

## Press Release

### Adaptation Actions for a Changing Arctic – Bering-Chukchi-Beaufort Region 2017

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Arctic Monitoring and Assessment Programme (AMAP) has released the Bering- Chukchi- Beaufort Regional Report. The report is a result of four years of research towards understanding future change and the adaptive capacity in the Arctic regions of Alaska, western Canada and eastern Russia.

The Adaptation Actions for a Changing Arctic (AACA) report carefully documents environmental, climatic and social information and highlights the interactions between them. This knowledge supports and informs decision makers, communities and businesses, helping people adapt to the warming climate and socio-economic changes. The Bering- Chukchi- Beaufort Region Report, one of three reports requested by the Arctic Council, proposes how best to meet these changes with efficient adaptation.

#### Socio-economic impacts

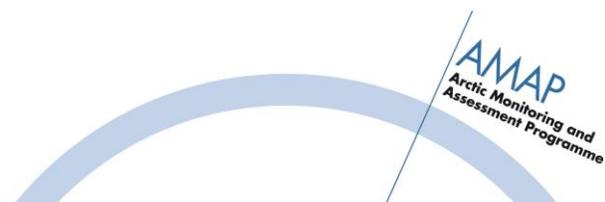
Climate change is only one factor impacting the Bering-Chukchi-Beaufort region. Adaptation should be considered within the context of all the changes within the region. These changes include the globalization of the economy, changing demand for mineral resources, tourism and possible increase in marine transport.

Finding adaptation solutions results in challenges. "There is no 'one-size fits all' solution. Effective adaptation requires case-specific consideration of context. The interconnected environmental, cultural, social and economic conditions vary widely within the region," says Assistant Professor Sarah Trainor from the University of Alaska. Each community requires case-specific consideration in context of its landscape, ecosystem and relationship with the environment.

#### Weather impacts

Several factors impact the changing ecosystem, with climate change as the primary agent. Secondary agents include interactions between humans and the changing environment in which they live. This interaction can cause even greater change.

Other changes will continue to occur on the sea. Sea ice normally covers the northern- to mid-Bering Sea in the late winter. This ice reduces wave height and sea surge. The BCB reports shows that as the Chukchi and Beaufort Seas warms and ice disappears, waves will be up to two meters higher and the coastal erosion will increase.



## Regional adaptation

Plans for adaptation need to be tailored to fit the needs of each community's unique situation. There are several common key factors to adaptation including food security, a sustainable seafood industry, community involvement and improved infrastructure and governance.

Many people in the BCB region depend on harvesting a portion of their food from the land around them. For these people, serious ecosystem changes immediately impact their ability to obtain food. The Bering and Chukchi Seas have significant actual or potential economic opportunity for Alaskan and Chukotka communities. The fisheries could support subsistence and commercial activities.

On the local level, many of the rural communities couple adaptation with other initiatives to improve health, self-reliance and sustainability. Whatever ongoing management plans are required, this management should be a collaboration between all parties involved. Decision makers can turn to adaptation planning guidebooks, like the BCB report to form these plans. These can help create well-designed plans with community input at all levels, ensuring beneficial partnerships.

## Adaptive solutions

Adaptation requires cooperation on many levels. For Indigenous people, traditions and deep knowledge of their local area can help scientists to better understand the Arctic and how communities interact with the current changes. "Knowledge is strengthened when conventional science is combined with traditional and local knowledge," says Dr. Martin Forsius, the AMAP Chair.

Navigation into the future is not clear. For decision-makers at the community or regional level, addressing climate change adaptation can, understandably, become a lesser priority in comparison with more immediate community needs. It is difficult to predict economic development, market behavior, political events or technologies in the future. AMAP has produced information to guide the formation of adaptation tools and long-term decision making.

Change is coming; we need to prepare how to adapt.

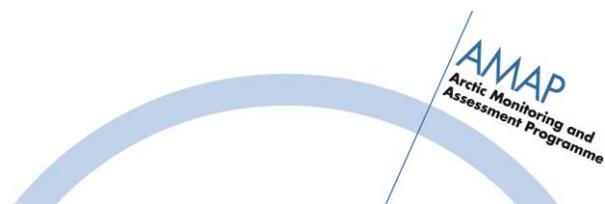
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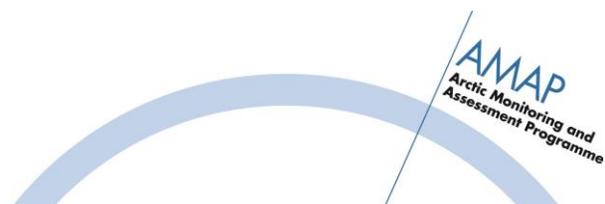
For **additional information** please visit the AMAP website for the [press kit with photos](#) and the [BCB Overview Report](#).

### **About AMAP**

AMAP is one of the six working group of the Arctic Council. AMAP is mandated to monitor and assess the status of the Arctic region with respect to pollution and climate change issues. AMAP document levels and trends, pathways and processes, and effects on ecosystems and humans, and propose actions to reduce associated threats for consideration by governments. AMAP produces sound science-based, policy-relevant assessments and public outreach products to inform policy and decision-making processes.

AMAP coordinates international activities that give us a complete knowledge of the whole Arctic. All our science is subjected to rigorous peer-review, making use of the most up-to-date results from both monitoring and research.

AMAP has completed the three 2017 Adaptation Actions for a Changing Arctic (AACA) reports. Each report addresses opportunities and challenges for how to adapt to Arctic change. They carefully document the Arctic, gathering information about both climate and society to understand the interactions between communities and the environment. In all three AACA pilot regions, climate is only one of many drivers causing change. These reports provide information that allow residence and policy makers to form decisions and create policy while considering these changes in the context of the Arctic and its people.



## **Fact Sheet: Adaptation Actions for a Changing Arctic**

### **Bering - Chukchi - Beaufort Region**

With no major cities, the approximately 85,000 residents live in small villages. Many residents, especially Indigenous people, take part in both subsistence living and cash economies. Most of the jobs are connected to the oil and gas and mining industries.

The land of this region is mainly permafrost and tundra. Millions of birds from more than 70 species of marine birds visit the region seasonally. In the past few years, annual average temperatures have increased by approximately 1.5 degrees Celsius. Projected winter seasonal temperatures may increase by 3 - 7 degrees Celsius by the end of the century.

#### **Impacts and consequences**

The thawing of permafrost, the year-round frozen ground, is harming infrastructure. Homes, municipal buildings and essential facilities, including infrastructure of the oil, gas and mining industries, are affected. Travel will be more challenging as roads thaw.

Travel conditions are challenging and animal movements are becoming increasingly unpredictable. This can decrease harvest success and require additional hunting. Longer hunts lead to higher fuel costs, time away from jobs and families, increased wear and tear on equipment, and increased risk of exposure and injury.

In addition, Arctic residents and communities will all be experiencing impacts on their everyday lives associated with issues such as contaminants, food and water security, housing, public services and infrastructure, human health, safety, coastal erosion and flooding, permafrost thaw, wildfires, and preserving cultural heritage.

#### **Arctic communities**

For centuries, Native communities have dealt with scarcity and high environmental variability. This gives them deep cultural reservoirs of flexibility and adaptability.

The subsistence way of life is important for the physical, economic, and sociocultural well-being of Arctic residents, their families, and communities. These connections and dependencies will see changes, challenges, and opportunities in the coming years.

Additional challenges for coastal communities include erosion, flooding and ecological and cultural impacts caused by increased maritime activities. Habitats for some of the ice-dependent species, such as the polar bear, seal, and walrus will decrease making these food sources a more limited resource for hunters.

Climate change influences an ecosystem's structure and function in the short- and long-term. These environmental variables are deeply interconnected, making it difficult to predict the condition of future ecosystems.



## **Socio-economic factors**

The Arctic accounts for around 10% of global oil production and 25% of natural gas extraction, tying the Arctic economy closely to the demand for oil and gas. Other key socio-economic considerations for the Bering - Chukchi - Beaufort Region include population, employment opportunities, energy availability and costs, tourism, socio-political change, land use, transportation, resource extraction, and other industrial activity. Health issues, including effects of contaminants on food, water, and air quality, are also important drivers that can be linked to the local economy and climate, as well as influences from outside the Arctic.

Job opportunities in rural areas are hard to come by. Many of the higher-paying local jobs call for higher education. Increased access to education could open up new jobs for local residents, but gaining access can be difficult.

The Northwest Passage between Asia and Europe now opens for one or two summer months. This route is 40% shorter than the Suez and Panama canals. However, the Northwest Passage lacks infrastructure, navigational charts, and search and rescue possibilities. If humans react to this climate change by building infrastructure, they will, in turn, affect the ecosystem.

## **The people**

The major Indigenous groups of the BCB are the, Inuvialuit, Inupiat, Yup'ik, Gwich'in, and Chukchi. It is inevitable that their cultures will be restructured due to the loss of their subsistence food resources on land, coast and sea. When the year-round sea ice is gone, there will be profound changes in the availability of mammals and birds as sources of subsistence foods.

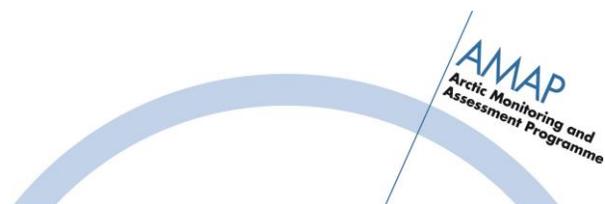
Food security has been, and will likely continue to be, a key concern of Arctic communities. It has been identified as one of the major determinants of human health outcomes among Indigenous peoples.

## **Scenarios**

There is great value in the understanding that can be gained through Indigenous and local knowledge. Working with the local populations to find adaptation solutions is vital.

Scenarios, which show different possible future outcomes, can be useful for navigating the line between Arctic science and policy. By using both the knowledge of scientists and Indigenous peoples, scenarios can help find critical uncertainties. Once identified, these can be targeted for future research and monitoring.

Projecting future scenarios for change shows that different communities face different risks caused by a changing climate, and have different perspectives regarding the implications of those risks. Consequently, it may be difficult to align decision-making at different levels, from local to international, to effectively address challenges across diverse communities, ecosystems, and stakeholders.



## **Into the future**

Scientific observations and traditional knowledge suggest that this region is moving toward conditions unlike those recorded in the past. Scientists and observers have documented many significant changes in the following: amounts of sea ice and snow, rising sea levels, rapid permafrost thawing, ocean acidification, coastal erosion, precipitation, movement of water, and ecology. Additional challenges for coastal communities include erosion and flooding, and the ecological and cultural impacts of increased maritime access and development activities. In addition, there is the issue of diminishing habitats for some of the ice-dependent species important for subsistence harvests, such as the polar bear, seal, and walrus.

The environmental factors associated with climate change are deeply interconnected, making future prediction difficult. Some ongoing changes in the Arctic environment are clear, and their impacts predictable, but many others are more complex, and will play out in unforeseen ways for generations to come.

## **Regional challenges**

The BCB study area covers three countries and the report identifies specific challenges for adaptation in each of them.

Arctic change impacts strategic planning in Chukotka. Because of governmental reforms, much of Chukotka now manages its environment and natural resources through the local and regional governments. Their development strategies include both adapting to and working towards the prevention and reduction of natural disaster risks.

Some Indigenous Alaskans living on the coast face the possibility of having to relocate. This involves leaving behind their intimate knowledge of the land and local foods, which may not transfer to another location. The land itself holds cultural and spiritual significance that makes moving difficult. While the government has guidelines to aid affected communities, no Alaska community has yet successfully relocated. A clear path to how communities can work with the government and receive funding would be a major step forward. The BCB report offers information to help understand and work with these challenges.

In northern Canada, adaptation planning and implementation occurs at federal and territorial governmental levels as well as within communities. Sustainable and effective wildlife management takes place through cooperation between the Indigenous community, governments and scientists.

