

# Climate Change and Coastal Erosion



## Coastal Erosion

An understanding of erosion in the highly dynamic coastal environment is essential to the development of sound erosion and coastal management policy, regulations and decisions.

Among the most visual reminders of any major hurricane, flood, or storm event in any community are a sudden, dramatic change in the shape of the coastline and beaches and the loss of property, livelihoods and infrastructure.



Climate change is predicted to increase the intensity and frequency of storm surges which may also increase coastal erosion.

Depending on the type of shoreline, elevation of the coastal area and severity of the storm, some coastlines have retreated—sometimes literally overnight—and large amounts of sand and cliffs have vanished. As shoreline is lost, the risk of damage to coastal properties increases.

Faced with the challenge of preventing and reducing losses due to coastal erosion, decision-makers and landowners must answer some basic questions:

- What is at risk?
- What solutions are feasible?

## Understanding Coastal Erosion

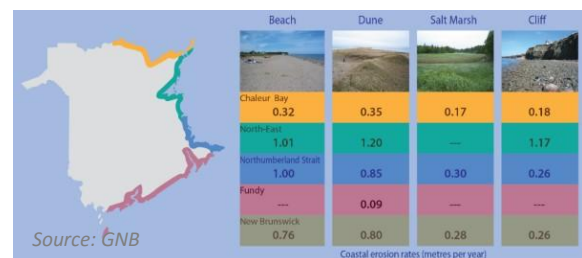
The majority of New Brunswick's coasts are susceptible to erosion. The amount of erosion from storms and storm surge is directly related to the number, intensity and duration of storms which can increase if storms occur during a high tide and full moon cycle.

- Although they are susceptible to erosion, beaches form the first line of defence against the velocity of ocean waves, providing a natural buffer between the waves and coastal properties, and natural features such as dunes and wetlands.
- As beaches continue to be damaged or altered during storms - especially the more severe storms that occur in fall and winter - they gradually lose their buffering ability, potentially increasing coastal erosion and aggravating the impacts to property, infrastructure, and natural features.

## Sea-Level Rise

As the rate of sea-level rise accelerates in response to the warming effects of climate change, we will see an even greater increase in coastal erosion, increased property damage, saltwater intrusion into rivers and underground drinking water resources.

Sea level rise can also produce an overall rise in the elevation of the water table. This situation can lead to the failure of both municipal and private septic and other drainage systems which need to be located at an elevation that is above the water table. Changes in elevation of the water table would also affect river drainage systems by slowing down runoff and increasing the risk of inland flooding.



## Erosion and the Economy

Hundreds of thousands of New Brunswickers and tourists visit New Brunswick's beaches each summer, generating millions of dollars in tourism revenue. In many of our coastal communities, beaches and beach-related activities create hundreds of jobs for area residents and are an important stimulus to our local economies.



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## Erosion Control Methods

One past approach to reducing damage from coastal erosion has been the use of engineered coastal erosion protection measures. However, because the coastal system is so complex, these techniques are often not ideal for all locations, and can cause additional problems, such as changes in sediment supply along the shore, greater erosion rates in abutting areas.

To reduce coastal erosion, the addition of buildings or public infrastructure in sensitive areas must be discouraged. Beach replenishment (replacing sand in eroded areas) and nourishment (planting native beach grasses) and other "soft" structural methods should be used instead of "hard" protection methods, such as revetments.



Photo: Bérubé  
*Sand fencing and beach nourishment*

## Emergency Preparedness

**Be alert!!** Adhere to weather and storm surge warnings on radio, television, and other media. If in doubt about your safety, or if an evacuation order is issued, relocate away from the coast for the duration of the storm. There are times when storm surges and flooding are so intense that property owners cannot get out of the area and emergency services cannot get into the area to provide assistance or to help you evacuate.

- **Road Closures:** Once the storm begins, roads into the area may be officially closed until after the storm passes to ensure public safety.
- **72 hr Emergency Kit:** Have a kit with supplies of food, water and medicines for each person for a minimum of 72 hours.
- **Bathurst Evacuation Centre:** is located at the KC Irving Regional Centre.

- **Make and practice** your evacuation plan with your family.
- **Before you evacuate** turn off or store safely all water, sewer, gas, oil, propane and electricity supply to the buildings.
- **“Public Alerting Service”**- Register for the service at [www.Bathurst.ca](http://www.Bathurst.ca) or (506) 548-0415.

## How to Flood-Proof Your Home

- Install a Back Water Flow Valve to prevent sewage and flood water from backing up into your home during a flood or storm surge event.
- Waterproof around your windows, doors and foundations.
- Remove oil, pesticides and all other materials that may contaminate your property or store them in sealed waterproof containers well above anticipated water levels or in a location well away from the shoreline.

### What is the City of Bathurst doing?

The City of Bathurst has prepared a Climate Change Adaptation Plan to increase the City’s overall \* *resilience* and to reduce the risks associated with climate change. The plan and flood maps are online at:

[www.bathurstsustainabledevelopment.com](http://www.bathurstsustainabledevelopment.com) or [city@bathurst.ca](mailto:city@bathurst.ca).

**\*Resilience is defined as – A measure of the sustained ability of people, property, infrastructure, businesses, communities or natural resources to withstand and recover from adverse situations such as climate change.**



### Sources:

Bathurst Sustainable Development.com  
[www.gnb.ca/](http://www.gnb.ca/) Coastal Erosion  
NB Department of Natural Resources. Geological Surveys Branch  
University of Moncton, University of Waterloo