

## Material H5 – Local Climate Change

### Qaanaaq

Qaanaaq is the world's northernmost inhabited district and also the coldest. The district covers a very large area. To get from the southernmost settlement Savissivik to the settlement Qaanaaq, 200 km must be traversed by dog sled over a large ice sheet. As a result of climate change, this journey has become very dangerous because the ice sheet is now full of big deep crevasses.

In winter, an important part of the catch in the district was hunting at the breathing holes of seals, but this has become much more difficult, because the ice edge has moved further inland due to rising temperatures. Consequently, walrus and polar bears come closer to human settlements and to the coast line and chase the seal away. There are restricted quotas for hunting walrus and polar bear, so they cannot replace seal.

Fishing has increasingly become a source of income for the population, but historically the storage facilities for fish catches and the supply of fresh water have been limiting the size of catch for sale. This has been a result of the focus on developments in the larger cities of Greenland, resulting in less investments in storage capacity in Qaanaaq. When the storage is filled no more fish can be sold as fish can only be transported from Qaanaaq by ships in a short period during the summer months. No other transport is possible.

### Qaanaaq

(Pictures: © Kåre Hendriksen)



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### Upernavik

Previously, sea ice covered the Upernavik district from November to mid-June and transport between the districts 10 settlements during this period took place on dog sledges or snowmobiles. The warmer climate has meant that the period of ice is much shorter and often only is stable for a single month around March-April. During summer time with open waters boats were used for transportation.

In the Upernavik district winter darkness lasts for three months, and when there is no ice, hunting and fishing becomes more dangerous. The hunters are forced to use open boats to fish and hunt seal. But who can find a seal in the dark and icy waters? And how can you find a fish buoy indicating the position of your long lines when you return after eight hours to take the catch from the long line sailing in the dark in tight, chopped ice?

Furthermore in the northern part of the district, the inland ice has retreated up to 10 km back exposing new islands that create new currents undermining the sea ice. This makes it more dangerous to drive on in the winter time. In recent decades the fishing quota has been reduced and regulation has preferred larger vessels over coastal fishing.

Quote from a local hunter and fisher:

*Yes, climate change does impact us a lot – but we are forced to adapt to it. The threat to our way of life comes from Nuuk [the administrative capital of Greenland].*

### Upernavik

(Picture: © Kåre Hendriksen)



## Material H5 – Local Climate Change

### Uummannaq

In Uummannaq usually there was thick fjord ice six to eight months a year, where the transport of halibut between the 7 settlements and the larger stores in the town were done by small trucks driving over the ice. The fishing in the wintertime was done with long lines through holes made in the ice cap.

For the last 10 years, the thickness of the ice has been reduced which has made transportation increasingly difficult with trucks. But the ice is still too thick to allow for boats.

As the local storage for frozen fish catchments does not have enough capacity, the fishing of halibut during wintertime where no cargo vessels can enter the settlements has to stop in the middle of the winter simply due to the lack of storage capacity. Storage as well as processing facilities are decided upon by the fishing companies and the central government. Limited budgets and a general policy to support centralization favours the sea going fishing trawlers.



Uummannaq (Picture: Public Commons)

## Part 2

**Material H5 – Local Climate Change****Disko Bay**

Until around 2000, the Disko Bay was covered by thick sea ice for around half of the year, so supplies could not be sent by sea in winter. This meant that the stores always had to have big stocks of essential goods, resulting in higher costs for storing goods and all sorts of other items. With the warmer climate, it has been possible to travel by sea for a longer part of the year, but still large stocks are maintained, because it's hard to predict when the ice breaks up.

In recent years, the ice has melted by the middle of April, so helicopter services were stopped from 1<sup>st</sup> May to reduce costs as helicopter transportation is very costly. In the summer period transportation is done by passenger ships. But the shifting weather conditions makes local settlements very dependent on such planning measures.

Also the lowering temperatures results in a melting of the permafrost that has kept the ground under houses and roads stable all year round. Now several foundations are beginning to sink or slide.

Quote from a local hunter and fisher:

*In 2015, the winter ice stayed well into May, but Air Greenland stopped helicopter services May 1st and Disko Line could not bring their ships to port due to the ice. Passengers were dropped off at the edge of the ice – those who could walk on the ice. Others did not travel.*

**Disko Bay**

(Picture: © Kåre Hendriksen)



## Material H5 – Local Climate Change

### Central Greenland

Weather conditions or temperatures have not changed that much and the difference between summer and winter appear stable with open waters allowing ships to enter harbours most of the year. Climate change can be observed as storms and temperature changes have been occurring more frequently. The weather has been tougher.

From the late 1960s, cod disappeared gradually from the waters of Greenland and seemed almost completely to have disappeared by 1990. As this was the primary export income for Greenland in this period and the cod fishing had its heydays in central and south Greenland leading to huge investments in fishing vessels and fish processing factories, the disappearance of the cod led to unemployment and settlements with empty houses.

At first, the expectation among biologists was that this was a result of the lowering sea temperatures in those years, while overfishing by e.g. foreign fishing vessels was seen as a secondary reason. In recent years the cod is slowly coming back and biologists now tend to view this as a result of the regulated and reduced international fishing in Greenland waters and not as a result of changing water temperatures.

Still changes in temperatures lead to diminishing permafrost resulting in increasing damage on building and roads.



### Central Greenland

(Picture: Public Commons)

## Material H5 – Local Climate Change

### South Greenland

While cod fishing during the decades from the late 1960s to the 1990s produced rising incomes and improved living conditions in southern Greenland, the recent decades have been characterized by high unemployment rates in several settlements.

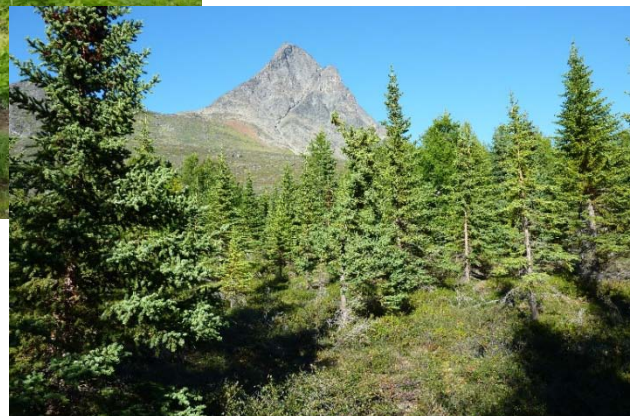
Very significant to southern Greenland has been that climate change over the past decade has meant warmer summers. Besides options to extend sheep farming to larger areas there have been greater opportunities to grow potatoes and other root vegetables, and there has been more grass for the sheep and horses.

Climate change does not just show through higher temperatures. Trees now to grow to larger sizes and small forests are beginning to develop, however in periods with less rain and consequently a lack of water agriculture cannot expand.

Quote from a local hunter and fisher:

*The summer of 2015 has been the driest in many decades, so while climate change has brought more opportunities for agriculture, the drought has resulted in much less grass. As a result, we need to import more animal food.*

### South Greenland (Pictures: © Kåre Hendriksen)



## Material H5 – Local Climate Change

### Ammassalik district

The temperatures on the eastern coast line of Greenland is on average close to the western side, but also heavily affected by the Arctic sea ice that covers a larger part of the coast with ice sheets and icebergs moving south with the currents.

First of all, climate change in the Ammassalik district, that holds most of the population in eastern Greenland, has resulted in increased rainfall, increased snow fall and more frequent storms. Though fishing stocks are increasing in the waters on the east coast and show a potential for more fishing, the storms and the sea ice has limited these opportunities for the district's fishermen. This district still has high unemployment rates.

Due to the regional reform of Greenland, public spending and employment in the local municipality has gone down.

Quote from a local hunter and fisherman:

*Here, we tend to get two metres of snow a year - in 2009 eight metres of snow fell. Even at the end of June there was five metres of snow on the road between the airport and Kulusuk.*

### Ammassalik district (Pictures: © Kåre Hendriksen)

