

Priorities for Climate Change Adaptation in New Brunswick, July 2016

Note: this document was developed by some members of New Brunswick's climate change collaborative (<http://www.nben.ca/index.php/en/groups-in-action/working-together/climate-change-adaptation>).

It is not submitted as a document by the network, but by myself, as member and participant of this collaborative.

Sabine Dietz, Sackville NB

1. Collaboration

Provide resources and funding to maintain the provincial collaborative. The collaboration platform ensures continuous networking and communication among stakeholders and practitioners, encourages innovation, and contributes to the advancement of climate change adaptation in the province.

- a. Collaboration is essential to ensure information sharing among practitioners.
- b. Collaboration allows for the development and implementation of joint projects and shared methodologies.

2. Data and information:

Up-to-date data is essential for decision-makers and needs to be made available freely in an easy to use manner. With the considerable uncertainty around future scenarios, long delays as is customary at this time cannot be continued.

- a. Up-to-date data is essential for managing risk in the long-term. For example, as new sea level rise data is known, downscaling and dissemination needs to be undertaken in a timely manner.
- b. Support work in the province through an online platform that carries up-to-date data and information (New Brunswick specific and Canadian).
- c. Use GeoNB (*provincial portal for maps*) and ensure all floodplains, at risk flood areas and coastal erosion areas are mapped out, regularly updated, and available.

3. Ecosystem assets and services, green infrastructure:

It needs to be broadly recognized and acknowledged that in the long-term, resilient ecosystems will provide cheaper, and easier to maintain infrastructure capable of buffering us against the impacts from climate change, at all levels (health, flood risk, etc.). Ensure that using “natural infrastructure”, which are natural systems that are protected, managed and restored, is clearly delineated from using “green infrastructure”, which are systems created to reflect and provide ecosystem services. Given that not only is the use of ecosystem services cheaper, it also has co-benefits: using ecosystem services in adaptation needs to be highlighted as a viable option and to become the priority approach used.

- a. Develop and accept definitions around natural infrastructure and green infrastructure, their use, and application in adaptation.
- b. Develop and implement guidelines that incorporate ecosystem assets and services into all projects geared to reducing the impacts from climate change.

- c. Ensure ecosystems and biodiversity assets and services are protected, maintained or restored in all work aimed at reducing impacts from climate change, and all infrastructure and development planning.
- d. Ensure that guidelines are developed for the use of green infrastructure preferentially over grey infrastructure (engineered solutions not including ecosystem services) in adaptation.

4. Capacity at government level

Broad support and expertise is required at the provincial and federal government levels that can support the actions communities will have to implement.

- a. Ensure expertise and human resources are available at the provincial and federal levels to support the implementation of adaptation (e.g. engineering, adaptation planning, etc.).

5. Education and mainstreaming:

Climate change is a reality, and citizens need to reduce their own risk. A broad based outreach and education approach is required to ensure that citizens will be more resilient to changes.

- a. Incorporate climate change education into the curriculum in New Brunswick.
- b. Increase support for public and/or informal education and mainstreaming programs and initiatives on climate change (mitigation, adaptation) in New Brunswick.

6. Re-location:

Removing infrastructure from high-risk areas needs to be a conversation in the province. For some regions, it will be the only long-term solution.

- a. Identify and develop strategies around supporting relocation within disaster risk reduction strategies.
- b. Provide a funding framework/ incentives to allow relocation of infrastructure from high risk areas (including cost-sharing mechanisms - private-public).
- c. Ensure that relocation is an adaptation action that is considered in all adaptation planning processes.
- d. Consideration needs to be given to rural areas (low house values versus the cost of moving).

7. Guidelines and policies incorporating climate change considerations in decision-making:

Provincial and federal projects need to be climate resilient, adaptation measures need to be appropriate, and implementation of adaptation measures needs to be incorporated across all departments.

- a. Develop federal and provincial policies and guidelines that require the evaluation of all capital projects against future climate realities.
- b. Develop guidelines and rules around assessing which types of infrastructure are appropriate as adaptation measures, and to assess all infrastructures against future climate resilience.
- c. Develop guidelines on incorporating climate change and adaptation requirements into decision-making at the provincial level and across departments.

8. Land use planning: - *focused on New Brunswick*

Land use planning is an excellent tool to reduce exposure to risk, and ensure communities can become resilient. With the current review of the Community Planning Act and the Municipalities Act, there is a significant opportunity to incorporate strong policy statements, regulations, and requirements for adaptation into both Acts.

- a. Incorporate adaptation requirements in the new Community Planning Act and Municipalities Act in New Brunswick.
- b. Develop provincial policy statements on settlement, land use planning, and transportation within the context of the Community Planning and the Municipalities Act that reflect the need to adapt to and mitigate climate change impacts.
- c. Incorporate regulations to prevent developments in at-risk areas following the Provincial Flood Risk Reduction Policy.
- d. Develop guidelines and regulations around construction (infilling- empty parcels of land) and renovation in those at-risk areas where infrastructure needs to be maintained (e.g. rebuilding roads, existing building retrofits, etc.) and enforce those regulations.

9. Adaptation Planning

Adaptation planning is an essential process for communities to undertake in order to evaluate their risks, and develop approaches appropriate to their situations. Communities need financial and logistical support to undertake this process, especially since it cannot be a one-off plan, but requires a long-term engagement aimed at changing the way we develop our communities.

- a. Provide human resources and financial incentives at the provincial and federal levels to develop adaptation strategies.
- b. Require communities to develop adaptation strategies.
- c. Making adaptation strategies a requirement for funding.
- d. Provide provincial and federal funding in the areas of adaptation planning processes (plans or strategies, public engagement, municipal infrastructure adaptation, and relocation).
- e. Provide technical and logistical support to communities.
- f. Ensure a guiding document is in place outlining the content and process of developing an adaptation strategy.

10. Funding:

Funding is required for both adaptation planning as well as implementation. Infrastructure adaptation will be costly, and needs to be financed beyond the current financing options.

- a. Promote the incorporation of climate change considerations in all projects and activities dealing with infrastructure, and support funding for work that accounts for adaptation (or provide disincentives for work that does not incorporate climate change impacts).
- b. Use funds from carbon pricing mechanism to implement or develop adaptation projects in the province.
- c. Provide funding and regulatory support for the Regional Service Commissions to implement regional climate change adaptation planning, including for LSDs (local service districts, unincorporated areas).
- d. Funding should come from regular sources (taxation), and not from the Environmental Trust Fund (provincial fund for environmental projects).

Appendix 1-Completed and undergoing work

Multi-stakeholder Partnerships

- The Climate Change Adaptation Collaborative, a multi-stakeholder group created in 2013 and facilitated by the NBEN, brings together municipal leaders, regional planners, provincial and federal government representatives, non-profit groups, researchers and academics, industry representatives, and others to advance and mainstream climate change adaptation across sectors. It was formed in 2013 in support of the New Brunswick Climate Change Action Plan. <http://nben.ca/index.php/en/groups-in-action/working-together/climate-change-adaptation>
- Regional partnerships are established in the Acadian Peninsula (lead by IRZC) and in the Tantramar region (Tantramar climate change adaptation collaborative, lead by EOS EcoEnergy). <http://eosecoenergy.com/en/projects/climate-change-adaptation/tantramar-climate-change-adaptation-collaborative/>
- The Southeast Regional Service Commission has active partnerships with the Engineering Department at l'Université de Moncton for inland flood zone modelling, and with various NGOs to address ecosystem-based adaptation planning.
- WWF Canada's St. John River Program and the Canadian Parks and Wilderness Society, NB Chapter, and researchers from UNB are working with the Northwest Regional Service Commission on a climate change adaptation vulnerability assessment project.
- NB Association of Registered Professional Foresters: international collaboration

Research Capacity

- University of New Brunswick: inland and storm surge flood modelling (Dr. Paul Arp), community vulnerability and resilience (Dr. Tom Beckley).
- Université de Moncton: erosion (Dr. Serge Jolicoeur, Dr. André Robichaud), risk assessment (Dr. André Robichaud), community vulnerability and resilience, risk perception, local knowledge, community participation (Dr. Julie Guillemot, Dr. Omer Chouinard).
- Coastal Zones Research Institute: planning, feasibility, cost-benefit analysis, community participation.
- Department of Environmental and Local Government: modelling (Reid McLean), coastal flooding, erosion;
- Department of Energy & Mines: coastal squeeze (Dominique Bérubé).
- Canadian Rivers Institute, Atlantic Salmon Council and the Department of Fisheries and Oceans: lakes modelling and research
- NB Climate Change Research Collaborative: modelling and sharing their results internationally
- Miramichi Salmon Association: work to improve cold water refugia

Education & Communication

- Fundy Biosphere Reserve: Curriculum units on climate change: <http://www.fundy-biosphere.ca/en/projects-and-initiatives/education.html>
- Watershed groups deliver educational programs on climate change and adaptation

- Association des bassins versants de la grande et petite rivièreTracadie
- Canaan-Washademoak Watershed Association
- Conseil de gestionenvironnementale de la rivière de Pokemouche
- Eastern Charlotte Waterways Inc.
- Gestion H2O
- KennebecasisWatersjed Restoration Committee
- Meduxnekeag River Association
- Pays de Cocagne SustainableDevelopment Group
- Petitcodiac Watershed Alliance
- Shediac Bay Watershed Association
- Vision H2O
- A regional communication plan will be developed for the Acadian Peninsula in 2016-2017 by the Coastal Zones Research Institute
- Many groups have peer-to-peer mentoring programs for communities and are developing informal community-based education approaches
 - EOS Eco-Energy
 - Pays de Cocagne Sustainable Development Group
 - Petitcodiac Watershed Alliance
- Education for Regional Service Commissions: presentations to directors (facilitated by NBEN)
- Association of Canadian Delegates to the Gulf of Maine Council on the Marine Environment : awareness and accessibility regarding intensity-duration-frequency (IDF)
- Conferences and workshops facilitated by the NBEN (consult the reports here: <http://nben.ca/index.php/en/province-wide-conferences-and-workshop-reports>)
 - Workshop, Moncton, January 2013
 - Workshop, Moncton, March 2013
 - Provincial conference, Fredericton, December 2014
 - Regional workshop, Shippagan, March 2015
 - Workshop, Fredericton, June 2015
 - Regional workshop, Woodstock, November 2015
 - Provincial conference, Moncton, February 2016
- Conferences facilitated by the Department of Environment and Local Government
 - November, 2010
 - March, 2011
 - November, 2012
 - February, 2016
- Workshops and film screenings facilitated by NB Climate Change Research Collaborative
- NB Association of Registered Professional Foresters: professional development for the members
- Tools developed in NB through the Department of Environment and Local Government <http://atlanticadaptation.ca/node/260>
- EOS Eco-Energy developed a toolkit for the Tantramar region <http://eosecoenergy.com/en/climate-change-adaptation-toolkit-2/>

- CPAWS NB developed fact sheets on climate change adaptation and natural areas (forests, rivers and wetlands, communities, biodiversity)
<http://cpawsnb.org/campaigns/climate-change>
- Miramichi River Environmental Assessment Committee: warm water protocols for fisheries closures

Planning

- Rural and municipal plans incorporate climate change
 - City of Bathurst (community, led by the City)
 - City of Fredericton (corporate, led by the City)
 - City of Moncton (corporate, led by City)
 - Town of Sackville (corporate, led by EOS & Town)
 - Town of St. Andrews (community, led by Eastern Charlotte Waterways)
 - Town of St. George (community, led by Eastern Charlotte Waterways)
 - Town of St. Stephen (community, led by Eastern Charlotte Waterways)
 - Village of Blacks Harbour (community, led by Eastern Charlotte Waterways)
 - Village of Grand Manan (community, led by Eastern Charlotte Waterways)
- Shediac: Municipal plan to protect natural environments and for climate change, proposals for boroughs development in flood-prone zones to mitigate the effects of sea level rise, incorporates a sea level rise bylaw <http://www.nbse.ca/media-planning/library/SH-MP-FINAL-E-WEB.pdf>
- Beaubassin West: Rural plan for conservation of the physical environment, proposal for sustainable community design and renewable energy, incorporates a sea level rise bylaw. <http://www.nbse.ca/planning/area/beaubassin-ouest-west>
- Beaubassin East, Beaubassin West, Shediac, Memramcook and Sackville: Sea level rise by-law. The developments within flood prone zone must adapt. [http://www.beaubassinest.ca/userfiles/file/By-Law%2009-1B%20\(%C3%A91%C3%A9vation%20de%20la%20mer%20anglais\).pdf](http://www.beaubassinest.ca/userfiles/file/By-Law%2009-1B%20(%C3%A91%C3%A9vation%20de%20la%20mer%20anglais).pdf)
- Shippagan: added climate change adaptation principles in Municipal plan and adopted zoning by-laws to prevent new developments in erosion risk areas and elevate the first floor of new buildings in projected flood risk areas

Policies & Regulations

- Flood Risk Reduction Strategy by the Government of New Brunswick
<http://www2.gnb.ca/content/dam/gnb/Departments/env/pdf/Publications/NBFloodRiskReductionStrategy.pdf>

Funding for adaptation work

- Department of Environment and Local Government: supporting communities through the Environmental Trust Fund
http://www2.gnb.ca/content/gnb/en/services/services_renderer.13136.Environmental_Trust_Fund.html
- Natural Resources Canada has funded various work in the province since 2010 (through ACASA) <http://atlanticadaptation.ca/node/260>

Green infrastructure

- Green infrastructure working group: working on creating a portal with information and resources on various green infrastructure projects in the province
- The Office of the Auditor General is recommending the promotion of innovative approaches through Infrastructure Canada's funding programs (e.g. natural infrastructure)