

# Perceptions of Climate Change Impacts and Vulnerability

## Case Study // Nanaimo, British Columbia // Canada



### Introduction

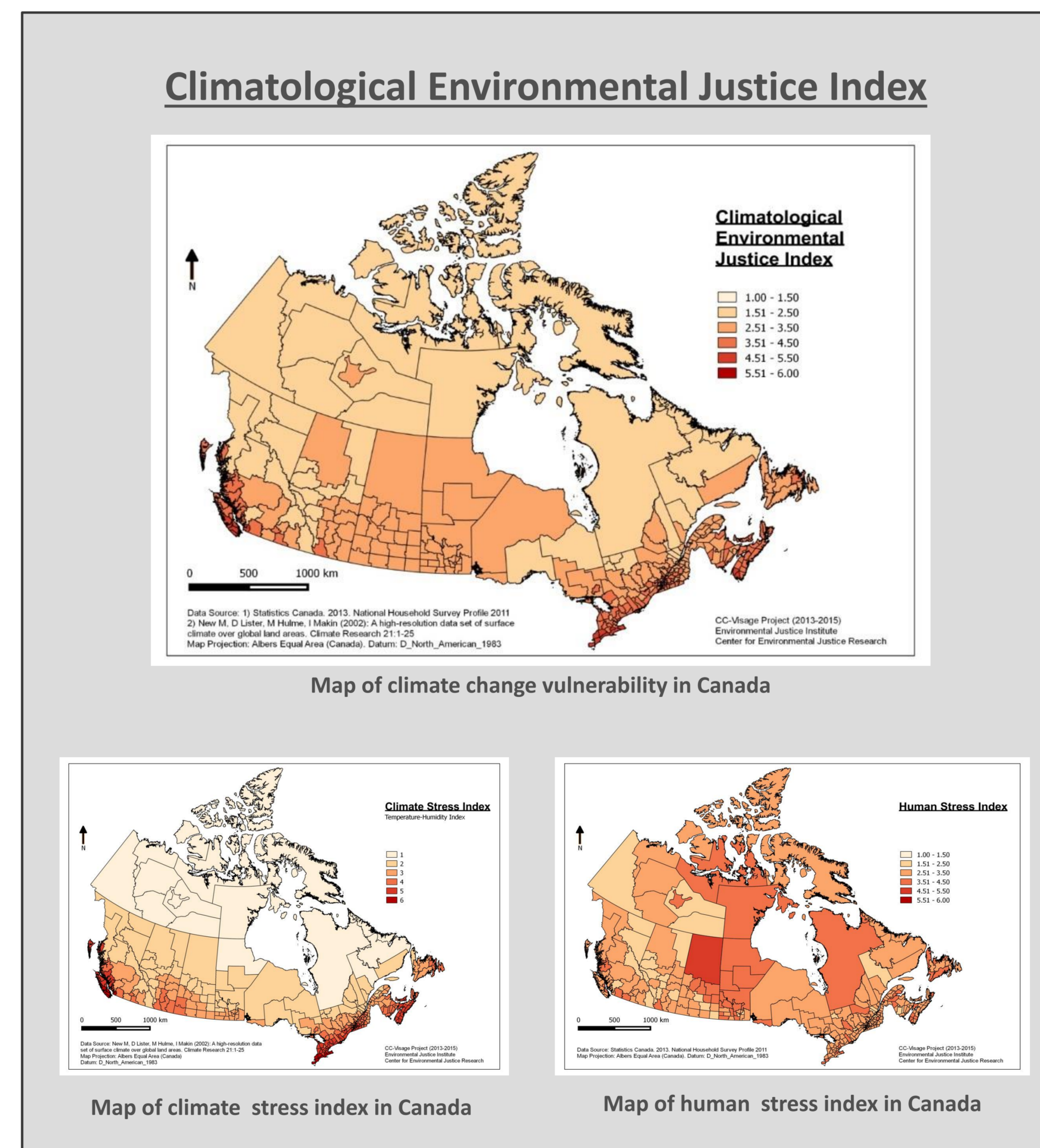
Globally, there is an unequal distribution of climate change impacts and vulnerability to climate change. However it is unlikely that the distribution of the benefits and burdens will be based on climate alone. It is well-documented that the distribution of climate change benefits and burdens on human populations are also influenced by underlying social, environmental and economic realities (Samson et al. 2011, Martins et al. 2010, U.S. Global Change Research Program 2011). Adaptation measures are put in place to reduce these vulnerabilities and build resilience. To develop successful adaptation policies it is important to understand both at the macro and micro level, a community's climate vulnerabilities and perceptions of vulnerability.



Individuals define vulnerability based on several personal and collective frames. Perceived insecurity from experienced or anticipated impacts associated with climate change will likely arise from a combination of external definitions from "experts" and internal definitions derived from psychological, social, moral, institutional and cultural processes. It will also depend on multiple social, economic and political elements, which may occur scales and speeds and which will produce very different outcomes in different communities (O'Brien and Leichenko 2010; O'Brien et al. 2004). Focusing on deepening the understanding of perceptions of climate change and vulnerability is critical to the development of inclusive models for adaptation. As such, this study aims to determine the range of perceptions in regard to climate change across the city policy network in Nanaimo, British Columbia.

### Social Marginalization

Nanaimo was chosen based on the Climatological Environmental Justice Index (CEJI) and its classification as the third most vulnerable community in Canada according to the German Canadian FFU research collaboration "CC-Visage". The CEJI variables are based on the Climate Stress Index (CSI) and the Human Stress Index (HSI).



Based on small scale representations of GIS data in Nanaimo the qualitative survey data will be obtained at the community level in Nanaimo. This will then be analysed with qualitative-quantitative methods, namely through factor analysed guideline interviews (Miles and Haberman 1994). The range of perspectives on the given topic will be sorted and the possibility of consensus will be revealed using the Q Oracle (Kaufmann 2012). Final findings will then be included in the above named GIS representations to create a public participation geographic information system map. (Gosine, Teelucksingh, 2008) To contribute to mutual learning at UBC and the FU the findings will be presented to both university communities.

### Field Research and Methodology

#### 13 steps to apply Q Oracle

1. Formation of a team to undertake and monitor a given subject.
2. Identifying the areas of 'discourse'
3. Selection of 'experts' and clustering of one or more panels. (P-set = total of all panels, if any)
4. Collection of statements from literature and the P-set
5. Creation of a final Q sort by classification of environmental discourses (e.g. Dryzek 1997)
6. Q sorting by the P-set in accordance to the Q Pyramid
7. Q analysis
8. Interpretative analysis of conflict lines from the normalized scores and the decent factor array
9. Development and transmission of the first round Delphi questionnaire
10. Analysis of the first round responses
11. Preparation and transmission of the second round questionnaires
12. Analysis of the second round responses (Steps 10 to 12 are reiterated at least three times)
13. Preparation of the final report by narratives of the discourses and analysis of the three rounds. (Provision of: Q sort correlation, normalized factor scores, PCA, Kendall W coefficient of concordance, free texts which can be analyzed by 'ad hoc methods' of discourse analysis)

### Final Result

Finally, a fuller picture of coherence between policy approaches to climate change adaptation and community-level policy perceptions of climate change vulnerability at the grassroots level will be identified. The research will demonstrate the consensus or lack thereof regarding climate adaptation policies and the perceived vulnerabilities to climate change impacts in Nanaimo. The final result will take the form of a 60 page master's thesis to be completed by the summer 2016.

### References

Allmende Kontor, <http://www.thf-berlin.de/en/get-involved/pioneer-projects/allmende-kontor/>  
Baxter J and Deacon L (2012) No opportunity to say no: a case study of procedural environmental injustice in Canada. *Journal of Environmental Planning and Management*  
Beveridge R, Miewald C and Ostry A, (2011). Climate Change and Food Security in British Columbia, Pacific Institute for Climate Solutions.  
Carlaw K and Lee M, (2010). Climate Justice, Green Jobs and Sustainable Production in BC, Canadian Centre for Policy Alternatives BC Office  
City of Nanaimo Blog, <http://www.nanaimo.ca/blog/nanaimo-s-food-strategy>  
Clements L, Chandell K and Lelie Puska, (2011) Climate change and food security on Vancouver Island. Vancouver Island Community Research Alliance  
Goldberg, M and Kerstetter S, (2007). Income Insecurity and Food Insecurity in British Columbia, Provincial Health Services Authority.  
Gosine, A and Teelucksingh. (2008). Environmental Racism in Canada, Edmond Montgomery Publications.  
Kaufmann, G. (2012). Environmental Justice and Sustainable Development. With a Case Study in Brazil's Amazon Using Q Methodology. Doctoral Thesis. Freie Universität Berlin, Berlin.  
Martins, R. D., & Ferreira, L. D. C. (2010). The research on human dimensions of global environmental change in Latin America: Looking back, moving forward. *International Journal of Climate Change Strategies and Management*, 2(3), 264–280. doi:10.1108/17568691011063042  
Miles, MB. & Huberman, AM, (1994). *Qualitative Data Analysis* (2nd edition). Thousand Oaks, CA: Sage Publications.  
Regional District of Nanaimo Agricultural Area Implementation (2014) <http://rdn.bc.ca/cms/wpattachments/wpID3260attD6829.pdf>  
Rideout K, Seed B and Ostry A Putting Food on the Public Health Table *Canadian Journal of Public Health / Revue Canadienne de Sante'e Publique* Vol. 97, No. 3, pp. 233-236  
Samson, J., Berteaux, D., McGill, B. J., & Humphries, M. M. (2011). Geographic disparities and moral hazards in the predicted impacts of climate change on human populations. *Global Ecology and Biogeography*, 20(4), 532–544. doi:10.1111/j.1466-8238.2010.00632.x  
U.S. Global Change Research Program. (2011). *Climate Change Impacts and Responses : Societal Indicators for the National Climate Assessment*.