

WHAT IS *STS PERSPECTIVES*?

The *STS Perspectives* project is a foresight-type study designed to mobilize part of Quebec's scientific and technological energy in order to address some of the main socio-economic challenges that Quebec society will have to meet over the course of the next fifteen to twenty years.



1200, route de l'Église,
3^e étage, bureau 3.45
Sainte-Foy (Québec) G1V 4Z2
Téléphone: (418) 644-1165
Télécopieur: (418) 646-0920
Courriel: cst@cst.gouv.qc.ca
Internet: www.cst.gouv.qc.ca

BRIDGING THE GAP BETWEEN SCIENCE AND SOCIETY

The Council of Science and Technology is greatly concerned about how to bridge the gap between science, technology and Quebec society. This issue is very important because science and technology must be integrated in a more decisive and harmonious manner into all areas and sectors of society if Quebec is to become a real knowledge-based society.

The attempt to bridge the gap must be made from both sides of the equation through a dialogue taking place on a regular basis. Not only does Quebec society have to master scientific and technological knowledge and methodology to a greater extent in all its sectors of activity, but stakeholders from the areas of science and technology also need to pay more heed to the concerns of members of society, most notably as regards their orientations and impacts. Thus, the relevant criteria for R & D funding must be such that they take social needs into account.

The *STS Perspectives* project is directly related to the context mentioned above: it proposes to ask people to identify the main socio-economic challenges that Quebec society will have to face in the future and to then provide direction, in conjunction with scientists, for the forces of research and innovation. As such, *STS Perspectives* is a truly innovative project, given that few of the world's foresight projects have actually focused on scientific and technological demand, rather than on its supply.

Three main objectives

The three main objectives of the *STS Perspectives* project involve:

1. Raising the awareness of all sectors of Quebec society as regards the importance and usefulness of science and technology for understanding and resolving socio-economic problems;
2. Inviting the Quebec scientific community to participate in the process of reaching the social and economic goals of science and technology; and
3. Mobilizing the partners involved in Quebec's socio-economic development, including those from the area of scientific and technological development, to determine the main challenges that Quebec society will have to face in the next few years, as well as formulating the necessary strategies to meet those challenges.

APPROACH AND METHODOLOGY

The project includes two main phases; the first is to be carried out in four stages and the second is to be based on strategic planning.

Phase I: defining the challenges

The first phase of the project consists in outlining a certain number of recognized major socio-economic challenges that generate needs for new knowledge and new technology or innovation. This phase involves four stages:

1. **Consulting the population** in order to establish the main issues of concern for Quebecers regarding the future and learning about their perceptions of the main socio-economic problems that Quebec will have to face over the course of the next two decades.

Six discussion groups were assembled during the fall of 2003 in the various regions of Quebec so that members could express their views on the subject. A questionnaire has been created using the information gathered from these groups in order to better identify people's issues of concern regarding the changes that could affect Quebec society over the next twenty years. A telephone survey was then carried out involving 1,623 residents of Quebec aged 15 and older.

2. The holding of **foresight workshops** bringing together one hundred or so participants from a wide range of backgrounds and representing various areas of Quebec society.

This workshop, the theme of which was "Build their Future," was held in October 2004. The 104 participants were selected for their original ideas, their capacity to work in groups, their originality, their creativity, their social involvement and their ability to develop a certain foresight-related vision of Quebec. Their mandate was also to create a list of forty or so major socio-economic challenges that Quebec will face in the next twenty years. As food for thought, the participants were given the first summary of the results of the survey carried out during Stage 1.

3. **A consultation of members of the Quebec scientific community** in an attempt to reduce the list established previously to fewer than ten or so challenges, taking into account the expected contributions from science and technology.

This list was submitted to Quebec researchers during an on-line consultation conducted at the beginning of 2005. In all, 1,306 researchers from university, industrial, governmental and other circles participated in the consultation process. More than 50 percent of respondents chose 7 of the 40 challenges.

4. The **drafting of seven thematic reports** by seven specialized committees, formulating and explaining the challenges and their potential science-technology components.

The reports, drafted by 60 or so experts, also presented an overview of the main fields of research which could help meet the seven challenges, examples of research themes and a range of the scientific and technological disciplines concerned.

MAIN RESULTS OF PHASE I

A concerned population

Consulting the general public during the first stage of Phase I of this foresight project has enabled us to better understand the main issues of concern for Quebecers regarding the future.

Education and public access to knowledge turned out to be important issues for people, and, at the same time, they viewed these matters from a very optimistic angle. Environmental questions also turned out to be very important for respondents, but they were rather less optimistic as to how these issues will unfold, particularly young people. In fact, the majority of respondents do not believe that the main pollution problems will be solved within the next 20 years.

People are not as concerned about the economy as about the environment, but their concerns about the economy are greater than about access to knowledge. A large percentage of respondents, most notably the poorest and least educated among them, are worried about the impacts of globalization in Quebec and about the employment situation in particular.

People are most concerned with individual well-being. The strongest predictions that we recorded concerning future deterioration involve the quality of family life, physical and psychological health, and the quality of the environment.

Above and beyond these important realities, Quebecers also believe that Quebec society will become increasingly multicultural in nature, that the French language will lose ground, and, at the same time, that the province will find it increasingly difficult to escape the grip of American culture.

Finally, people do not view the theme of politics in a very positive light. They insist, rather pessimistically, that the government will not manage to solve problems related to the deficit and the provincial debt.

The forty challenges identified by participants

In Stage 2 of the foresight workshop, forty main socio-economic challenges that Quebec society will have to face in the near future were identified; they can be grouped into 6 main thematic categories:

1. Health and life-style

“The public health-care system, quality of life of senior citizens, nutrition, well-being, sports and leisure, etc.”

2. The environment and resources

“Natural-resource development, water management, green energy, transportation, waste production, fossil energy, etc.”

3. Economy, research and innovation

“Priorities involving research, globalization, the solidarity economy, jobs with high added value, agriculture, networks and regions of Quebec, a highly qualified workforce, etc. “

4. Education

“Learning languages, teaching science, teaching in underprivileged environments, dropping out of school, etc.”

5. Demographics and communities

“Increasing the birth rate, immigration, First Nations and the Inuit, etc.”

6. Culture and society

“Public participation in the democratic process, making science accessible, ethical considerations, reconciliation of work / family, poverty, the cultural sector, etc.”

SEVEN MAIN SOCIO-ECONOMIC CHALLENGES

The consultation process involving researchers in the third stage of Phase I of the STS Perspectives project has made it possible to identify seven major socio-economic challenges for which research can provide a clearer understanding of the real problem area linked to each of the challenges, and/or propose solutions. The seven challenges are as follows:

1. "Promoting the adoption of healthful life-styles, based on a preventive holistic vision of physical and psychological health and an effort to make people responsible for their own health."
2. "Increasing the efficiency of the public health-care system in an environment dominated by an aging population, while at the same time controlling costs."
3. "Developing natural resources, as well as residual material, more efficiently, using a sustainable-development approach and making Quebec a world leader in this area."
4. "Making a high-quality education, combining rigour, creativity, flexibility and responsible citizenship, accessible to all."
5. "Targeting strategic and priority market niches in the areas of research, economic development and education, established on the basis of current strengths and emerging sectors."
6. "Reducing our dependence on fossil energy and making Quebec a leader in the fields of energy efficiency and renewable energy, mass transit and new environmental technologies."
7. "Adopting innovative interventions for controlling poverty and the factors that generate and maintain it, and staving off the consequences of poverty: marginality, a feeling of powerlessness, inequity and violence."

The future of scientific and technological development in Quebec

As well as determining the seven challenges, the researchers questioned during Stage 3 of the first phase were also asked to comment on Quebec's scientific- and technological-development prospects.

Research funding was chosen by 76 percent of respondents / researchers as being one of the three most important challenges to be met during the next 10 years in order to promote the scientific and technological development of Quebec. The other outstanding challenges include transferring knowledge (35 percent), maintaining a balance between independent research and targeted research (33 percent), increasing private funding for research (22.7 percent), and promoting scientific careers among young people (17 percent).

Multi-disciplinary fields, centred on transfer and sustainable development

In the fourth stage of Phase I, each of the seven challenges selected was presented to a group of experts in charge of explaining the key related issues and suggesting the main fields of identified research that could help in meeting the challenges in question..

The multidisciplinary character of the fields of research constitutes an important link among the seven chosen challenges. Furthermore, all the challenges involve two important types of contributions from research, i.e., understanding the challenges and developing and integrating innovation in practice.

The seven groups of experts insisted on the importance that the transfer and appropriation of research results take on as conditions of success for each of the fields, or they created a specific field based on these issues. In fact, research activities can only contribute to an understanding of the phenomena and to improving or resolving the situations if their results are successfully integrated in practice.

The solutions to the problems raised by the seven chosen challenges are inevitably dependent on public intervention. Furthermore, the work groups have pointed out the necessity of integrating each challenge within a sustainable development perspective.

STS PERSPECTIVES PROJECT FOLLOW-UP

Phase II: strategic planning

During Phase II of the project, which began in the fall of 2005, the Council of Science and Technology intends to ensure that research development strategies will be designed and implemented for each of the seven challenges chosen in Phase I. These strategies will be developed on the long term and they will take into account the major evolutionary trends within the scientific fields targeted by the challenges in question.

A steering committee will be formed for each of the seven challenges. Each committee will be made up of five researchers and five representatives from research-result user communities.

The strategies that the Council hopes to see developed and applied should focus on questions such as:

- Which research themes have to be developed first in order to help meet the challenge?
- What resources will be needed?
- How can the transfer and exchange of knowledge between the researchers and users be ensured?
- How can exchanges and sustainable collaboration among the researchers from the various areas and disciplines be promoted?

Agreements have already been reached with the ministries and agencies that have specific responsibilities linked to the challenges in question. This is especially true for the Ministry of Health and Social Services (challenges 1 and 2), the Ministry of Natural Resources, Fauna and Parks (challenges 3 and 6) as well as the Ministry of Employment and Social Solidarity (challenges 4 and 7). The three Quebec grant providers (the Quebec Research Fund on Society and Culture, the Quebec Research Fund on Nature and Technology, and the Research Fund on Health in Quebec) decided in June 2005 to form a partnership with the Council for this operation.

The research development strategies involving the seven challenges should emerge around the end of 2006 and during 2007.

PROJECT IMPACTS AND SPIN-OFFS

The *STS Perspectives* project offers the ministries and agencies affected by the challenges in question the possibility of better orienting and planning their research and innovation initiatives. The three Quebec grant providers have already integrated the *STS Perspectives* challenges into their strategic planning.

To help better understand and find solutions for some of the main challenges that Quebec will have to face in the next twenty years, strategies will be developed based on collaboration among government interveners, research-sector stakeholders and research users. This exercise will be the first of its kind in Quebec.

The *STS Perspectives* project constitutes a first use of foresight research as a means of providing food for thought for decision-makers concerning the future of research, science and technology in Quebec. As well as assisting the decision-making process, this project will have enabled us to broaden our reflections upon the ways in which the general public can participate in key decisions in the future.

Foresight-related thinking which will continue, and which may well have other spin-off in the years ahead.

PARTNERS

The *STS Perspectives* project enjoys the support of a number of collaborators and partners:

Ministry of Economic Development, Innovation and Exportation (MEDIE) (sponsor)

Valorisation-Recherche Québec (sponsor)

Association francophone pour le savoir (Acfas)

Association des directeurs de la recherche industrielle du Québec (ADRIQ)

Fonds québécois de la recherche sur la nature et les technologies (FQRNT)

Fonds québécois de la recherche sur la société et la culture (FQRSC)

Fonds de la recherche en santé du Québec (FRSQ)

Several other ministries and agencies for the realization of Phase II.