The Ministry of Transportation of Quebec's Web Site on Climate Change

Ministry of the Environment
Transportation in Quebec against the background of climate change

Transportation is one of the largest causes of climate change but also one of the sectors that will be the most affected.

Greenhouse effect and climate change
According to the last report by the International Panel on Climate Change (IPCC), the planet could experience an average increase in temperature of between 1.4° and 5.8°C by the end of the century *(see Flash animation on this subject).*

Transportation and climate change
Climate change is caused by greenhouse gases (GHGs), a major portion of which comes from vehicle emissions.

Toward sustainable mobility
Individually, we all have a role to play in reducing GHG emissions, especially by ensuring that we travel in an ecologically responsible fashion *(see Flash animation on this subject).*

Adapting transportation to the impacts of climate change

- Whatever measures are implemented today, climate change will affect transportation tomorrow in many ways. The Ministry of Transportation of Quebec is already working on measures that will allow infrastructure to face these changes *(see Flash animation on this subject).*

For further information, see these related sites on:

- The greenhouse effect and climate change
- Exhaust gases
- Life cycle analysis
- Trip planning
    - Public transportation
    - Intercity transportation
    - Active transportation
    - Carpooling
    - Sharing cars
    - Taxis
- Performance guides

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1. INTRODUCTION

The Ministry of Transportation of Quebec (MTQ) has created a new section on its Web site dedicated to the phenomenon of the greenhouse effect and the impacts of climate change on transportation activities.
(http://www.mtq.gouv.qc.ca/fr/ministere/environnement/climat/index.asp).

This initiative by the MTQ follows in the wake of the international implementation of the Kyoto Protocol on February 16, 2005. The site was created in collaboration with the Research and Environment Directorate and the Communications Directorate.

The MTQ is using its ministerial communications strategy to make the general public, its partners, and its employees more aware of the issues around the climate change phenomenon, sustainable mobility, and adapting to the impacts of climate change.

The site is made up of four sections:

1. The greenhouse effect and climate change
2. Transportation and climate change
3. Toward sustainable mobility
4. Adapting transportation to the impacts of climate change

The MTQ's project is the first provincial Web site with an entire section devoted to the issues around the climate change phenomenon and the transportation sector.

2. THE CHALLENGE

Since the end of the 19th century, the Earth's climate has changed. The average world temperature has increased by 0.6° C, which represents one of the fastest temperature increases that our planet has ever experienced. We now know that the major part of this temperature increase is primarily due to human activities and not solely planetary cycles. According to the last report of the UN's International Panel on Climate Change (IPCC), published in 2001, the average temperature of the Earth's surface could increase by a further 1.4° to 5.8° C by 2100. A large part of the Arctic region could experience an annual average temperature increase of 6° C during this same period.

Climate change will thus have major consequences on ecosystems and human activities. Locally, the increasing temperature has resulted in phenomena such as the thawing of the permafrost or diminishing water levels in the Great Lakes and St. Lawrence River. Experts also expect that the warming of the climate will lead to a greater number of extreme weather events such as winter storms of greater intensity, heat waves and droughts.

The implementation of the Kyoto Protocol is a major issue in Quebec's public policy. The transportation sector's important role puts it front and centre in this challenge. There are many issues around the climate change phenomenon and they affect everyone. They will involve major changes in how we live, travel and transport goods.

Reducing greenhouse gases (GHGs) associated with the transportation sector

A behavioural change of this magnitude cannot be implemented without cooperation from the entire population and our private- and public-sector partners. Efforts to modify our ways of doing things will be better understood if they are well explained, especially in the transportation sector. By building a Web site devoted to climate change and transportation, the MTQ is confirming its willingness to contribute to the government's efforts to raise awareness. It is also striving to simplify and widely disseminate experts' knowledge in this area. The priority approach taken with the target clienteles is to promote modes of travel and ways of doing things that are the most effective in reducing the GHGs associated with the transportation sector. This is what is meant by *sustainable mobility*.

Quebec is one of the locations in North America emitting the lowest amount of GHGs per person, i.e. 12.4 tonnes, versus the Canadian average of 22.4 tonnes in 2001. This is primarily due to the leading role that hydro-electricity plays in supplying our energy. Transportation and industry are responsible for the largest portion of Quebec's emissions. The transportation sector was the main emitter of GHGs in 2002, accounting for 38.5% of total emissions. Since 1990, these have grown by 14% and could reach 45% of the total by 2021 if nothing is done. The greatest increases have been observed in road transportation of goods and people. Based on this diagnosis, the Government of Quebec will have to devote a significant portion of its efforts to reducing GHGs in the transportation sector.

GHG Emissions by Sector in 2002

Transportation	38.5%
Industry	30.9%
Residential, commercial and institutional	13.6%
Agriculture	9.9%
Garbage	5.9%
Electricity	0.3%
Changing land use and forestry	0.9%

Source: Quebec Ministry of Sustainable Development, Environment and Parks

Adapting to the impacts of climate change

Adapting to the impacts of climate change on transportation activities is the second major focus of the ministerial strategy to fight climate change.

[TRANSPORTATION] "Regardless of current efforts to fight climate change, we will experience impacts and have to face them." Yoke Waller Hunter, 2003, Secretary General of the United Nations Framework Convention on Climate Change.

Transportation is one of the sectors most sensitive to climate change. Whatever GHG emission reduction measures are taken today, climate change will impact transportation in different ways. Some transportation activities and infrastructure are already being affected by this new reality.

The Ministry of Transportation of Quebec is preparing its activities and infrastructure to face these impacts and adapt to them. This effort flows from its mission, which is [TRANSLATION] "to ensure, across Quebec, the movement of people and goods through safe and effective transportation systems that contribute to the economic, social and sustainable development of Quebec."

Against the background of adapting to the impacts of climate change, the Ministry of Transportation of Quebec has identified four major intervention priorities: coastal erosion, the dropping water levels in the St. Lawrence River, the thawing of the permafrost, and winter viability.

The Ministry is thus involved or participating in several research projects designed to identify how climate change will impact our transportation activities. It is also participating in developing or testing new ways of doing things in order to adapt to the new climatic conditions.

The Ministry of Transportation is a founding member of the Consortium on Regional Climatology and Adaptation to Climate Change. (http://www.ouranos.ca/)

3. THE PROJECT

The site is designed to inform the general public, our partners, and our employees about the issues around the climate change phenomenon, sustainable mobility and adapting to the impacts of climatic changes.

It consists of four main themes:

a. The greenhouse effect and climate change

This section briefly explains the phenomena of the greenhouse effect and the temperature increase seen to date. As well, it describes the different GHGs and their characteristics and how increasing temperatures impact ecosystems and humans.

It concludes by presenting the objectives of the Kyoto Protocol, giving a situation report on the transportation sector, and discussing the role that Quebec intends to play in fighting climate change.

b. Transportation and climate change

This section discusses issues in Quebec's transportation sector in relation to the climate change challenge. The first part describes the main pollutants associated with light vehicles. By burning fossil fuels such as gasoline or diesel, a vehicle releases a significant quantity of greenhouse gases into the atmosphere as well as a large number of harmful substances or pollutants, such as those causing smog.

A brief overview of various replacements fuels, also called "alternative fuels," is also included.

c. Toward sustainable mobility

In developing its Web site on climate change, the MTQ made it a priority to increase people's awareness of using more sustainable transportation, both to reduce fuel costs and GHGs. Various aspects of this issue are discussed:

- Trip planning
  The various trip planning options available to everyone and their related impacts on the environment are discussed.

- Polluting less when driving
  This part explains that by adopting more sustainable behaviours such as avoiding unnecessary idling, reducing speed, etc. we can reduce our contribution to the greenhouse effect.

- Choosing the right car

Purchasing a car is the ideal time to commit to reducing one's impact on global warming. A vehicle's various characteristics affect its GHG emissions.

- Purchasing local products
  This section explains that by purchasing local products, we reduce our indirect contribution to global warming.

Governments also obviously have an very important role to play in helping achieve the objective of sustainable mobility. This concept is also front and centre in the Ministry of Transportation of Quebec's mission and initiatives, which are highlighted in the section "Que fait le MTQ?" [what does the MTQ do?]

d. Adapting transportation to the impacts of climate change

The last part of the site is devoted to describing the impacts of climate change and the MTQ's efforts to adapt. As part of its mission, the Ministry must ensure that across Quebec, people and goods are moved by effective and safe transportation systems that contribute to the economic, social and sustainable development of Quebec. Transportation will be one of the sectors most affected by climate change in Quebec. Against the background of climate change, the Web site describes the four areas of greatest interest to the Ministry of Transportation of Quebec:

- *Coastal erosion*
  Coastal erosion is a natural process of sediment movement caused by the combined effect of the ocean and climatic factors. In the maritime estuary and Gulf of St. Lawrence, this phenomenon appears to have been increasing in recent years, which represents a threat to the transportation activities and infrastructure located near the coast.

- *Water levels on the St. Lawrence*
  The St. Lawrence is a key entryway to North America. However, water levels and flow rates on the St. Lawrence could drop as a result of climate change, which would threaten maritime transport.

- *Thawing of the permafrost*
  In Nunavik, the thawing permafrost is already threatening some roads and runways. The Ministry of Transportation is seeking to understand this phenomenon more fully, in order to adapt its infrastructure to this new reality.

- *Winter viability*
  The concept of "winter viability" is not limited to winter maintenance. Climate change threatens to modify winter driving conditions. It is expected that cold snaps will become less frequent but that winter thaws will become more frequent. Precipitation in the form of freezing rain is likely to increase, and winter storms, although less frequent, should be more severe.

Flash animations

To simplify complex scientific concepts such as the greenhouse effect and climatic changes and make them easier to understand, the MTQ has developed two simplified “Flash” type animations.

The first one is entitled “L’effet de serre et les impacts des changements climatiques” [The greenhouse effect and impacts of climate change], and it is designed to present and explain the impacts of climate change by drawing a direct link to Quebec’s specific characteristics. The subjects discussed include the thawing of the glaciers, rising sea levels, extreme weather events, coastal erosion, the thawing of the permafrost, winter viability and, finally, heat waves and their impacts on water resources.

The second animation details different ways of achieving the objective of sustainable mobility. It describes the various types of pollutants associated with light vehicles (sub-compacts, mini-vans, sport utility vehicles or SUVs) as well as the different modes of public transportation available in Quebec. As well, the animation illustrates various ways to avoid unnecessary idling, plan one’s trips, and cut driving speeds in order to reduce the transportation sector’s contribution to global warming.

Related sites

The information available on the site is complemented by a list of several related specialized Web sites. These are found throughout the text or are available by subject under the “Related sites” section.

4. CONCLUSION

The Ministry of Transportation of Quebec has created the first provincial Web site devoted to climate change and the transportation sector. It is designed to make the public, our partners, and the private sector more aware of societal issues around fighting climate change.

The ministerial awareness strategy operates on two levels: initiatives designed to reduce GHGs, and initiatives designed to help the transportation sector adapt to the impacts of climate change.

This initiative is a an essential preliminary step toward the subsequent implementation of measures to reduce GHGs and adapt to the impacts of climate change on Quebec’s transportation sector. This approach will help increase the public’s awareness of environmental protection and improvement.

Web technology makes it possible to raise the public's awareness of the issues around the challenge of climate change in the transportation sector. It is an innovative means of communication, reaching many target groups at a low cost. The updating of the content and links is facilitated, and the impact of the awareness-raising campaign is spread throughout the year.

The objective of the MTQ's Web site is to help spread the word about research and innovative initiatives in this field in Quebec's transportation sector.