

Exploring Holistic Resilience in Nova Scotia: A Study of Hall's Harbour



**Report prepared for
Change Lab Action Research Initiative (CLARI)**

By

Dotun Olutoke

July 2023

Acknowledgements

Funding for this research in Hall's Harbour was provided by Change Lab Action Research Initiative (CLARI).

Abstract

Small rural communities in Nova Scotia grapple significantly with the impacts of coastal climate change and adaptation efforts target these environmental threats. However, socioeconomic factors also impact the resilience capacity of these communities. This research uses the Nova Scotian coastal community of Hall's Harbour as a case study to explore holistic community resilience within the contexts of climate change and other socioeconomic considerations. Semi-structured interviews and a focus group with community members and other stakeholders serve as the data for the inquiry. Data analysis identified five themes that include: community values, coastal climate adaptation, tourism development, the communities' capacity for resilience, and community economic and infrastructure development as the key factors supporting holistic resilience in the small rural coastal community of Hall's Harbour. Key insights from the findings include: (i) building resilience through infrastructure development (ii) engaging the community capitals to enhance community resilience, and (iii) the significance of adaptive capacities in community adaptation and resilience planning. Based on the findings, the study suggests that effective community resilience building in the context of small coastal communities like Hall's Harbour relies not only on climatic/environmental factors but on the combination of different socioeconomic influences within and outside the community. Key recommendations for resilience planning in small rural and coastal contexts include improved community engagement, diversified funding, stronger partnership, and capacity building.

Introduction

Coastal communities worldwide are dynamic environments increasingly threatened by the changing climate (He and Siliman, 2019; Labuz, 2015). The vulnerability of coastal areas is increased by extreme weather events and hazards like hurricanes, flooding, tsunamis, storms, droughts, extreme temperatures, and long-term risks such as shoreline erosion and sea-level rise (NAS, 2017; Mafi-Gholami et. al., 2020). In many countries worldwide, climate-change and weather events in coastal communities increase risks which impact human health, coastal ecosystem, and infrastructure consequently leading to human displacement and loss of lives and damage to properties (Bambrick, 2016; Ogie, 2018; Parry et.al, 2007).

The coastal community of Hall's Harbour in Nova Scotia, a significant tourist destination in the province is grappling with the impacts of climate change which includes flooding, shoreline erosion and storm surges. These impacts affect coastal infrastructure and pose greater risk to community infrastructure, commercial and residential buildings. To build resilience against these environmental impacts, Hall's Harbour engages in adaptation planning to improve coastal infrastructure. Through its Shoreline Protection and Wharf Expansion Project, the community is engaged in adaptation, resilience, and other socioeconomic development activities. Some of the key activities in the planning include: wharf rehabilitation and extensions, improved harbour channel width, additional boat mooring capacity, raising and extending shoreline protection and breakwaters, additional parking capacity, improved experience and harbour access for tourists and long-term sustainability of Hall's Harbour fishing and tourism industries (Houghton, 2021).

Given that climate change is not the only crisis that coastal communities like Hall's Harbour face, it is imperative that research on building resilience is more holistic by exploring

the multifaceted nature of change in rural coastal communities and the complex interconnectedness of socioeconomic factors.

Study Purpose and Objectives

The purpose of this study is to explore holistic resilience planning in Hall's Harbour, Nova Scotia. Specifically, the research will:

- a) Conduct a comprehensive literature review exploring community resilience in rural and other coastal regions;
- b) Describe factors that support community resilience planning in Hall's Harbour within the context of climate change and other socioeconomic dimensions;
- c) Provide recommendations on integrating "holistic resilience thinking" into future community development plans for Hall's Harbour and other Nova Scotian rural coastal communities.

Hall's Harbour: Background and Efforts to Build Resilience

Hall's Harbour is a fishing, coastal community located on the Bay of Fundy in Kings County, Nova Scotia. The community derives its name from Samuel Hall, a privateer who led an expedition of 17 men in 1779 to the community, setting up his operation base in present day Hall's Harbour after making raids along the Bay of Fundy (Parker, 1998). Between 1835 and 1836, the community expanded to include 12 houses and 2 stores and by 2002 there were approximately 60 properties and 20 residents in the coastal settlement while over 300 residents live in the wider Hall's Harbour Fire district (Spinazola, 2002). Today, there are approximately 300 people living in both the fishing village and the greater district of Hall's Harbour. As a community with a predominantly ageing population, many residents in Hall's Harbour are seasonal residents who only live there during the summer months.

Hall's Harbour, apart from being a fishing community with a popular Lobster Pound and Restaurant, is a significant tourism destination in Nova Scotia, historically attracting up to

60,000 tourists yearly (Spinazola, 2002). The wharf in Hall's Harbour is an important socioeconomic, cultural, and physical asset that attracts visitors from different parts of the world and the community and government have invested financial resources to develop and protect it over the years (Green, 2004). Built in 1836, the wharf has undergone major reconstruction and expansion due to damages. In 1962, a storm caused extensive damage exceeding \$50,000. The most recent damage to the wharf occurred in 1997 when a great storm weakened the wharf leading to an eventual collapse of the center portion. This event and the subsequent efforts to rebuild after the storm damage galvanized the people of Hall's Harbour to organize and create the Hall's Harbour Community Development Association (HHCDA).

The HHCDA is one of 8 major organizations in the community of Hall's Harbour taking a leadership role in ongoing community planning projects related to wharf expansion and other socioeconomic development activities. Understanding the severity of climate change impacts, the HHCDA is taking a proactive approach by engaging community residents, business owners, government, and stakeholders at all levels of government in adaptation planning targeted at strengthening resilience to current and anticipated extreme weather events (Starratt, 2021). Through funding from the Kings County Council, the HHCDA engaged an engineering company to create conceptual designs and renderings of the Wharf Expansion and Shoreline Protection Project. The designs were presented at an Open House Event in September 2021.



A visual illustration of the Hall's Harbour Expansion and Shoreline Project, a key aspect of community's adaptation and resilience plan

As Hall's Harbour community's efforts to improve coastal and tourism infrastructure and address the impacts of climate change are in the planning phase, this study leveraging on different research approaches such as case studies, community interviews and a focus group discussion provided valuable insights that will potentially inform effective decision-making capable of moving Hall's Harbour and other small coastal community in Nova Scotia towards a more resilient and sustainable future.

Key Highlights from the Literature

The literature review focuses on perspectives that provide contextual background to the research.

The following key thematic areas are considered important to better understand the concept of resilience:

- Multidimensional perspectives of resilience
- Community resilience
- Components of community resilience
- Understanding community resilience through the community capitals
- Community Resilience in the Canadian Context

The study explores the idea of resilience from diverse perspectives and the following are some of the key highlights emerging from diverse literature:

- Across individual, physical, ecological social and community dimensions, resilience focuses on the **capacity to adapt** in the face of change (Garcia-Dia et.al., 2013, Bodin and Wiman, 2004, Adger, 2005, Pfefferbaum, 2005)
- **Developing adaptive capacity** to changes is an essential feature of building effective community resilience (Nelson et, al., 2007, Gallopin, 2006, Oppenheimer et al., 2014).
- The components of community resilience include **leadership, community infrastructures and services, diverse economy, place attachment, community resources, community networks**. Building effective resilience will therefore require small communities with limited resources and assets to think holistically and integrate the components that support resiliency. (Magis, 2010; Ross, 2010; Amundsen, 2012, Lerch, 2015).

- At the community level, **building strong social networks and connections** within the community and with external groups like governments and private sector actors are essential for enhancing holistic resilience.
- The community capitals (natural, political, cultural, financial, built, human, social) provides a useful approach to investigate community resilience (Aldrich, 2017; Kerr, 2018; Panday et.al, 2020, Jordaan, et.al., 2018; Vasseur et.al. 2022). Working towards resilience is **a balancing act of many dimensions** of community resources/community capitals.
- From diverse studies in Canada, the following factors are key areas of consideration in building resilience: multistakeholder collaboration, integration of diverse approaches and methods, funding challenges, the relevance of research, capacity building, and the gap between planning and implementation.

Inadequate funding is considered a key barrier to implementing adaptation actions that could improve overall community resilience (Saunders-Hastings, et.al., 2020; Oldfield and Nciri, 2020; Swanson et.al, 2021).

Holistic community resilience is considered as an approach that considers the complexity and interconnection of both environmental and socioeconomic factors in a community's adaptation to changes.

Research Methods

The research adopts qualitative, interpretive, and participatory action research approaches. Data for this research was collected through eight semi-structured interviews and a focus group (involving 10 participants) with residents of Hall's Harbour. Interview and focus group questions

relate to the participants' connection with Hall's Harbour community and socioeconomic development of the community. The interviewees and focus group discussants were also asked to comment on the impacts of climate change and other socioeconomic issues on the coastal community from historical and contemporary perspectives.

Participant interviews and focus group discussions were audio-recorded and transcribed digitally using the Otter.ai Software. The raw data were revised to fix errors and/or omissions. After this process, the reviewed data were transcribed electronically and coded to identify themes. Member checks were used to validate the data and references were made to field notes as an additional measure to ensure accuracy of data. The field notes highlight key aspects of interviews, focus group and helped in easy referencing when analyzing the data. Based on the identified themes, thematic analysis was done to further provide contextual insights into the data.

Results

Relying on the analysis of the interviews and focus group data, the study identified five relevant themes and subthemes which are presented in the following table:

Themes	Subthemes
Community Values and Connections	Communal Values
	Community Involvement and Participation
	Community Champions
Coastal Climate Adaptation Planning	Rationale for Adaptation Planning
	Potentials of Adaptation Planning
	Challenges associated with Adaptation Planning
Enhancing Resilience through Tourism Development	Tourism attractions in Hall's Harbour
	Challenges of Tourism Development
	Infrastructure and Services to Improve Tourists' Experience
Community's Capacities for Resilience	Community Demographic Capacity
	Managing Community Character
	Building partnerships and coping with institutional challenges
Community Economic and Infrastructure Development	Areas of Economic Growth
	Economic Diversification
	Improving Infrastructure Capacity

The analysis provides an understanding of the key factors important to build resilience in Hall's Harbour. The core community values of mutual support, care and collaboration blend with a great sense of responsibility which informs individual and collective participation in support of adaptation activities. Also, adaptation to climate change through understanding of the challenges, provision of relevant coastal infrastructure and taking practical proactive steps form a key component of building resilience. Proposed infrastructure development aligns with the community's vision for tourism development and this underline the importance of investment in tourism-related services and infrastructure to enhance resilience in Hall's Harbour. The research

emphasize that these kinds of development should consider the community's limited capacity and ensure the community's character is maintained. Given that economic development promotes community's resilience, research participants identified diversification of Hall's Harbour local economy through creation of local business opportunities to complement existing ones as a significant aspect of community economic development.

The analysis of interview and focus group data provides a deeper understanding of the community's values, plans and visions, challenges, and opportunities in relation to resilience and adaptation planning in Hall's Harbour. The insights and perspectives shared by participants can be utilized to deepen community participation, enhance communication and information sharing, improve tourism development, develop resilient infrastructure, diversify the economy, inform policy and decision-making in government, and strengthen partnerships.

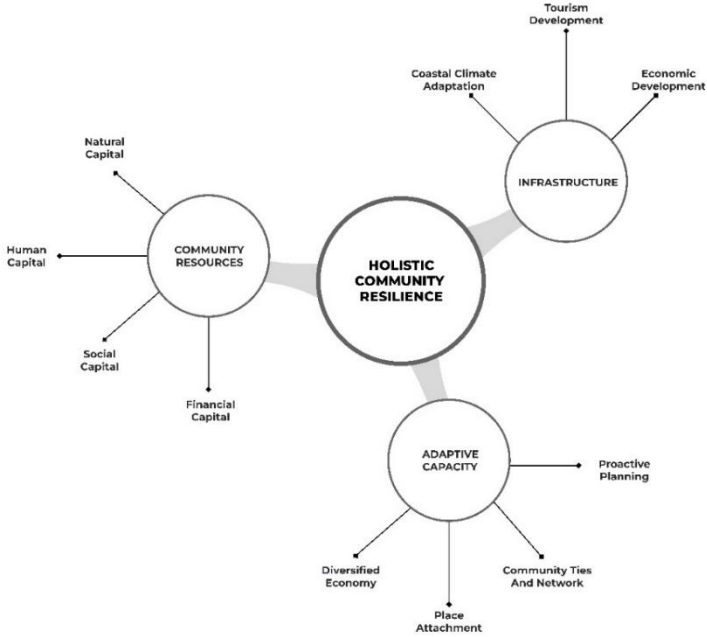
A Holistic Approach to Building Resilience in Hall's Harbour

Drawing on existing literature including theoretical perspectives and the analysis of interviews and focus group data, three key concepts emerged for further exploration:

1. Building resilience through infrastructure development
2. Engaging community capitals to enhance resilience
3. Adaptive capacity as a key factor in community adaptation and resilience planning

These factors provide a broad insight into how Hall's Harbour can develop holistic resilience through the sustainable use of community resources and assets. The overarching idea from the research findings is that effective community resilience building in the context of small coastal communities like Hall's Harbour *depends not only on environmental factors but on the combination of different socioeconomic factors within and outside the community.*

Considering the interconnectedness of different factors supporting resilience in Hall’s Harbour, the community needs to take a systems’ thinking approach to adaptation and resilience planning, which views Hall’s Harbour as a complex adaptive system constantly influenced by local and external intersecting factors. To capture this complexity, this infographic depicts the key elements that make up holistic community resilience:



The key components of holistic community resilience

Recommendations

Building holistic resilience inclusive of climate issues and other socioeconomic considerations is challenging especially in the contexts of small rural coastal communities. Funding challenges, limited capacity, degrading infrastructure, a non-diversified local economy, and continuous demographic decline are factors impacting the community's capacity for resilience. For Hall's Harbour and other small coastal communities in Nova Scotia, building resilience could be better achieved by addressing a combination of local and external factors while consolidating ongoing adaptation efforts in the community. The following recommendations provides Hall's Harbour, and other small rural coastal communities with strategic directions towards a more resilient and sustainable future. These recommendations fall mainly under three broad categories: (a) increased community engagement (b) stronger partnership and capacity building (c) diversified funding.

Key Recommendations for Holistic Resilience in Hall's Harbour

- 1.** Hall's Harbour community should partner with government agencies and community-based organizations to promote capacity building initiatives that equip community stakeholders with skills to support adaptation and resilience efforts (e.g. trainings on environmental policies, legislations and stakeholder engagement, seminars on proposal and grant writing, workshops on budgeting and fundraising).
- 2.** The community through the Hall's Harbour Community Development Association should create more platforms and opportunities that encourage increased participation of community members in resilience planning. Public engagements meetings like Open Houses, Town Hall meetings should be constantly organized to engage the wider community on adaptation activities.

3. The community should provide opportunities for younger people in Hall's Harbour to participate more in resilience building efforts. Examples include creating a youth advisory committee on resilience planning and/or reserving a spot for young people on community associations like the Hall's Harbour Development Association. The community can partner with Clean Foundation through its Leadership Summer Internship program to empower youths to take leadership for resilience and climate action in their communities. Hall's Harbour could also create youth-focused fun events (e.g. games night, bonfire, camping) as a platform to get more young people involved in resilience planning.
4. Hall's Harbour should strengthen local collaborations between other coastal North Mountain communities –Scotts Bay, Baxter's Harbour, Morden, Burlington, Harbourville, Black Rock, Huntington Point, Baxter's Harbour, Ross Creek – for knowledge co-creation and information sharing. This could be the creation of a broader regional association and serve to advocate on behalf of these coastal communities in particular climate change adaptation planning related work. This creation of this coalition of communities should start with due consultation with all the communities. This group could be led by a committee with members drawn from different communities and an advisory board comprising of representatives from the municipal government, regional economic organizations, environmental not-for-profits in Nova Scotia.
5. Through series of consultations, the community should develop a community engagement strategy that is inclusive of the ongoing projects in the community where the community regularly gets progress reports of planning efforts and the opportunity to provide insights, feedbacks, and constructive criticism with the overall of goal of ensuring more people become actively involved in adaptation and resilience planning.

6. Hall's Harbour should partner with research institutions to support the community with programs that increase climate literacy and cost-effective methods of building resilience in the community. Examples of such partnerships could be with *Clean Foundation* and *Transcoastal Adaptation* – both organizations are engaged in nature-based adaptation solutions that promote coastal resiliency in Nova Scotian communities.
7. Government should support the community to provide paid employment opportunities and financial incentives to better support adaptation and resilience planning in the community. Examples include hiring a community manager and support staff and providing stipends to encourage community members to facilitate events and adaptation-related activities. This would complement the efforts of unpaid volunteers in the community.
8. Government should provide financial incentives (e.g. tax breaks) for wealthy people to encourage them to donate funds towards infrastructure projects in the community.

Recommendations for Small Rural Coastal Communities

1. Engage community members to ensure that adaptation projects and initiatives receive community inputs and continuous feedbacks from the conception stage throughout the project lifecycle.
2. Community stakeholders should develop an understanding that planning for resilience should be broad-based, capturing the complexity of climatic and environmental factors and how they intersect with other socioeconomic dynamics.
3. Build partnerships with different stakeholders – research/universities (for access to data, capacity building); charity organizations, private and government institutions (for community capacity building, advocacy support, awareness creation, diversified funding, increased approval of building permits).

4. Integrate adaptation and resilience planning into community development plans. This involve communities planning and implementing climate adaptation and resilience as a key component of proposed or ongoing projects.
5. Implement key infrastructure projects that directly contributes to community resilience and ensure the scale of infrastructure development aligns with the community's financial capacity, and implement big adaptation projects in small phases.
6. Ensure a balance between infrastructure development that promotes adaptation while ensuring that this kind of development does not cause a significant change in the character of the community.

References

- Adger, W. N., Hughes, T. P., Folke, C., Carpenter, S. R., & Rockstrom, J. (2005). Social-ecological resilience to coastal disasters. *Science*, *309*(5737), 1036-1039.
- Aldrich, D. P. (2017). The importance of social capital in building community resilience. *Rethinking resilience, adaptation, and transformation in a time of change*, 357-364.
- Amundsen, H. (2012). Illusions of resilience? An analysis of community responses to change in northern Norway. *Ecology and Society*, *17*(4).
- Bambrick, H. (2016). Climate change impacts on human health in the coastal zone (CoastAdapt Impact Sheet 5).
- Bodin, P., & Wiman, B. (2004). Resilience and other stability concepts in ecology: Notes on their origin, validity, and usefulness. *ESS bulletin*, *2*(2), 33-43.
- Garcia-Dia, M. J., DiNapoli, J. M., Garcia-Ona, L., Jakubowski, R., & O'Flaherty, D. (2013). Concept analysis: resilience. *Archives of psychiatric nursing*, *27*(6), 264-270.
- Gallopín, G. C. (2006). Linkages between vulnerability, resilience, and adaptive capacity. *Global environmental change*, *16*(3), 293-303.
- He, Q., & Siliman, B.R. (2019). Climate Change, Human Impacts and Coastal Ecosystems in the Anthropocene. *Current Biology Review* *29*.
- Houghton, D. (2021). Hall's Harbour Master Plan: Open Invitation. Hall's Harbour Soundings 2021. Retrieved from [Soundings_20210918.pdf \(hallsharbour.org\)](#)
- Jordaan, A. J., Sakulski, D. M., Mashimbye, C., & Mayumbe, F. (2018). Measuring drought resilience through community capitals. In *Resilience* (pp. 105-115). Elsevier.
- Kerr, S. E. (2018). Social capital as a determinant of resilience: Implications for adaptation policy. In *Resilience* (pp. 267-275). Elsevier.
- Labuz, T.A. (2015). Environmental impacts—coastal erosion and coastline changes. *Second assessment of climate change for the Baltic Sea basin*, 381-396.
- Lerch, D. (Ed.). (2017). *The community resilience reader: Essential resources for an era of upheaval*. Island Press.
- Mafi-Gholami, D., Jaafari, A., Zenner, E. K., Kamari, A. N., & Bui, D. T. (2020). Vulnerability of coastal communities to climate change: Thirty-year trend analysis and prospective prediction for the coastal regions of the Persian Gulf and Gulf of Oman. *Science of the Total Environment*, *741*, 140305.
- Magis, K. (2010). Community resilience: An indicator of social sustainability. *Society and natural resources*, *23*(5), 401-416.
- National Academy of Science, NAS. (2017). *Coastal Hazards*. Washington, D.C.: National Academies Press.
- Nelson, D. R., Adger, W. N., & Brown, K. (2007). Adaptation to environmental change: contributions of a resilience framework. *Annu. Rev. Environ. Resour.*, *32*, 395-419.
- Ogie, R. I., Holderness, T., Dunn, S., & Turpin, E. (2018). Assessing the vulnerability of hydrological infrastructure to flood damage in coastal cities of developing nations. *Computers, Environment and Urban Systems*, *68*, 97-109.
- Oldfield, E. and Nciri, A. (2020). Building Community Resilience: Key Considerations and Lessons Learned from Twelve Canadian Communities.
- Oppenheimer, M., Campos, M., Warren, R., Birkmann, J., Luber, G., O'Neill, B., ... & Hsiang, S. (2015). Emergent risks and key vulnerabilities. In *Climate Change 2014 Impacts*,

- Adaptation and Vulnerability: Part A: Global and Sectoral Aspects* (pp. 1039-1100). Cambridge University Press.
- Panday, S., Rushton, S., Karki, J., Balen, J., & Barnes, A. (2021). The role of social capital in disaster resilience in remote communities after the 2015 Nepal earthquake. *International Journal of Disaster Risk Reduction*, 55, 102112.
- Parry, M. L., Canziani, O., Palutikof, J., Van der Linden, P., & Hanson, C. (Eds.). (2007). *Climate change 2007-impacts, adaptation and vulnerability: Working group II contribution to the fourth assessment report of the IPCC* (Vol. 4). Cambridge University Press.
- Pfefferbaum, B. J., Reissman, D. B., Pfefferbaum, R. L., Klomp, R. W., & Gurwitch, R. H. (2007). Building resilience to mass trauma events. *Handbook of injury and violence prevention*, 347-358.
- Ross, H., Cuthill, M., Maclean, K., Jansen, D., & Witt, B. (2010). Understanding, enhancing and managing for social resilience at the regional scale: opportunities in North Queensland.
- Saunders-Hastings, P., Barnard, M., and Doberstein, B. (2020). *Planned Retreat Approaches to Support Resilience to Climate Change in Canada*. Natural Resources Canada: Ottawa, Canada.
- Spinazola, M. (2002). "Community Development Association: An Instrument for Community Survival". Unpublished Research Project for the Degree of Master of Business Administration in Community Economic Development University, Cape Breton University
- Starratt, K. (2021, October 5). Project aims to protect Halls Harbour residents, industries from rising sea levels. *SaltWire*. <https://www.saltwire.com/atlantic-canada/news/project-aims-to-protect-halls-harbour-residents-industries-from-rising-sea-levels-100642314/>.
- Swanson, D., Murphy, D., Temmer, J., & Scaletta, T. (2021). *Advancing the Climate Resilience of Canadian Infrastructure: A Review of Literature to Inform the Way Forward*. International Institute for Sustainable Development.
- Vasseur, L., Thornbush, M. J., & Plante, S. (2022). Engaging Communities in Adaptation to Climate Change by Understanding the Dimensions of Social Capital in Atlantic Canada. *Sustainability*, 14(9), 5250.