

# **Climate Change in Greenland: Impacts and Response**

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## **Introduction**

I am a member of the Inuit people of Greenland. I have a Masters in political science from the University of Copenhagen, so I experience the effects of climate change as an Indigenous woman whose culture and livelihood is directly affected, and as a political scientist. For the past year, I have been working with projects. The latest project was an Arctic Council report about women's participation in decision-making processes in Arctic fisheries resources management. I have no formal training in climate change research, but climate change impacts in Greenland are so widespread that all projects have to deal with it.

## **The geography of Greenland**

Greenland is the biggest island in the world, covering 2,166,086 square kilometres. 2000 estimates tells about 1,755,637 sq km of the land is covered by ice. If you put Greenland on the map of Europe, the northern tip of Greenland will be situated in the northern part of Norway and the southern tip of Greenland will be on North Africa, or roughly three times the size of Texas. The total population numbers only 55,000 of which 45,000 are Inuit. Most of the remaining 10,000 non-Indigenous people are Danes working in Greenland for a longer or shorter period of time. There are a further 10,000 Greenlandic Inuit people in the rest of the world, most of them living or studying in Denmark. Our culture and ethnicity is closely related to Inuit in Alaska and Canada and our Greenlandic language is also almost the same. We have home rule under the state of Denmark.

The main export is fish and seafood, so you can say we live off the sea. Inuit people have always hunted on the sea ice, so in a very real sense, we also live on the sea. Subsistence hunting and fishing is the main livelihood in the North and East of Greenland, which is why changes in sea ice have such a powerful effect on our lives and culture.

The Greenland Ice Cap holds 9% of the fresh water resources in the world. If all of the ice cap were to melt, global sea level would rise substantially. Greenland ice thus has an enormous impact on the rest of the world. It is in the ice cap and in the weather conditions in Greenland that the climate changes in the world can be measured. The major geographic impacts of climate change in Greenland are melting of the ice cap, thinner sea ice and melting permafrost.

## **Melting of the ice cap**

In 1995 a glacier in Kangerlussuaq, close to the Atlantic airport in midwest Greenland, moved 6 km (or 3,73 miles) to the sea during one year. Today, only 10 years later, it is moving at 14 km (or 8,70 miles) during one year, more than twice as fast. This rate of movement is so fast that new snowfall is not sufficient to maintain the ice cap. Land, which previously has been covered with the ice cap for centuries, is now visible. Another climate change impact is that the warmer sea, which is no longer covered by the insulating sea ice, warms up the weather and makes the weather more wet and instable and impacts the climate as well. With more delays and cancellations of flights because of storms and snowfall, this affects airplane and helicopter traffic, making transportation more difficult and expensive.

## **Thinner sea ice in winter**

In the north of Greenland from the Arctic Circle towards the North, sea ice traditionally lasted for 8 months from October to May, or longer. Today, sea ice is lacking or so fragile that it makes all forms of transportation difficult. With unstable ice you might imagine ships can get through more easily, but clumps of ice make it impossible for ships or boats to get through, but also impossible to dogsledges or snowmobiles to drive on. Sea ice was traditionally used to connect the towns and villages in the north. When sea ice is lacking or too unstable, dogsledges can no longer be used in the sea ice for hunting and the villages become more isolated.

## **Melting of the permafrost**

Buildings constructed on permafrost are becoming increasingly unstable, requiring expensive repair. New buildings will require different, and likely more expensive construction techniques. Roads and airport runways build on permafrost are now unstable and hard to maintain. The ice cap, permafrost and sea ice are all critical to the geography and economy of Greenland as a whole, and essential to the economy, social structure and culture of Inuit people.

## **Ecological-social-cultural impact of climate change**

The major impact is on the traditional culture and livelihood of Inuit hunters, particularly in the North. Sea ice is essential for hunting and as a way to connect communities. Major impacts include the likely disappearance of seals and polar bear. Thinner sea ice will not support dogsledges, and hunters cannot feed their dogs with fewer hunting days.

Last year the hunters in Qaanaaq, the northernmost municipality close to Thule, made a plea to the public that their dogs were starving. With no ice, hunters barely got enough to feed their families, with nothing left over for the dogs. With lower income, they could not afford to buy dry dog food, so the dogs were starving. The whole nation came to their support. The Home Rule Administration had to provide the hunters with catastrophe aid from public funding, which brought money to the hunters. Fish industries sent fish with aeroplanes to the north. We fear that that the problem will be repeated every year. The small municipality of Qaanaaq is still coping with after-effects of the crisis, and there are discussions to transfer from hunting to tourism. But the transition takes pain, money and time. Climate change is catastrophic for the hunters in Greenland!

In Upernavik, the next northernmost municipality next to Qaanaaq, they tell that since the year 2000 the sea ice comes later than usual and is too fragile to be used. They get more snow and have now unstable weather conditions. With no sea ice to travel on, the connections between the 11 villages in the municipality are broken. In Upernavik they previously never had the fish lumpsucker in the spring. The last years the income from lumpsucker roes has been a new positive possibility for the hunters, at the northern part of Greenland.

‘Traditional’ species such as shrimp and seals are becoming scarcer, ‘new’ species such as lumpsucker have already appeared at Upernavik, while warmer water species such as cod can be expected to move north as the water warms. This could lead to new opportunities, but fishers and hunters must learn new technologies and culture to adapt to the new species and a different climate. With the right planning, there could be some positive economic benefits to fishers. Loss of ice cover and a warmer climate could also lead to a growth in agriculture, but again, planning will be needed.

Women interviewed for the 2004 Arctic Council Report<sup>1</sup> described the impact of climate change on the hunters. Women from a village in the Disco Bay area told that they might as well say that the dogsledge is only a sport now! Last time they had proper sea ice, from which the hunters could hunt from, was in 1998. Since then the ice comes too late and is too fragile to hunt from. The ice comes only at the beach and only for about a week.

The hunters now feed their dogs just to keep the dogs. They use them only in races or sports in competitions inside the village area. The dogs are a necessity to the dogsledge, during the long winters with solid sea ice and down to minus 40 degrees Celsius. With solid sea ice, ships are not used and the small villages don't have airtransport. With the dogsledge you can hunt your food and travel to other villages and towns.

So, I repeat again: the climate change is catastrophic to the Greenlandic hunter and the Greenlandic dogsledge and the Greenlandic culture!

### **What is being done?**

What is being done in Greenland is not restoration. Because, how can we restore our weather, climate and ice? The Greenlandic Home Rule wants to limit the emission of greenhouse gases and has a policy to meet energy needs from natural sources. Hydro-electric power has the potential to supply all the demand for energy in Greenland many times over. However, potential projects are situated in remote areas, making construction difficult and costly. The population in Greenland is sparse, located in small communities spread out over a huge area, so it would be extremely costly to build transmission lines. Nevertheless, Nuuk, the capital of Greenland has a power station, and Tasiilaq in East Greenland has also a power station. One power station is now being build in South Greenland and the second largest town, Sisimiut has also decided to have their own power station.

The massive impacts of climate change on Greenland's geography, infrastructure, biology and culture, are discussed intensively in the population on a daily basis and in the media. Politicians who talk to the media express a willingness to do something about the impacts of climate change, but actions so far have been limited to investigations, documentation and research.

There are various Greenlandic institutions who work with documentations of climate change, the impact of melting of the ice cap and the sea ice and socioeconomic impact. The following is a brief description of some of the different initiatives. Additional information can be obtained from the Internet and by contacting the institutions directly:

**The Nature Institute of Greenland** participates in EcoGreen, an international research program involving 33 institutions from 11 countries. The research programme objective is to link the ecological and socio-economic relations between climate, ecology and people in Greenland. Further informations on [www.natur.gl](http://www.natur.gl)

**ASIAQ** – Greenland Survey has in cooperation with ARTEK, Arctic Technology Center ([www.arktiskcenter.gl](http://www.arktiskcenter.gl)) started a project called "Permafrost in Greenland. Changes and consequences driven by the climate." The project investigates the impacts of melting of the permafrost on roads, airport runways, buildings and in populated areas. This project is a cooperation between Denmark's University of Technology ([www.dtu.dk](http://www.dtu.dk)), the Danish Institute of Meteorology and the University of Alaska Fairbanks. Further informations on [www.asiaq.gl](http://www.asiaq.gl)

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<sup>1</sup>Arctic Council (2004) *Women's Participation in Decision-making Processes in Arctic Fisheries Resource Mangement*. (Ed. Lindis Sloan) Forlaget Nora, Kvinneuniversitetet Nord, N-8286 Nordfold

**ICC**, which is the Inuit Circumpolar Conference, has initiated a project called “Sila – Inuk”, to study the impact of climate change in Greenland. ICC and KNAPK, the Greenlandic hunters and fishers organization cooperate in the project. The aim is to collect climate change observations made by the residents of Greenland. The University of Colorado at Boulder is also a partner in the study. Further informations on [www.icc.gl](http://www.icc.gl)

**The Greenlandic Home Rule** is closely monitoring the socioeconomic conditions for the Greenlandic hunters. A socioeconomic analysis of the conditions of the hunters was conducted from Roskilde University Center on behalf of the Greenlandic Home Rule. The analysis is meant to form the basis of an action plan for the hunters and is planned to be a continued analysis throughout the years. Further informations on [www.nanoq.gl](http://www.nanoq.gl)

The government of the Home Rule is also represented in the work of the Arctic Council through participation in various working groups, to ensure a follow up of the ACIA- climate report.

**Is the work adequate?**

Due to the enormous impact of the climate change to the infrastructure and to the culture, I think the work to ensure a smooth transition from hunters trade to other kind of livelyhood is inadequate. As the situation now appears, it seems like the Home Rule might need to give catastrophe aid to the hunters every year. When the catastrophe happens every year now, it cannot be a surprise anymore. There is a lot of planning, work and initiating the transition ahead of us. And so far we have not heard so much about it.