Water Security in the Canadian North with a Focus on Nunavut

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ABSTRACT HIGHLIGHTS

- This research aims to address the water security issue in Canadian North, specifically Nunavut and how it impacts the Inuit community
- Climate change has affected the stability of the natural world; its impacts have altered precipitation cycles, increased exposure to solar radiation resulting in reduction of snow and ice cover. These changes coupled with geographic and economic limitations exacerbate the effects of water crisis on the indigenous populations residing in Nunavut and other parts of Northern Canada
- Water security is often perceived through an anthropocentric lens, however, in this paper, a holistic approach has been taken to consider biophysical and sociocultural elements.
- Two important case studies (in the Canadian and the US Arctic) are analyzed to strengthen the objective of this thesis and the comparative analysis led to an understanding that the water crisis is a complex system.
- The crisis is envisioned as a system and sub-systems such as energy security and community housing have been recognized as areas that require research, policy attention and inclusive decision making.

RESEARCH QUESTIONS & OBJECTIVES

How can the local government, policy makers and other key stakeholders (public health, water operations etc.) collaborate with the Indigenous Peoples to address the Water security in the Canadian North?

Research Objective

The primary objective of this thesis is to build an effective solution model that addresses water security in the Canadian North through instruments of collaborative implementation (breaking down the complex model and address individual elements with inputs from indigenous voices.)

Further objectives are as follows:

1. Discuss the implications of water governance and adaptation
2. Review peer-reviewed literature sources that focus on water quality, quantity, management, and security as well as the applications of Traditional Ecological Knowledge (TEK)
3. Comparative case study analysis that draws parallels between Coral Harbor, Nunavut and three communities in the Northwestern Alaska
4. Draw recommendations from a conference proceeding called "Water Innovations for Healthy Arctic Homes" held by Alaska Department of Environmental Conservation to strengthen the results of this thesis.

METHODOLOGY

- **Literature Review**: A comprehensive literature review done with broad range of keywords including, but not limited to – water security, water governance, environmental racism, indigenous rights, Canadian North, Nunavut, social challenges, social sustainability, traditional identity, policy framework, settler-colonial values

- **Comparative Case Study Analysis**: The subject of the primary case study explored in this paper is Coral Harbor, a small community in Nunavut; data on household water consumption and distribution is analyzed, government documents are reviewed to gather relevant information and recommend practical interventions to municipal water supply system. This case is compared to a case study three communities (Sheefish Lake, Jade and Tundra Hill) in Northwestern Alaska for an in-depth understanding of the various elements that are part of the water security model. These communities are chosen as they are in North America and are comparable in terms of culture, financial limitations, municipality action and public health implications.

- **Scorecard to evaluate the communities**: A scorecard is put together to examine factors such as water consumption, infrastructure, interview methods used in the case study, feasibility of data collection and socioeconomic implications (community housing, energy influence and public health factors)

DISCUSSION

- **Water-Energy Nexus**
  - Important finding: energy-water relationship that was detailed in the Alaska case study – a new research avenue for understanding the utility implications on water crisis
  - Economic limitations in the northern communities indicate that the residents struggle to afford high utility bills.
  - Water-energy nexus angle needs to be considered for the communities of the Canadian North as that would bring in an action plan to address water and energy security.

- **Community Housing in Coral Harbor**
  - another theme that needs to be included in this system as an important sub-system.
  - In the case study analysis, it was observed that crowded housing and "hidden homelessness" are quite prominent in many regions of Nunavut and the Canadian North. To address water security, it is mandatory that the community housing issue is addressed first.

- **Inuit Culture - TEK Influence**
  - Indigenous Traditional Ecological Knowledge (TEK) - collective term used for indigenous practices, learnings, and cultural findings accumulated over generations which can be applied to learn more about a sustainable future
  - There are several benefits of including TEK in conservation of natural resources as the phenomenon showcases an innate link between culture and biodiversity
  - This thesis has provided sufficient information and examples to encourage TEK collaboration in the Municipal (Canadian North) decision-making as well as in the Federal water governance policies

- **Data & Governance**
  - Limited capacity of water governance tools – it is not applicable to areas such as the Canadian North because of the lack of data available on a local level (which is ideally the input for these tools
  - The need for an "on the ground" water related stakeholders right from the initial stage of planning and action: recognized by the 2009 Water Security Workshop participants
  - A specific governance pattern observed as the model of neocolonial modernist urban planning has failed due to poor data management, overlooking of existing sociocultural arrangements and lack of including indigenous voices in implementation or policy action

CASE STUDY HIGHLIGHTS

- **Case Study Highlights**
  - Energy crisis observed in Alaska is a crucial element in the issue of water security; this research angle should be a priority consideration in any future research conducted in the Canadian North, specifically in the communities of Nunavut.
  - Both the case studies indicate that the water crisis issue needs collaborative action which considers socio economic components, economic limitations, lack of tax structure as well as the influence of indigenous thoughts and learnings. Immediate attention is required to address infrastructural issues as well as medical responses; currently, the communities are not able to follow public health guidelines and have compromised standards compared to the statements made in the UN SDGs, Goal 6 and 10.

RECOMMENDATIONS

1. **Innovative Solutions Coupled with Systems - Thinking to Address the Water Security Model**: Water energy crisis addressed through engineering solutions that are focused on converting waste into biofuel
2. **Integration of TEK with Environmental Decision Making: A Multidisciplinary Panel**
   - An advisory panel can be created with stakeholders and planners that belong to different sectors in collaboration with Indigenous leaders - Involving them establishes a strong relationship as well as exhibits accountability; social justice component involved as this can slowly dismantle the colonial influence in the decision-making process
3. **Data Management, Tools and Resources**: Developing a robust database, implementing a water resource vulnerability assessment using the formula: Risk + Response = Vulnerability and undertake a detailed Arctic-wide hydrologic assessment and modelling
4. **Creating an Inclusive Communication Platform**: Develop a forum for indigenous voices to log their concerns, problems, innovative ideas for water management technologies and thoughts on financial management and create handouts for relevant decision makers with information on health-related implications

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