ArticNet
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4.2: Human Vulnerability

Vulnerability in the Canadian Arctic: ArticNet 4.2

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Rationale and Focus

The central objective of ArcticNet is "*to translate our growing understanding of the changing Arctic into impact assessments, national policies and adaptation strategies*." A primary goal is the direct involvement of northerners in the scientific process.
The focus of Theme 4 is "*human adaptation to climate change, in the context of other stressors, through the development of strategies, policies, and approaches… to translate results to meaningful change at the community level*."

Project 4.2 assesses the vulnerability of Arctic communities to environmental changes, and identifies strategies and policies to enhance their capacity to deal with changing conditions. It employs a methodology for vulnerability, that considers environmental changes in the context of social, environmental and cultural changes, and actively engages northerners in the research process. The research is designed to explicitly identify and evaluate management and policy options to reduce vulnerability in Arctic communities.

Methodology

The methodology is based on principles outlined in Lim, 2004; Berkes and Jolly, 2001; Turner et al., 2003; Keskitalo, 2004; Ford and Smit, 2004; Ford et al. 2006.

The research approach (see Figure 1):
- ❑ documents stakeholders' exposure-sensitivities and adaptive capacities for current and future conditions
- ❑ identifies the broad environmental, socio-economic and policy conditions that drive local exposures and influence resilience
- ❑ incorporates future climate and other conditions derived from the natural sciences
- ❑ assesses future adaptive capacity through integration with social sciences.

Theoretical Framework

Vulnerability is a function of both exposure-sensitivity and adaptive capacity (see Figure 2).

Exposure-sensitivity reflects the likelihood of a natural hazard occurring and the situational characteristics of a community that make it sensitive to the hazard.
Adaptive capacity refers to a community's ability to cope with exposures, and is reflected in the community's management of current and past stresses, its ability to plan for future change, and its resilience to perturbation.
Thus **vulnerability** is related to potential stimulus, physical location and characteristics, governance, economic situation, social parameters and political systems.

$$V_{ist} = f(E_{ist}, A_{ist})$$

V_{ist} = Vulnerability of system *i* to stimulus *s* in time *t*
E_{ist} = Exposure-sensitivity of *i* to *s* in *t*
A_{ist} = Adaptive capacity of *i* to deal with *s* in *t*

Vulnerability, its elements (E and A) and their determinants are dynamic, and they are place and system specific.

Figure 1: Research Approach

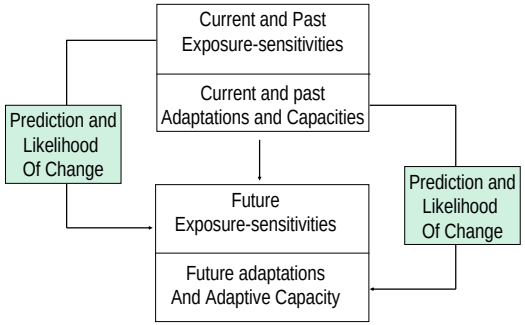
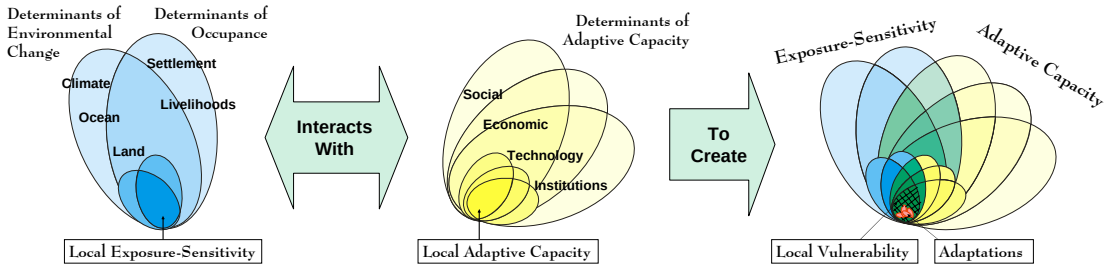
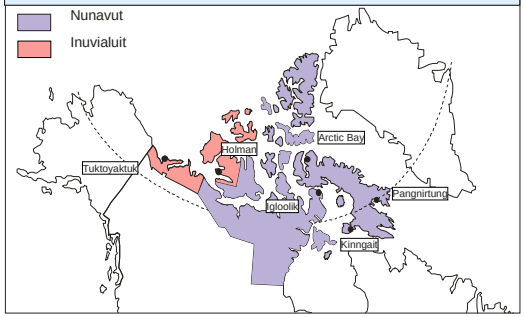


Figure 2: Components of Vulnerability



Field Sites



Results and Dissemination

Publications: *Arctic, Global Environmental Change, World-Watch, Polar Record* (In Review), *Northern Review* (In Review), *Northern Climate Exchange, Above & Beyond Magazine (*In Review*), People and Environmental Change in the Hudson's Bay Region* (In Review)

Presentations: ArcticNet, Rapid Landscape Change and Human Response in the Arctic, Adapting to Climate Change in Canada, OMRN, IHDP, Coastal Researchers Meeting, NRF, Congress of the Humanities and Social Sciences, CAG, SEARCH, AAG, CAFF, AINA, Inuvialuit Joint Secretariat, Inuvialuit Game Council, Nunavut Research Institute, UBC, COP11

Posters: COP11, ICARP, ArcticNet, Rapid Landscape Change and Human Response in the Arctic, Arctic Coastal Dynamics Workshop, ARCUS, SEARCH

Media: Toronto Star, Montreal Gazette, London Free Press, The Guelph Mercury, CBC The National, The Weather Network, CBC Radio North, CBC Radio 1,CBC National News, Norwegian Press

Community Collaborations/Consultations: COP-11, Inuvik, Tuktoyaktuk, Aklavik and Holman, Inuit Tapiriit Kanatami, Arctic Bay, Igloolik, CAFF, Inuvialuit Joint Secretariat, Inuvialuit Game Council, Aurora Research Institute , Inuvialuit Land Administration, Ulukhaktok Hunters and Trappers Committee, Helen Kalvik School, Inuit Tapiriit Kanatami,

Training of High Quality Personnel: 3 PhD and 2 Masters students, 1 research assistant, 6 northern researchers

International and IPY

Project 4.2 collaborates with researchers from all of the Arctic Council countries to develop an international consortium, Community Adaptation and Vulnerability and Arctic Regions (CAVIAR) that has received International IPY endorsement.

Co-Sponsorships

SSHRC, CCIAP, NSTP, ARI, OMRN, CRC, Latornell, ARCUS Scholarship, Rhodes House Foundation

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