

L'ISLET

QUEBEC



Developing a multi-risk Adaptation Plan

Introduction to the Local Government

L'Islet, Quebec is an amalgamated municipality featuring three smaller regions with a combined population of approximately 4,000 over an area of 11,952 km². The municipality is located along the flood plains of the south shore of the St. Lawrence River. The municipality is made up of residential properties along the shoreline, agricultural lands, a few urban centres, and an important industrial area.

The municipality's climate change vulnerability and risk assessment (2017) and its subsequent Climate Change Adaptation Plan (2018) were initiated as a proactive move, rather than an emergency response, to specific climate related events.

"The municipality of L'Islet is quite small and has limited resources, yet it was able to take a very proactive approach to climate change adaptation by working with its citizens and funding agencies." Yannick Bourque, Planning Advisor for the Municipality L'Islet

Significant climate-related events and impacts

The municipality of L'Islet experienced two significant coastal flooding events in 2020. On both occasions, private residences, heritage buildings, the natural shoreline and seasonal recreational facilities, such as campgrounds, were impacted. Prior to these flooding events, the community was also negatively affected, although to a lesser degree, by extended heat waves, lack of summer precipitation and

associated drought-like conditions. Such droughts, as elsewhere in southern Quebec, raised concerns about water shortages for both domestic and agricultural uses in L'Islet. The summers between 2015 and 2017 were the hottest on record in the area.



Heritage buildings at risk of flood damage in L'Islet

Developing a Climate Adaptation Plan

The municipality of L'Islet collaborated with a citizen environmental committee, the ROBVQ (Regroupement des organismes de bassins versants du Québec) and Le Groupe Conseil Carbone (CCG), a climate change consulting firm, to develop its vulnerability and risk assessment and adaptation plan. Historical climate hazards were investigated in order to evaluate the current and future effects of climate change on the municipality. Social, economic and environmental aspects were also considered in the evaluation of vulnerabilities and risks.

For the vulnerability and risk assessment, the municipality consulted with citizens to assess climate-related vulnerabilities and risks on soil use, water courses and municipal infrastructure in order to establish a "collective

memory.” The goal was to use this citizen input to provide contextual insights on climate information.

“We mobilized the public to participate in the studies through Facebook and our regional newsletter, Le Hublot.” Yannick Bourque

Subsequently, the probability of climate-related events and risks occurring in the future led to the identification of adaptation actions. A second citizen consultation completed in 2018 sought additional input on the proposed adaptation actions to address the noted risks. This left the municipality with an array of citizen-endorsed actions that ranged from shore naturalization to opening dialogues with the farming community about water quality and scarcity.



Public consultations for the climate change adaptation plan

Climate data used

Historical climate data

The municipality and CCG relied heavily on historical climate data supplied by Ouranos, Quebec’s Innovation Cluster on Regional Climatology. This non-governmental organization makes available observations and simulations of total precipitation, extreme heat, general temperature, cold, and freeze and thaw cycles among other climate indicators.

Ouranos also provided river flowrate data, information useful when studying the impacts of flooding and drought. Additional information on the St. Lawrence River was obtained from Quebec’s Ministère de l’environnement et de la lutte aux changements climatiques. Finally, supplementary historical climate information was obtained from

Environment and Climate Change Canada, including precipitation data recorded near Montmagny between 1965 and 2001.

Projected climate data

The municipality also obtained future projected temperature data from Natural Resources Canada’s Le Québec en évolution and Ouranos. As is the case across Canada, temperatures are rising, contributing to an increase in weather extremes, including precipitation extremes. An analysis of winter temperatures revealed that fewer snowfall days are likely in the future, with an increase in rain and freeze-thaw cycles. One important question remains of whether or not the projected increases in rainfall will be enough to compensate for the increased rates of evapotranspiration driven by much hotter summer temperatures.

Climate Change Vulnerabilities and Risks

Numerous physical, natural and socio-economic systems were identified as being vulnerable to climate related events within the municipality of L’Islet. The climate-related events examined included flooding, intense storms, damaging waves on the St. Lawrence River, heat waves, and drought. The resulting vulnerabilities included:

- Unstable and aging retaining walls on private and municipal property along the St. Lawrence River susceptible to shoreline erosion from high waves, high tides and seasonal flooding.
- Heritage buildings (e.g. churches, graveyard, several schools), including residences prone to flooding damage and a loss in heritage sites, which could negatively impact the region’s tourism.
- L’Islet’s aging population and agricultural labour force who are particularly exposed to extreme heat events.
- Migratory birds and other species affected by flooding, drought and intense storms, which could also affect nature-based tourism.
- Biodiversity loss, including possible loss of native species and an increase in invasive species and insect pests.
- The quantity and quality of drinking water from private wells and municipal sources being vulnerable to flooding events and subsequent runoff.
- Agricultural lands being susceptible to summer droughts and resulting crop loss.

A total of 29 social, economic and environmental risks were then identified, with the highest ranked risks being declines in agricultural crop yield, plant biodiversity reduction and damage, water contamination, increased need for building and shoreline maintenance, and damage to heritage buildings. Also highly ranked were an increase in the number of very hot days associated with heat exhaustion, heat stroke for exterior workers, accelerated shore erosion, and an increase in damaging coastal flooding events.

Next steps for L'Islet in climate change adaptation

A climate change adaptation plan was developed based on the vulnerability and risk assessment and the citizen consultations, which identified 32 citizen-endorsed actions to address the 29 risks.

A number of adaptation actions are currently being implemented, including the re-treeing of the shoreline. Additionally, increased vegetation and tree cover are now integrated into new developments, as are smaller streets with increased permeability to reduce the impact of flooding. Moreover, water meter monitoring is being instituted in some areas of the municipality to help with water conservation efforts. Some of the adaptation actions, which have also been categorized under 11 broader community objectives, include:

- Acquiring shoreline land for coastal erosion protection,
- Implementing shoreline vegetation inspections and ensuring norms are met,
- Creating an urban forestry plan,
- Establishing a drinking water conservation program,
- Opening a dialogue with all stakeholders about water quality, and
- Managing the floodplains.

The municipality's goal is to implement at least 60 percent of the actions by 2025, focussing specifically on the most cost effective actions with the greatest benefits.

Opportunities and challenges in developing a climate adaptation plan

Several opportunities and challenges presented themselves to the municipality of L'Islet during this initiative. In particular, several unique opportunities presented themselves, including increased access to government

funding, enhanced communication with citizens, and community engagement in the broader issue of climate change.

"It is impressive to see what a small municipality can do to proactively address climate change. In this way, L'Islet was able to inspire its citizens and hopefully other small municipalities wanting to do their part." Pascal G  n  vieve, Executive Director, Groupe Conseil Carbone

In contrast, some large challenges were encountered while assessing climate change vulnerabilities and risks, and developing and implementing the adaptation plan. These challenges included a lack of ongoing financial and political support, making the case for certain capital cost actions, and the need for ongoing citizen champions.



Looking for more great resources?

Check out [ChangingClimate.ca](https://www.changingclimate.ca), your one-stop-shop for examples of climate change impacts and examples of adaptation actions from across Canada.

Need climate data to support your adaptation actions?

Visit [ClimateData.ca](https://www.climate-data.ca) to access historical and future climate data, custom analysis tools, training materials, and much more.

