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Global Warming

Climate Change Sparks Scrap for Arctic Resources

By Philip Bethge

While scientists and conservationists worry about the potentially dire consequences of global warming, politicians and businessmen are already battling over how to reap the economic benefits from the Arctic thaw.

AP

Arctic ice is melting faster than ever before.

It's not always easy hoisting a flag on Hans Island. The Canadians even had to bring along their own rocks to weigh down the foot of the mast. But then nothing could stand in the way of the success of operation "Frozen Beaver" -- at least from a Canadian perspective.

It was last July when Canadian soldiers raised the maple leaf banner over the tiny isle between Canada's Ellesmere Island and Greenland. Not long after that, Canada's Defense Minister Bill Graham flew in by helicopter to proclaim that Hans Island will always remain Canadian. The provocation worked: Denmark promptly cabled a note of protest to Ottawa.

The diplomatic spat marked the current highpoint of a bizarre scuffle over who owns a 1.3 square kilometer bit of barren rock in the middle of the Arctic Nares Straits. Its biggest attraction is what is probably the northern-most outhouse in the world. Yet for Canada and Denmark -- a country which has also repeatedly planted its flag in the islet's stony ground -- the dispute means much more: Hans Island is a test case for the sort of territorial rows which could soon become a lot more common north of the Arctic Circle.

Carving up the frosty Arctic is a hot topic right now for many countries. At stake are the sovereign rights to enormous reserves of natural resources, as well the control of seafaring routes which have until now been blocked by ice. The reason for the newly awakened interest is that the Arctic is rapidly warming. Nowhere else on the planet have such far-reaching consequences of global warming been observed. While biologists and climate researchers fear melting icecaps, rising floodwaters and extinctions of several species, oil and gas companies are hoping the Artic thaw will enable them to access vast new energy sources.

"How our climate will look in the next few decades, is being decided in the Arctic," says Hans-Wolfgang Hubberten of the Alfred Wegener Institute for Polar and Marine Research in Potsdam (AWI). This week Hubberten played host to Germany's first "Arctic Science Summit Week" in Potsdam near Berlin. Around 150 scientists from all over the world came to discuss the effects that Arctic warming would have on landmasses, people, animals, plants and the global climate.

"We are noticing a rapid decrease in sea ice in the Arctic Ocean and the permafrost on the ground is melting," says Volker Rachold of the International Arctic Science Committee, an organization that coordinates Arctic research worldwide. Scientists say that air temperatures are higher than they have been for centuries. And as a consequence, Greenland's ice is melting more quickly than ever and Alaska's glaciers continue to shrink rapidly.

Last year was also a record year in many respects. According to data gathered by satellites, there is less sea ice between Greenland and Siberia than ever before: In August, the Russian ship "Akademik Fyodorov" was the first vessel in the history of seafaring to cross the pole without needing ice breakers. There are hardly any ice floes left in the Northwest Passage, which connects the Canadian Arctic to Asia. And even the Northern Sea Route along the Siberian coast, once not entirely navigable, was free of ice for a whole month last year.

The tops of mountains, normally wrapped in thick pack ice, remained free of ice until well into the winter. Scientists at the Norwegian Polar Institute even recorded a balmy 7.7 degrees Celsius at Longyearbyen airport in January. It was a new record high temperature for a place where January temps usually average minus 15 degrees Celsius. Other knock-on effects encourage further melting: When the pack ice melts, rays from the sun hit the sea water. The dark water absorbs the heat much more than the reflective white of the ice and snow. This means that the whole region gets even warmer.

Ice-free Arctic Ocean?

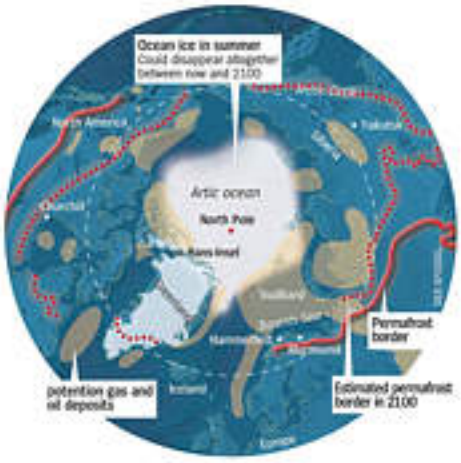
"I fear that the Arctic Ocean could become completely ice free in the summer by the end of the century," says Georg Heygster, from the Institute of Environmental Physics at Bremen University.

The warming threatens to bring about massive changes in an entire region, where the delicate balance here has already been knocked off kilter by environmental pollution and higher levels of ultraviolet sunrays.

Almost 4 million people live in this Arctic territory, and it is divided between eight countries: Norway, Sweden, Finland, Denmark, Iceland, Canada, Russia and the United States. This land of the summer midnight sun is bordered to the north by the Arctic

Circle. Its vast stretches of tundra lie between the ice-covered far north and the wooded sub-Arctic region. The tundra, which is characterized by bleak plains of permanently frozen ground, makes up in total a quarter of the landmass of the northern hemisphere.

In some areas the extreme frost has created deep fissures in the ground. These are soon filled with water, which then freezes over. The network formed by the ridges of ice is easily seen from the air. But now this incredible landscape of permafrost is starting to crack as a result of increased temperatures. Scientists are worried that up to 90 percent of the rock-hard surface could melt by the end of the century, shifting the permafrost border hundreds of kilometers northward.



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Graphic: the Arctic Circle

"If the subterranean ice melts, then the whole ground could collapse," believes AWI scientist Hubberten. The fear is that streets, pipelines and industrial sites would all sink into the abyss below. In the central Siberian town of Yakutsk, for example, which is built on the permafrost, around 300 buildings have given way. Large residential structures, a power station and a runway at the local airport have all been affected.

The region's water reserves have been hit. Scientists have already noticed that entire lakes have seeped away into the thawed-out ground and rivers have swollen to bursting. The amount of water flowing from Russian rivers, such as the Ob, into the Arctic basin has increased by seven percent over the last 60 years.

The consequences of climate change

A massive study released two years ago, sparked off further rounds of discussion in Potsdam this week. "The Arctic Climate Impact Assessment" lists possible consequences of global warming for mankind and the environment. At the same time, the community of Arctic states doesn't want to miss potential opportunities. The region's governments are hoping for new fishing grounds and tourist destinations, as well as the opening up of Arctic shipping routes. It likely won't be long before cargo ships traveling from Hamburg to Yokohama will be able to sail along the Siberian coast -- instead of through the Suez Canal. The trip through the frosty north would halve the journey time. The route from Russia to North America could be similarly shortened: a trip from Murmansk at the moment takes around 17 days. But by going via the Canadian port of Churchill, and transporting the goods south by rail, the journey will be cut to eight days at sea.

The first pioneers are already placing their bets on the new freight connection via Hudson Bay, such as the American entrepreneur and railway magnate Pat Broe, who is

now seen as something of a visionary. In 1997 he bought the deserted port of Churchill from the Canadian government for a paltry seven dollars. Broe now calculates that the investment could soon be earning him $100 million a year.

But more than anything else, it is the earth's riches under the rapidly disappearing ice that spark the imagination of many. The US Geological Survey estimates that a quarter of the world's oil and natural gas reserves lie hidden under the Arctic Ocean. If the thaw continues, then excavation could soon become financially viable. Norway and Russia are already bickering with each other over drilling rights in the Barents Sea. The region's gas will soon be processed in Murmansk and Hammerfest, and then transported to other parts of Europe and America. The size of the Russian Shtokman gas field alone is estimated at 3.2 trillion cubic meters, making it one of the largest known deposits in the world.

The thought of such possibilities has plunged the Arctic nations into a gold rush frenzy. But it's certainly not only good news. The Arctic thaw will also create changes in the environment that bode ill in particular for coastal residents. The livelihoods of many of the indigenous Inuit peoples depend on the sea being frozen. Hunting on the ice is a key part of their cultural traditions.

"In the past we were frozen in by the end of October. Now that doesn't happen until Christmas," says Clifford Weyiouanna of Shishmaref, a village on the island of Sarichef in the Bering Strait. "Normally the ice out there should be about 1.2 meters thick. But when I was out there just now, it barely measured 30 centimeters." The area is also endangered by heavy erosion, because with the ice gone, the sea is able to roll unimpeded onto the coast. The sea has claimed 40 meters of land since 1997. In October 2001 the village was threatened with waves up to four meters high, causing local residents to decide to flee to the mainland.

Animals under threat

The fragmented sea ice is endangering Inuit hunting patterns all over the region: whether Sachs Harbor on the western Canadian coast, the small town of Pangnirtung near the Arctic Circle, or Frobisher Bay near Iqaluit. Birds and fish, which don't even have names in local Inuit languages, are now being spotted in these areas. At the same time, animals that depend on the sea ice for survival, such as seals, walruses and polar bears, are becoming rare.

The Canadian town of Churchill has also earned itself a tragic sort of renown: Every autumn the bears of the region gather together to wait for the Hudson Bay to

REUTERS

Arctic polar bears have to jumps from ice floes to hunt.

freeze over. Only then can they make their way onto the sea ice to hunt seals. But every year the winter starts later, and the ice thaws earlier, meaning that bears don't have the opportunity to hunt enough to build the layer of fat they need for a healthy winter. "If the ice melts just a week earlier, then a female bear is forced to come back to the mainland around 10 kilograms lighter," says polar bear expert Ian Stirling of the University of Alberta.

Experts from the World Conservation Union (IUCN) fear the number of polar bears could drop by one-third over the next 35 to 50 years. According to the organization, caribou, lemmings and arctic foxes are also at risk from global warming. "The tree line is shifting towards the Pole and animals from the sub-Arctic are already starting to spread northwards," says María Gunnarsdóttir from the organization Conservation of Arctic Flora and Fauna. "Since the land doesn't go on northward forever, at some point there won't be any room left for the Arctic species."

And it is very likely that the region will get warmer still. The real climate time bomb still slumbers some 1,500 meters below the permanently frozen tundra and is only now starting to show its effects. An estimated 400 billion tons of methane is trapped in the frozen earth of the Arctic. The release of even a fraction of the greenhouse gas could lead to the climate horror scenario in record time: only last week the academic magazine "Science" confirmed that Greenland's icecap was melting.

Less ice on Greenland

The massive ice sheet is almost five times the size of Germany and up to three kilometers thick. It contains enough water to increase the world's sea levels by more than seven meters. The unsettling news from the scientists is that the melting process seems to have already begun. "A further rise of two to three degrees and the melting of the Greenland icecap will be irreversible," warns Philippe Huybrechts from the University of Brussels in Belgium. The ice on Greenland itself could completely vanish within the next 1,000 years, Huybrechts says, estimating that together with melting in the Antarctic, there will be a rise in sea level of up to 90 centimeters by the end of the century.

NASA/NOAA

On Sept. 21, 2005, sea ice extent dropped to 2.05 million sq. miles, the lowest extent yet recorded in the satellite record.

That means that the quarreling Danes and Canadians need to resolve their testy territorial dispute over Hans Island pretty quickly -- unless they want to find themselves bickering over a stretch of water. At least Copenhagen and Ottawa have agreed to carry on their argument in a more civilized manner: While attending last autumn's UN General Assembly meeting in New York, Danish Foreign Minister Per Stig Møller assured delegates that there wouldn't be any more flag-planting contests. Both

countries remain adamant about sticking to their territorial claims, but the banner battle has been resolved without a diplomatic incident. It appears, Møller said gleefully, that the Canadian flag has fallen down of its own accord.

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