Indigenous Peoples and Traditional Knowledge Related to Biological Diversity and Responses to Climate Change in the Arctic Region

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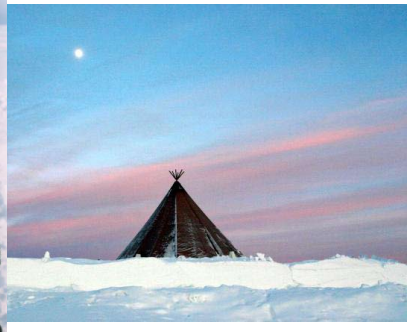

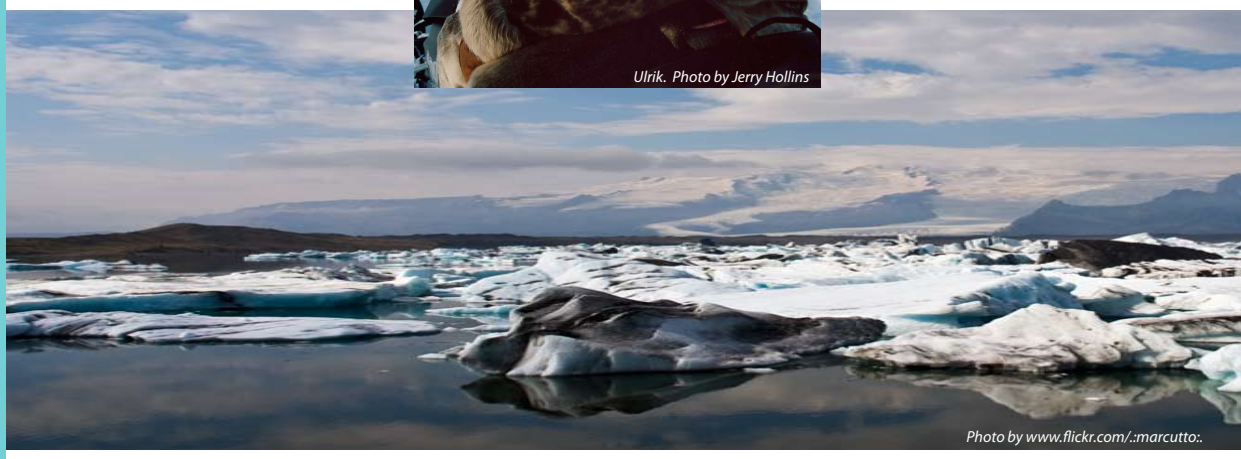

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FOREWORD

The pressures on the planet's natural functions caused by human activity and manifested in climate change have reached such a high level that the ability of ecosystems to satisfy the needs of future generations is seriously, and perhaps irretrievably, compromised. Arctic regions are now experiencing some of the most rapid and severe climate change on Earth, which will contribute to global environmental and socio-economic changes - many of which have already begun.

Climate change affects all regions and all people but often, those who contribute the least to climate change, will suffer from its impacts the most. This is particularly valid for the indigenous and local communities. Indigenous and local communities, particularly those in the Arctic, are highly vulnerable to climate change and bear the brunt of this problem because of their close association with the lands and waters traditionally occupied and used by them and the plants and animals contained therein.

However, there is much that indigenous and local communities and their environmental knowledge can contribute to solutions on biodiversity loss and climate change. Indigenous and local communities have accumulated vast amounts of ecological knowledge in their long history of managing the environment. Indeed, their very survival has relied on learning to use their local resources, including biological resources, in sustainable ways.

Mr. Ahmed Djoghlaf
Executive Secretary
Convention on Biological Diversity

Introduction

While the results of scientific studies on the impacts of climate change on Arctic species and ecosystems are useful, they present only one snapshot of a vast and complex system. Indigenous and traditional knowledge from the Arctic region reveals another view of life and lifestyles under threat. This knowledge provides invaluable information on climate change in the Arctic and although it is as unique and vulnerable as the ecosystems on which it is based; it too is coming under threat.

Much of the knowledge contained in this brochure was shared by indigenous and local community representatives at an International Expert Meeting on Responses to Climate Change for Indigenous and Local Communities and their Impact on Traditional Knowledge Related to Biological Diversity in the Arctic Region. This meeting was convened by the Government of Finland in Helsinki from 25 to 28 March 2008 and included participants from throughout the Arctic region. The report of this meeting was presented as an information document to the ninth meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD) in May 2008.

Inuit Fishing. Photo by US Fish and Wildlife Service.

Climate change and the Arctic

Arctic Tern. Photo by www.flickr.com/Gavatron.

As climate change emerges as perhaps the most serious threat to biodiversity, the Arctic region, with its dramatic visible changes, has come increasingly into focus along with the indigenous and local communities who base their livelihoods and culture on this fragile ecosystem. The Arctic contains unique biodiversity that is well adapted to the often dark and cold Winter conditions, as well as to the short growing/reproductive period in the Summer. The wealth of life in the Arctic includes between 500 million and 1 billion birds, which breed in the Arctic and migrate throughout the world via several flyways. This abundance of biodiversity supports more than 400,000 indigenous peoples who inhabit the Arctic region.

And yet, climate change has already begun to affect the functioning, appearance, composition and structure of Arctic ecosystems. For example, over the past 100 years, the thickness of sea ice in the Arctic has decreased by 40%. In the last 30 years alone, there have been observed declines in the extent of Arctic sea ice of 8.9% per decade in September and 2.5% per decade in March of each year. On land, annual reductions of mass from the Greenland Ice Sheet more than doubled in the 1990s. Furthermore, permafrost temperatures have increased during the last 20–30 years in almost all areas of the Arctic. These changes to Arctic ecosystems are having significant impacts on Arctic species and the indigenous and local communities who rely on them for their livelihoods and culture.

The Changing Arctic

The story of climate change in the Arctic is emerging with a clear headline – action must be taken now to preserve the unique and vulnerable heritage of the Arctic region. Regional assessments such as the Arctic Climate Impact Assessment (ACIA) have captured many of the changes that have already occurred in the Arctic, including, reductions in the extent of sea and land ice, shifting habitats, increased risks from pests and diseases, and changes in migration routes.

Our knowledge of climate change in the Arctic reveals that such changes are actually having both positive and negative impacts on biodiversity and livelihoods in the region. Some species, such as polar bears and seals, will suffer greatly, while others, such as insects and certain flowers will flourish as the snow and ice retreats. As such, the interactions between climate change and indigenous and local communities in the Arctic are very complex. Table 1 provides some examples of negative impacts of climate change on indigenous and local communities and biodiversity in the Arctic region. Even if we only consider the projected positive impacts of climate change on biodiversity in the Arctic, including higher summer salmon stocks, increased root and berry growth and larger whale populations, we can see that, on second glance, while the number of species and net primary productivity may increase in the Arctic as a result of climate change, these changes might cause further conflicts, for example, between traditional livelihoods and other land-use options. Managing change in the Arctic, therefore, requires full consideration of all environmental, socio-economic and cultural impacts on indigenous and local communities.

Snow Covered Trees. Photo by www.flickr.com/redjar.

Table 1: Examples of negative impacts of climate change on indigenous and local communities and biodiversity in the Arctic region

Impact	Effect on indigenous and local communities	Effect on Arctic biodiversity
Changes in the timing of traditional sustainable-use activities such as reindeer-herding, hunting and fishing	Slaughters delayed because of difficulty in freezing meat	Increased degradation of pastures and erosion
Changing freeze-thaw cycles causing the formation of ice layers over fodder lichen	Reduced access to high quality grazing pastures	Higher reproductive deaths due to premature births among reindeer and caribou
Lakes and ponds in the tundra are draining underground	Reduced access to fish and waterfowl	Migration, feeding, and other patterns and habits of birds are changing
Greater exposure to natural disasters such as floods	Reduced populations of prey species and losses in infrastructure	Degradation of wetlands

Photo by Ili Wu

Improving science through traditional knowledge

Many of the impacts of climate change on Arctic ecosystems are reflected in traditional knowledge recounted by the indigenous and local communities who inhabit and manage the Arctic. In fact, many aspects of Arctic biodiversity are being monitored informally on a daily basis as an inherent part of traditional livelihoods and activities such as hunting, herding, farming and fishing. Box 1 provides an example of observations made by indigenous people regarding changes in the climate and their impact on local biodiversity and livelihood activities.

Reflecting this knowledge in climate change and biodiversity science and policy, however, requires a key shift in the way impacts and vulnerabilities are assessed, recorded and integrated into policy responses.

In the past, many scientific studies have not taken full consideration of traditional knowledge, which,

Box 1. Observations from hunters of the Native Village of Gambell, Alaska

By Merlin Koonooka

Generally the sea ice now arrives later and melts earlier and the floe of multi-year chunks of ice and icebergs that spit out of the Arctic Chukchi region in early Fall into the Bering Sea does not happen anymore.

The ice now behaves differently – tending to move in one big mass near the shore without open leads, the larger ice floes ideal for whaling and other hunting do not occur as much with this kind of ice.

The weather is more unpredictable with extremes and dangers resulting in accidents and losses of life.

The changes in the weather and ice conditions result now in changes in animal behaviour, habit, and migration: during Spring, walruses are now seen spread out individually on small pieces of ice instead of in large herds on larger pieces of ice; some animal migrations now seem to take place at the eastern side of the island instead of in the strait (western side) and northwest of Saint Lawrence Island; the Fall seals are now hunted on a different schedule; it is now hard to get tomcod and blue cod in Winter ice fishing, and all this results in shorter Spring harvest.

The warmer climate so far has also resulted in some good things: the marine mammals hunted appear to be in good health, the bowhead whale continues in good numbers with good population growth, harvesting of whales occurs in Fall/Winter for several years now, harvesting of all species of salmon now occurs in Summer, the cod previously depleted by commercial fishermen are back in local waters, and berries continue to grow as well as other plants and roots gathered for food.

Winter berries. Photo by www.flickr.com/ Majicdolphin

in many cases, has proved to be more accurate than the conclusions derived from modern science. When considering an issue as important as a change in the basic climatic conditions in the Arctic, ensuring access to the best available information is of the utmost importance. This cannot be accomplished without the building of equitable long-term partnerships between indigenous peoples and research institutions.

It is necessary, therefore, to develop research models that value and integrate traditional knowledge, practices and innovations, with the approval of the knowledge holders. This could include:

1. The establishment of pilot programmes for indigenous monitoring of biodiversity, based on locally and regionally defined criteria, indicators and monitoring systems;
2. The compilation and dissemination of best-practice indigenous monitoring systems on the impacts of climate change on biodiversity;
3. The development of community based monitoring programmes to assess the impacts of climate change on biodiversity, including programmes that facilitate contributions in indigenous languages;
4. The establishment of a mechanism for the validation of both traditional knowledge and modern scientific information at the community level on the impacts of climate change on biodiversity; and
5. The development of processes where indigenous peoples are involved in the collection of data and information used for adaptation planning at all levels;

Balancing Local and National Actions in Response to Climate Change in the Arctic Region

It is clear that, in order for Arctic ecosystems to continue to provide adequate food, water and nutrient cycling, that are critical to the survival of species and the preservation of biodiversity-related traditional and local knowledge and livelihoods, steps must be taken to adapt to the impacts of climate change. While national and international policies are being developed, many steps have already been taken by Arctic communities. Fishing sites have been moved closer to shore in response to reductions in thickness of lake ice so as to ensure safety. Winter grazing patterns for livestock, such as reindeer, have shifted in response to differences in ice and snow conditions. Box 2 illustrates some climate-change adaptation activities by indigenous communities in Alaska and northern Russia.

The international framework for local action

National Governments who are Parties to the Convention on Biological Diversity have taken many commitments with regard to climate-change adaptation and its link to indigenous and local communities. Such commitments include identifying,

Ulrik . Photo by Jerry Hollins

on a national basis, ecosystems and indigenous and local communities vulnerable to climate change. Through the Convention on Biological Diversity, countries are also encouraged to consider introducing necessary measures for ensuring the full and effective participation of indigenous and local communities in mitigating and adapting to the impacts of climate change.

Box 2. Adapting to climate change

In Alaska, indigenous peoples have begun hunting only once a year instead of twice as a result of changing climatic conditions that impact migration patterns and make sea-ice hunting more dangerous. In order to adapt to this enforced change, communities have constructed cold-storage facilities to meet resulting increased quantities and changing timing of supply.

The early melting of sea ice in the Spring has also made it more difficult to hunt Spring walrus in Alaska. As such, indigenous communities have begun shifting from walrus-skin boats to fabric boats due to the difficulty in finding suitable walrus.

In northern Russia, the Chukchi reindeer-herding community of Nutendli is facing the melting of permafrost, resulting in the disappearance of lakes and the emergence of new severe floods. In order to survive through the changes that modernity and now climate change are imposing on them and their world, the Nutendli community has begun providing education to the children of the community by means of a nomadic school. Through such schools, the community is able to build a relationship to the rapid changes of their land while ensuring that their knowledge and traditional livelihoods survive.

At the International Expert Meeting on Responses to Climate Change referred to in the introduction to this brochure, a number of specific activities were identified that could help Parties meet their obligations concerning biodiversity, climate change and indigenous and local communities in the Arctic. Such activities include processes and legislation to link local knowledge and activities in the Arctic region to national-level planning exercises through:

Ulrik. Photo by Jerry Hollins

- National mitigation and adaptation strategies that fully consider all environmental, socio-economic and cultural impacts on indigenous and local communities;
- Recognition of the value of traditional knowledge for minimizing the negative impacts of climate-change response measures so as to ensure that traditional knowledge is respected, properly interpreted and used appropriately in adaptation planning and monitoring

Other suggested activities explored ways in which livelihood options can be maintained and enhanced in the Arctic as a result of climate change, such as:

- Recognizing unique opportunities for maintaining existing stores of carbon in the Arctic such as peatlands, including payments for Arctic ecosystem services;
- Exploring the potential benefits of small-scale sustainable agriculture, including organic agriculture and organic certification for indigenous peoples in the changing climate in the Sub-Arctic.

Finally participants in the meeting identified a number of perverse incentives and negative policy measures that could, in fact, impede climate-change mitigation and adaptation in the Arctic, including:

- The need to better define and reclassify "wastelands" recognizing that sparsely populated lands may in fact be used and/or occupied by indigenous peoples;
- The need to ensure that full carbon-counting is carried out for mitigation in the Arctic, bearing in mind specific Arctic issues such as melting and receding permafrost and changing travel patterns;
- The need to recognize that the successful adaptation by indigenous peoples in the Arctic

Dog sledding. Photo by www.flickr.com/ jurvetson

will be closely linked to access and use rights over biodiversity and land resources (indigenous participants referred to the concept of "fate control").

Next steps: preserving life and livelihoods in the Arctic

The Arctic region is warming about twice as fast as the rest of the world and yet action is not yet matching this accelerated pace. There is a need for immediate capacity-building and the gathering of additional knowledge on the links between biodiversity, climate change and indigenous and local communities in the Arctic.

Since the Arctic is spread over eight countries, and since the issue of climate change, biodiversity and indigenous peoples are covered under many international agreements, including the Convention on Biological Diversity (CBD), the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Declaration on the Rights of Indigenous Peoples, there is an urgent need for coordinated action.

Life and livelihoods in the Arctic need to be recognized, their value acknowledged and their preservation made a priority. Pilot projects should be developed immediately linking biodiversity and the impacts and responses to climate change. In the longer term, equitable partnerships must be built for research, monitoring and evaluation, and tools must be adapted and strengthened including the ecosystem approach and the Akwé: Kon Voluntary Guidelines for the Conduct of Cultural Environmental and Social Impact Assessments regarding Developments Proposed to Take Place on, or which are Likely to Impact on, Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous and Local Communities.

Polar bears. Photo by Amanda Graham

Box 3 presents a list of capacity building needs as identified by participants to the International Expert Meeting on Responses to Climate Change for Indigenous and Local Communities and Their Impact on Traditional Knowledge Related to Biological Diversity in the Arctic Region.

Box 3. Capacity-building needs

1. Further elaboration of the concepts of flexibility, vulnerability and resilience as they apply to the social and physical impacts of climate change on Arctic indigenous peoples and their traditional knowledge of biological diversity, recognizing that resilience and ability to adapt are closely linked to the recognition of human rights including fate control.

2. The compilation and dissemination of lessons learned from climate-change response measures implemented by indigenous peoples in the Arctic, while recognizing the rights of the holders of such knowledge.

3. The enhancement of the availability, within indigenous communities, of information on international processes relevant for climate change and biodiversity bearing in mind limitations related to access to technology and language and the importance of the effective participation of indigenous peoples.

4. The identification and promotion of co-management practices of species and ecosystems in the Arctic that enhance the adaptive capacity of biodiversity and indigenous peoples.

5. Further research to consider such specific vulnerabilities and appropriate responses in light of climate change and climate-change-response activities.

6. The encouragement of international bodies and national Governments to support indigenous education, specifically nomadic schools, as useful strategies to promote the transmission of traditional knowledge relevant for biodiversity, climate change and climate-change-response activities.

American Black Bear in Anan Bay, Alaska. Photo by www.flickr.com/brewbooks.jpg

A Message from the Co-Chair

The drivers causing changes to the Arctic ecosystem are many. Among these drivers, warming of the climate is of particular importance because of the profound way it is changing the life of Arctic indigenous peoples. Climate change is not a distant threat ,but something which is happening now. What we are witnessing could not be more unfair. Arctic indigenous peoples are amongst those who have contributed the least per capita to the emissions of carbon dioxide and other greenhouse gases however they are amongst the earliest to feel the negative impacts. This situation adds an important moral, ethical and equitable dimension to the question of climate change.

In the context of the Convention on Biological Diversity (CBD), Finland has tried to provide a useful input to the work on biodiversity and climate change. On the basis of our northern location, it is only natural that our interest in this matter extends to the Arctic. Our participation, for example, in the work of the Arctic Council, has brought us closer to the indigenous peoples of the Arctic over the years. As we are facing changes in the Arctic climate, adaptation activities and strategies of indigenous peoples, such as the Saami, deserve our full support. Traditional knowledge related to biodiversity is one of the key components of adaptation. It is our responsibility, as we have committed, through the CBD, to respect and facilitate the preservation of this knowledge.

Esko Jaakkola
Environment Counsellor
Ministry of the Environment of Finland
Co-chair of the International Expert Meeting on Responses to Climate Change for Indigenous and Local Communities and their Impact on Traditional Knowledge Related to Biological Diversity in the Arctic Region.

Icy lagoon in Eastern Greenland. Photo by www.flickr.com/will_hybrid

Indigenous Peoples and Traditional Knowledge Related to
Biological Diversity and Responses to Climate Change in the Arctic Region

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