

Scenarios use to engage scientists and decision-makers in a changing Arctic

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ABSTRACT

Scenarios provide a framework to develop adaptive Arctic policies that consider the best available science to address complex relationships and key uncertainties in drivers of change. These drivers may encompass biophysical factors such as climate change, socioeconomic drivers, and wild-cards that represent low likelihood but influential events.

Three spatially explicit scenarios were identified with respect to the focal question: **What is the future of energy development, resource extraction and supporting activities on the North Slope and adjacent seas through 2040?** The NSSI science needs will guide recommendations for future research and monitoring and could improve policy guidance.

WHAT ARE SCENARIOS?

Scenarios represent plausible future states with respect to a specific focal question and encompass the entire scope of plausible futures. Scenarios are not predictions of the future.

METHODS

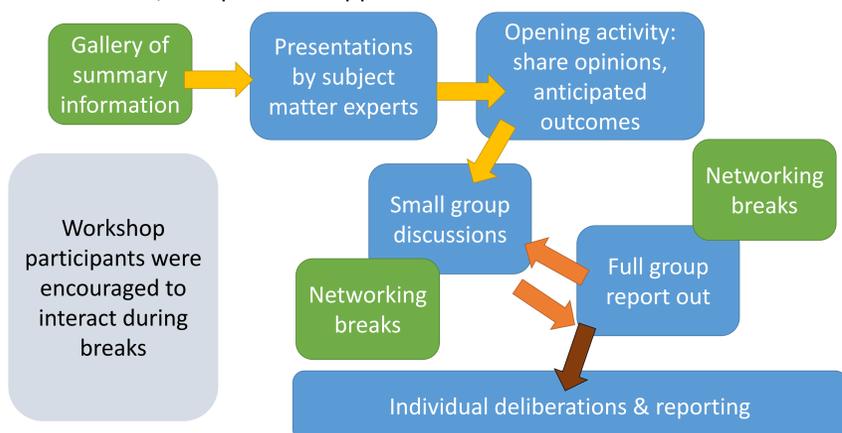
A participatory scenarios approach of a series of two-day workshops were planned. The first two workshops included 40-50 participants representing different relevant expertise from indigenous communities, federal, state and local agencies, non-governmental organizations, industry and academia.

Workshop 1: Scenarios Identification Workshop

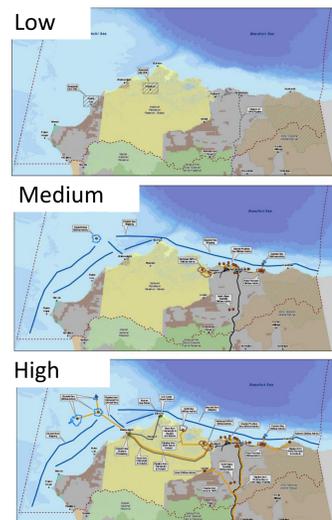
Workshop 2: Scenarios Implications Workshop

Workshop 3: Research and Monitoring Workshop

Workshop format: Allows a mixture of experts to determine alternate solutions, and provided opportunities to network.



RESULTS & ANALYSIS



Workshop 1

Key drivers of change and three energy development scenarios were identified. The location and intensity of activities differed with offshore activity occurring in the high and medium scenarios and significant economic effects to communities in the low development scenario.



Workshop 2

Small group discussions allowed participants to discuss critical implications and draft implication maps that were digitized.

Scenario implications were summarized by theme for discussion in Workshop 3.



Workshop 3

Theme-focused discussions on current and future research and monitoring efforts needed to assess scenario implications.

41 research and monitoring priorities identified. The top five research efforts were highlighted in the themes:

- Hunting & trapping on land
- Health and community well-being
- Permafrost & hydrology
- Marine mammal subsistence
- Marine oil spills

Scenario implication categories were used to facilitate discussions to identify the Most Critical and Least Critical scenario implications. The prioritization process is important for advising future research and monitoring needs.

Table 1. Prioritized critical scenario implications

| Implication subcategory* | High level | Medium level | Low level |
|---|------------|--------------|-----------|
| Marine oil spills | X | X | |
| Marine mammal harvests | X | | |
| Hunting & trapping on land | X | | X |
| Community Culture | X | X | X |
| ESA listed species | | X | |
| Health and safety | | | X |
| Oil/ gas revenue & employment | | | |
| Permafrost | | X | |
| Sea ice | | | |
| Erosion | | | X |
| State and local tax revenue | | X | X |
| Hydrology | X | | |
| Decommissioning & reclamation of infrastructure | | | X |
| Fishing | | | |
| Migratory and other birds | | | |

*Detailed implications were discussed within prioritized subcategories.

LESSONS LEARNED

- Understanding how scenarios are used, and distinguishing them from predictions is an important part of starting a participatory scenarios project. Post-workshop communication and a project website provided an archive of shared materials and resources.
- Gaps in subject matter expertise were highlighted in discussions at workshops. The integrity of results from draft workshop products to final products requires integration with existing datasets and consultation with experts as part of the analysis after the workshops.
- Prioritized scenario implications and research needs differ by individual and by group, therefore it is important to make the process of prioritization transparent. Additional information is in the technical report. Spatial GIS data from the project will soon be publicly available.
- Final technical report and summary report available from:

northslope.org/scenarios/

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