



UNDERSTANDING PSYCHOLOGICAL DRIVERS OF ATTITUDES TOWARDS MANAGED DYKE REALIGNMENT IN THE MINAS BASIN, NOVA SCOTIA

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BACKGROUND

With growing impacts of flooding devastating communities across coastal regions in Canada, effective adaptation strategies are required. The Minas Basin Region, located in the upper Bay of Fundy, is particularly susceptible to flooding due to extreme tidal ranges and low-lying infrastructure, as well as its geography. The watershed area of the basin is five times larger than the surface area of the basin, making it susceptible to both overland flooding from the watershed and coastal flooding from the Bay of Fundy. Most former tidal wetlands around the Basin have been converted to farmland through dyking and draining over the past 400 years.

Nature-based coastal climate adaptations seek to simultaneously address social and ecological challenges through the restoration of the natural environment. Managed dyke realignment is a nature-based strategy that involves building new dykes landward and breaching or removing the old to convert and restore some former farmland back to wetlands and salt marshes. Understanding how nature-based adaptations such as managed realignment are perceived in communities where they may be implemented provides insights into how to effectively manage impending increasing threats of flooding in both socially and ecologically sustainable ways.

RESEARCH

This research sought to gain a broad understanding of perceptions of local nature-based coastal climate adaptations, in particular managed dyke realignment, among populations living within the Minas Basin region. A survey was sent out to a sample of residents of houses within the Minas Basin region which explored perceptions of managed dyke realignment as well as the possible psychological drivers of those perception based on existing theories in social psychology (n=233; response rate 21%, confidence +/-6% at 95%). The theoretical framework grounding this research is Climax Thinking, which seeks to understand resistance to proposed public good land use and landscape changes.

RESULTS

Participants in this study were generally supportive of managed realignment as a dykeland management option (69% support), despite previous research indicating strong social and cultural attachment to the physical infrastructure of the dykes themselves. Participants also agreed that there was a strong need for urgent adaptation decisions with regards to dykelands in the area, and simultaneously expressed strong support for the raising of dykes to counter rising sea levels and storm surges (73% support) and the restoration of tidal wetlands, both to help protect against storm surges and sea level rise (74% support). Despite broad support, 20% of sampled participants indicated that it would be unacceptable to relocate homes or businesses to allow space for managed realignment projects. We looked further at predictors of this concern about managed dyke realignment, and found it was characterized by people who were focused on others (altruistic) or the past, and those who were not focused on the future or the natural environment. We also found that self-orientation was a strong driver underlying the other predictors, that is, being concerned for oneself significantly negatively predicted altruism, future, or nature focus.



Managed dyke realignment in the Bay of Fundy.
Example from realignment project on the Jijuktu'kwejk (Cornwallis) river at Belcher St. Marsh in Kentville, Nova Scotia, led by TransCoastal Adaptations.

APPLICATION & CONCLUSION

This research found that while there is overall acceptability of managed dyke realignment as a possible nature-based climate adaptation to address increasing flooding in the Minas Basin region, the success of these managed realignment projects is likely contingent on anticipating concern related to impacts on private property. This research shows that people are concerned about such impacts even if it is not *their* property affected. These concerns can be addressed and mitigated through the implementation of programming which encourages community members to think about future consequences of actions or inactions on their property (ideally prior to development of land at risk), the development of buyout and funding programs, and community educational programming.

There also may be a lack of understanding of managed dyke realignment within our sample, as many participants simultaneously supported both the restoration of tidal wetlands and building up current dykeland infrastructure, which are mutually exclusive under a managed dyke realignment scenario. This could indicate a further need to educate communities about existing dykeland management options and their associated trade-offs. The openness of participants towards the restoration of tidal marshes indicates that there is potentially increasing attachment among the community to the natural environment of the tidal marshes, which may speak to the successful efforts of groups like TransCoastal Adaptations Centre for Nature-Based Solutions. We encourage ongoing education about tidal wetland ecosystems and the benefits of their restoration for protection against flooding, maintaining biodiversity, storing blue carbon, and numerous cultural benefits to strengthen a sense of value for these ecosystems, and in turn support for managed realignment.



Samantha, primary researcher, visiting a dykeland site in Kentville, Nova Scotia.

Understanding public perceptions of coastal climate adaptations is critical for their success, especially in places like the Bay of Fundy where most of the coastline is privately owned and effective management requires collaboration across individual landowners, landowner decision-making collectives known as Marsh Bodies, independent contractors who develop and implement managed realignment projects, and all levels of government. Public trust in decision makers is also critical to establish ahead of the implementation of successful managed realignment projects. Solutions such as managed dyke realignment which focus simultaneously on the preservation of historically and culturally important modified landscapes, as well as the restoration of tidal wetlands to protect infrastructure from future flooding events, provide an effective management option, as long as it is supported and understood by the community.

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