

# In Greenland, hopes for climate change to boost economy

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Some people in Greenland hope to cash in on rising temperatures with new species to fish, innovative exports and advances in farming

As the world struggles to limit climate change, some people in Greenland hope to cash in on rising temperatures with new species to fish, innovative exports and advances in farming.

While the North Atlantic island remains highly dependent on shrimp as its main export—it is known locally as "the pink gold"—warming waters are attracting new types of fish.

"It's very nice to be able to offer freshly caught tuna and mackerel even if we are right here in Greenland," said Bjorn Johansen, a chef at Hotel Hans Egede, the largest hotel in capital Nuuk, which has a population of 22,000.

In summer, fishermen in east Greenland are now catching mackerel and Atlantic bluefin tuna that have swum far from their spawning grounds in the Mediterranean and the Gulf of Mexico.

For Johansen they are a break from the monotony of Greenland's traditional staples.

For Nuuk's home rule government, which is seeking more sources of income as the economy has to support an ageing population, they are an export opportunity.

Falling commodity prices have put a damper on hopes that the territory's mineral riches—buried beneath the ice—could spark an imminent mining boom.

Instead fisheries continue to dominate the economy, accounting for about 90 percent of exports, and mackerel and Atlantic bluefin tuna have ready markets.

That is welcome news for the local government, as the subsidy from former colonial master Denmark that currently accounts for about half of the annual budget is now fixed and its value slowly erodes along with inflation.

## **From Nuuk to Nairobi**

"If summer temperatures continue to increase during this century ... it is likely that bluefin tuna could become a regular summer visitor in east

Greenland waters," said Brian MacKenzie, a marine ecology professor at the Technical University of Denmark.

Satellite images show the Arctic territory's vast ice sheet, which holds between six and seven percent of the world's fresh water and covers four-fifths of its land, shrinking by nearly 50 cubic miles (208 cubic kilometres) per year.



Tuna fish caught in the waters off Greenland is unloaded at the harbour in Nuuk, Greenland

The ice sheet, a potentially massive contributor to a rise in sea levels, lost mass twice as fast between 2003 and 2010 as during the entire 20th century, researchers said last week in the journal Nature.

For many Greenlanders, climate change is already posing challenges and changing the traditional lifestyle: some hunters and fishermen have had

to put down their huskies as thinner winter sea ice makes the use of dog sleds for ice fishing too dangerous.

Tourism, one of the industries the government wants to grow to diversify the economy, is also facing obstacles in the thawing Arctic.

During some parts of the year the ice floes in the Ilulissat icefjord, Greenland's largest tourism attraction, have been so massive that cruise ships have had problems getting tourists ashore.

They has also made it harder for local fishermen to navigate into open waters.

But with the melting ice sheet comes rock that has been naturally crushed by the ice. This "rock flour" contains nutrients that can be used in countries with poor farmland.

"It is completely ready for shipping. A man and a shovel and then just off with the nutrient-rich dirt," said Minik Rosing, a geology professor who heads the think tank Greenland Perspective.

## **Potato protection**

The substance is a nuisance for Greenlanders when it clogs up the fjords and "may as well do good elsewhere in the world", he added.

The idea is to export the rock flour to places with barren and arid land such as Africa and South America.



The Heimdal Glacier in southern Greenland, pictured on October 13, 2015

The nutrients in the crushed rocks from Greenland can make the farmland arable again, Rosing said.

As the minerals are absorbed by the plants through the soil, more vegetation pulls carbon dioxide out of the atmosphere.

One tonne can be shipped up to 12,000 kilometres (7,500 miles) before having a negative impact on the climate, meaning the rock flour can be transported from Nuuk to Nairobi.

"We can therefore easily move it to South America or Africa without a negative impact," said Rosing.

Another export idea rooted in microbiology has come from south

Greenland's potato crops, which have grown more plentiful as summers have become warmer.



South Greenland's soil contains microorganisms beneficial to potatoes

While the cost of farming in the island is high compared to other places, higher temperatures could see it being done on a larger scale in the future.

The warming climate is not the only thing working in farmers' favour: researchers have found that the soil is also providing them with a unique advantage.



The harbour at Nuuk in Greenland

While potato growers around the world face the threat of disease-causing microbes such as blight wiping out entire harvests, south Greenland's soil contains microorganisms that inhibit the growth of harmful fungi.

These "have a major biotechnological potential if the molecules can be successfully synthesized into chemical compounds or if the organisms can be used as an organic alternative to pesticides", said microbiologist Peter Stougaard, an associate professor at the University of Copenhagen.

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