, for the choices that it advocates will influence the future structure of Québec industry. It constitutes a facet

of the scientific policy, due to the weight of the technological orientations recommended in it. Its links with the transportation policy and with decisions concerning land-use planning are close and complex. It is an essential component of an environmental policy, since energy activities are both the source of and the solution for a large number of environment-related problems.

By clearly stating its priorities and orientations in the energy field, the government is taking on commitments whose implications go beyond the energy sector alone. The energy policy represents a challenge for the whole government. Arising out of one of the most fertile public consultations ever organized in Québec, it offers us an approach, priorities, and initiatives that will contribute to the building of our collective future, in our own best interests.