

What are the Predicted Impacts for Communities in a Changing Climate?

- Changes in river flows, precipitation amounts and a rise in sea levels means that flooding will become more likely in human communities close to rivers and the coast. According to studies by the Geological Survey of Canada, New Brunswick's coasts are one of two areas of Canada with the highest sensitivity to sea level rise (along with the Beaufort Sea coast), and our rivers are amongst the most highly vulnerable in Canada to climate change.
- The availability of clean drinking water will become a major issue in some areas due to a combination of impacts. More severe storms will result in increased runoff from farms and other developed areas, leading to potential for increased water pollution and siltation. Extended periods of drought inland can result in lower water tables throughout the province, causing drinking water quantity and quality problems. Higher sea levels may result in increased salt water intrusion into water tables near the coast.
- Areas which are more densely developed, especially city centres, will likely experience greater temperatures due to lack of the buffering benefits of vegetation and open water.
- These predicted impacts will influence the safety of existing buildings, roads, and railways, and will determine where it will be safe to develop in the future.
- We will be spending a lot more money and effort trying to replace the ecosystem services we now take for granted – like the cooling effects of green spaces and water bodies, the natural flood and erosion control provided by forests and wetlands, and the natural water filtration done by natural areas.



What are Possible Solutions for Communities and Adapting to Climate Change?

For our communities to adapt and respond to climate change, it will become increasingly important for community planning to incorporate more natural areas into municipal and rural plans. Natural ecosystems provide many ecological safety net services to humans which would cost millions to reproduce or replace. Wetlands catch water and filter pollutants from it, and allow rainwater to slowly seep into the ground and recharge water tables. Forests reduce pollutants from the air and provide shade to help keep ground temperatures lower. Forests also slow the runoff of water (from rain or snowmelt) into river systems, reducing soil erosion and flooding.

“Changes such as declines in river flows and water levels, higher water temperatures, storm surges, and heavier short-duration rainfalls are expected to cause impacts such as a decline in hydroelectric power, declining water supplies, water quality problems, flash floods and overtaxing of drainage facilities.”
from Adapting Infrastructure To Climate Change In Canada's Cities And Communities, 2006

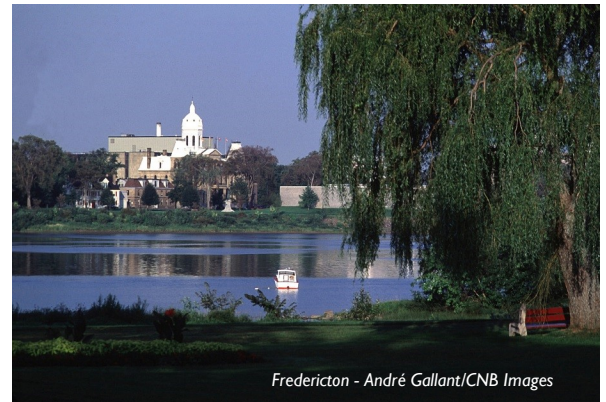
In the context of climate change adaptation, community planning can be simplistically thought of in terms of three colors: **grey, green and blue**. **Grey** is the colour of human development. **Green** represents terrestrial natural areas, including woodlands, fields and parks. **Blue** is water, whether rivers, streams, wetlands or coastal waters. Planning to help us adapt to climate change would prioritize blending green and blue within

developed areas to help buffer our human communities from the expected impacts of climate change. Ways to include green and blue natural areas in community plans include:

- Minimizing built developments and transportation routes near coastlines and along river banks, to reduce erosion;
- Minimizing impermeable surfaces (roads and parking lots), to slow down water run-off and reduce flooding;
- Conserving existing forests, rivers, streams, wetlands and making sure these green and blue spaces are linked to allow them to respond most effectively to climate changes.

To Implement the Climate Change Action Plan Related to Communities and Natural Areas:

- Drinking water, liveable temperatures, fertile soil, supply of food and natural resources for shelter are the basics of life for communities. Making it a priority for every community and every rural or urban plan to conserve the functions of forests, rivers, wetlands and coastal features will increase the likelihood we can continue to have these critical services. This will become even more of a priority as we respond to a climate change environment that will be much less comfortable and more unpredictable.
- Policies and legislation can encourage new development in areas least likely to be flooded or impacted by sea-level rise. This will have the added benefit of conserving coastal and riparian ecosystems for habitat and recreational purposes.
- The provincial planning policy initiative can help consider and plan for the combined impacts of development pressures and climatic changes on natural areas, reducing the ability of those areas to protect communities from climate change impacts.
- Forced migration of wildlife searching for suitable habitats will become complicated by the existence of developed areas and roads blocking their movements. Biodiversity strategies and wildlife management will need to become better integrated with community planning and development, to prevent wildlife from becoming more endangered or lost from the province.



Useful Resources:

Ashmore, P. and M. Church. 2000. The Impact of Climate Change on Rivers and River Processes in Canada. Geological Survey of Canada Bulletin 555. Ottawa: Natural Resources Canada.

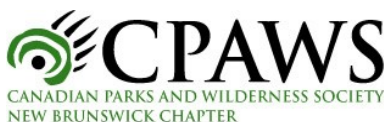
Infrastructure Canada. 2006. Adapting Infrastructure to Climate Change in Canada's Cities and Communities. Infrastructure Canada, Research and Analysis Division. Ottawa.

Ligeti, E., J. Penney, I. Wieditz. 2007. Cities Preparing for Climate Change: A Study of Six Urban Regions. Clean Air Partnership, Toronto.

Shaw, J., R.B. Taylor, D.L. Forbes, M.-H. Ruz, and S. Solomon. 1998. Sensitivity of the Coasts of Canada to Sea-level Rise. Geological Survey of Canada Bulletin 505. Ottawa.

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