

Building an Assessment Framework for Co-Produced Arctic Research Initiatives

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A. INTRODUCTION: As the Arctic faces rapid environmental change, there is a need for increased involvement and leadership from the communities who are most affected by these changes. Indigenous peoples' perspectives on climate change have been increasingly regarded as critical to developing sustainable solutions. While indigenous knowledge and western scientific knowledge are fundamentally distinct, these systems may be brought together to provide a deeper understanding of current and future Arctic change.

The co-production of knowledge (CPK) is a method of addressing and building solutions to problems using diverse ways of knowing ¹. As a practice, CPK is constantly evolving to meet changing knowledge systems, environments, and societal needs. This research proposal focuses specifically on the co-production of knowledge as it relates to western scientific understanding and indigenous knowledge of environmental change. It is important to acknowledge that 'Indigenous Knowledge (IK)' is used as an all-encompassing term for the purpose of comparison to other knowledge systems. However, knowledge systems within IK vary drastically from each other and depend on tribal affiliations, geographic location, language, history etc. ². Generally, indigenous knowledge is developed over thousands of years and remembered through cultural practices, intergenerational relationships, and deeply rooted ties to place ³. Indigenous knowledge, like western science, is and will be a constantly evolving system.

CPK is a fairly new term in describing research practices and can look like many different things on the ground. For example, there is a research project in Kotzebue, Alaska called [Ice Bridges](#) (Ikaaġvik Sikukun) that has used co-production research methods to examine sea ice change. During the course of this project project, the Kotzebue Elders Advisory Council proposed the research questions and helped guide sea ice researchers in remote locations that the Inupqia people were familiar with. After this data collection, indigenous representatives and researchers worked together to interpret the results and form an ongoing sea ice monitoring plan. While co-production of knowledge is a complex process that may be applied to many different types of partnerships, this example illustrates that CPK, on the ground, involves community engagement in every research step from developing questions, to data collection, to the dissemination of results. This will require more outreach and communication than scientific processes have utilized in the past

Research institutions are beginning to recognize a need for multiple bodies of knowledge to inform sustainable solutions. However, these emerging partnerships between indigenous experts and scientists face challenges in communicating their respective values, needs, and ways of experiencing and responding to change. While many organizations have discussed protocol and guidelines for achieving co-production of knowledge in Arctic research, these efforts are just beginning and the overall landscape of CPK is relatively undocumented. In addition, there is very little feedback or assessment of these partnerships available. The goal of this research is to

propose a cohesive framework to assess the impacts of co-produced research partnerships and their ability to create sustainable and equitable solutions to complex climate issues.

B. RESEARCH QUESTIONS

- 1. What and who determines a 'successful' co-production of knowledge initiative? What could a cohesive framework for success look like?*
- 2. How could co-produced climate research be assessed to ensure initiatives meet stakeholder goals and the needs of communities affected by environmental change?*

C. SPECIFIC AIMS

AIM 1: To assess the impact of CPK initiatives by exploring the current landscape of existing projects and partnerships. Using a survey distributed to existing knowledge holders and experts (ie. communities, researchers, indigenous experts, policymakers), I plan to determine the current level of participation in developing a co-production of knowledge assessment framework. The survey will also examine the current perceptions of what CPK is and the timeline for when collaborators should be involved in research. This CPK landscape exploration will provide a roadmap to convene all of the identified experts and participants (via a focus group) to determine what a successful CPK initiative should achieve and what knowledge it could produce. The focus group will allow for the development of both qualitative and quantitative data through the discussions and forums. Ultimately, building a cohesive framework will not be possible until the needs, goals, and priorities of communities are identified and articulated. This requires open and inclusive dialogue to build the necessary trust between western researchers, indigenous experts, and policymakers for successful CPK.

AIM 2: To determine the Impact of the NSF Funded "Navigating the New Arctic Initiative." Navigating the New Arctic ([NNA](#)) is a new initiative funded by the NSF to increase the creation and dissemination of new knowledge to inform the resilience of Arctic climate, security, and society. NNA has already funded several research projects with the goal of partnering western researchers with indigenous communities to study climatic changes. NNA is one of the few CPK initiatives that has received direct and constructive feedback from indigenous representatives in the form of community letters, providing an opportunity to study the assessment methods that already exist. In this aim, I will use a case study approach to study NNA and the documented feedback and project outcomes. Specifically, I will analyze the [letter](#) thread and public discourse between the NSF and Western Alaska tribal organizations and representatives. While both research aims will be conducted independently, this second applied research aim will inform the co-developed framework of Aim 1. The open and generative nature of the CPK focus group (Aim 1) combined with a detailed case study of a current initiative (Aim 2) will increase the likelihood that all future assessment methods are as comprehensive and inclusive as possible.

It is important to note that the process of creating this assessment framework will involve partnering with and co-producing with indigenous organizations and community members, meaning these research aims are flexible and able to adapt to feedback or differing research goals of all people involved in the process.

D. INTELLECTUAL MERIT: Co-production of knowledge is a relatively new approach to Arctic climate research and collaborations. This research will generate a new inclusive framework for assessing the impacts of these initiatives to ensure implementation is meeting the needs and ethics of all parties involved. Resources will be devoted to assessing current CPK projects, rather than creating new projects, which are likely to aggravate existing problems. This allows researchers and experts a chance to compare methods and adapt to meet shifting definitions of project success. A cohesive framework will also develop a common language between people and organizations working in the realm of Arctic CPK. This framework vocabulary will allow for increased coordination and communication between groups working on similar research projects.

E. BROADER IMPACTS: This project will increase understanding of and transparency in Arctic climate research. An informed, inclusive, and cohesive assessment framework of CPK initiatives will strengthen these efforts to include critical voices and perspectives in climate research processes. Rather than research which follows one-sided priorities, this project supports the efforts of prioritizing 'bottom-up' participatory science. Developing these protocols will further a necessary shift in power away from research institutions and into the hands of the communities where research is occurring ⁴. A decolonized research agenda must be implemented and constantly adapted to meet the needs of indigenous communities and goals ⁵. In turn, the assessment methods produced will allow for reproducible research to be applied to upcoming co-produced initiatives in other research fields and regions. Constant and clear communication between knowledge systems is at the heart of this research and will enable long-term, sustainable solutions to '[wicked problems](#)'.

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