Demonstrating Public Value in Arctic Science

From scientific excellence to social impact

Ashlee-Ann Pigford[1], Gordon Hickey[1], Laurens Klerkx[2]

1 Department of Natural Resource Sciences, McGill University, Canada

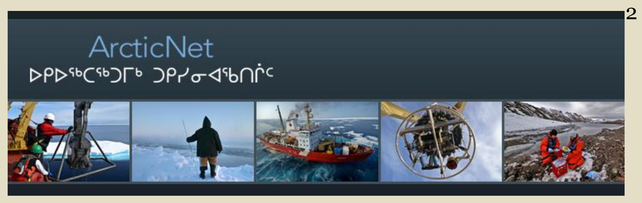
2 Knowledge, Technology and Innovation Group of Wageningen University, The Netherlands

Background

- Increasing demands for scientific research to demonstrate how it contributes towards solutions for complex problems in the Arctic
- The public value of science includes both the outputs of research (papers, report, students trained, etc.) as well as the societal outcomes that are influenced by the research[1]
- A range of different public values (e.g. social, cultural, environmental, scientific, economic) can be associated with science programs[1]

Context: Case Study

- **This study aims to provide insight into the <u>different kinds of public values</u> associated a with multi-disciplinary arctic science network in Canada**



[2]

- ArcticNet is a publicly funded Canadian Arctic scientific research network
  - Federal Investment: $113.7M CAD from 2003-18
  - *"…study the impacts of climate change and modernization in the coastal Canadian Arctic."*[3]
- ArcticNet's network has grown and diversified[4]

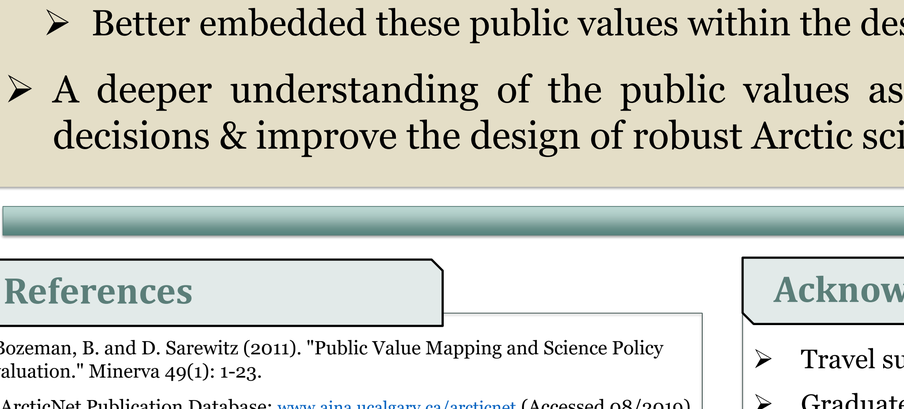


Figure 1. ArcticNet organizational connections[4]

* Analysis includes available data only; thus, data from 2017-18 & 2017-19 is not included

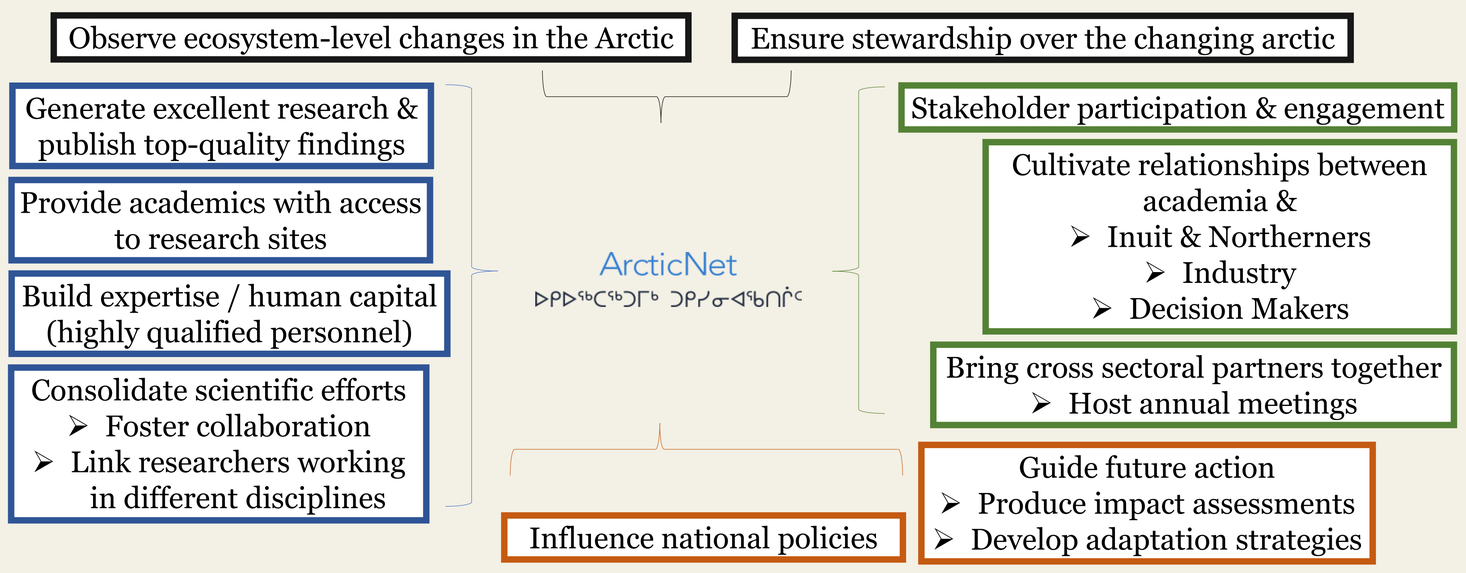
Methods

- **Public Value Mapping** (PVM)[1] to unpack the public values linked to ArcticNet
  - PVM makes the interplay of science values & other public values explicit in order to invite reflection on the practice of science management & its organizational context
  - PVM analysis includes mapping, value chain analysis & public value failure assessment
- **We illustrate the first step of PVM (Mapping):** Document and describe the public values that were used to justify research investments from 2003-2018
  - Analysis of network-specific documentation: annual reports, compendia & governance polices like mission and vision statements

Preliminary Findings

Identifying the aims and public values associated with ArcticNet

- All identified public values were present in ArcticNet from 2003-2018



Types of Values Identified

- Scientific: Advance arctic science in Canada
- Societal: Foster collaboration and partnerships with stakeholders
- Societal: Produce useful information
- Environmental: Minimize the negative impacts of climate change

- Public values related to scientific excellence & environment were consistent while, values linked to societal impacts evolved as the network matured
- Next steps:
  - Build models to explain the paths from values to outcomes (value chains)
  - Assess the potential for *public value failure*

Conclusions

- Arctic science research management strategies should account for the existence of multiple & evolving public values in order to reduce the potential for *public value failure*
- The explicit articulation of public value propositions for arctic science may help to:
  - More effectively communicate & convey the non-scientific contributions of arctic scientific research to the public and other stakeholders
  - Better embedded these public values within the design of arctic science networks
- A deeper understanding of the public values associated with networked Arctic science is required in order to inform future funding decisions & improve the design of robust Arctic science programming

References

1:Bozeman, B. and D. Sarewitz (2011). "Public Value Mapping and Science Policy Evaluation." Minerva 49(1): 1-23.

2: ArcticNet Publication Database: www.aina.ucalgary.ca/arcticnet (Accessed 08/2019)

3: ArcticNet Website: www.arcticnet.ulaval.ca/ (Accessed 08/2019)

4: Pigford AA, Hickey GM, Klerkx L. (Draft Manuscript). The structure of a science-based innovation ecosystem in a peripheral region: The case of ArcticNet.

Acknowledgements

- Travel support from the **Arctic Futures 2050 Conference Travel Award**
- Graduate funding from:

CREATE Environmental Innovation — Funding provided by the NSERC CREATE program. NSERC CRSNG McGill University of Alberta

Social Sciences and Humanities Research Council of Canada | Conseil de recherches en sciences humaines du Canada | Canada

Contact Details

- Ashlee-Ann Pigford:
  ashlee-ann.pigford@mail.mcgill.ca

McGill