

THE NEW ECONOMIC STAKES OF CLIMATE CHANGE:

THE SITUATION IN THE ARCTIC AND ANTARCTIC

While current climate change is hovering like the Sword of Damocles for the whole of humankind, a number of important diplomatic and economic interests are emerging at the high polar latitudes. More specifically, they involve the opening up of two major maritime routes: the “Northwest Passage” across the Canadian Arctic and its counterpart, the “Northeast Passage” (also called “Northern Sea Route”), to the north of Siberia. Both of these former frozen passages will open the way to the precious mining and oil resources of the Far North. In recent years, the Arctic and Antarctic have also become focal points for high-end luxury tourism, which through the injection of impressive logistical and financial means takes those who can afford it to encounter the last great lords of the sea-ice: the polar bears of the Arctic and the no less fascinating penguins in the South.



Figure 1 a Arctic sea ice in September 2008 (end of summer)

NB: shown in red, the average extent of the sea-ice 1979-2000 for the month in question (NSIDC)

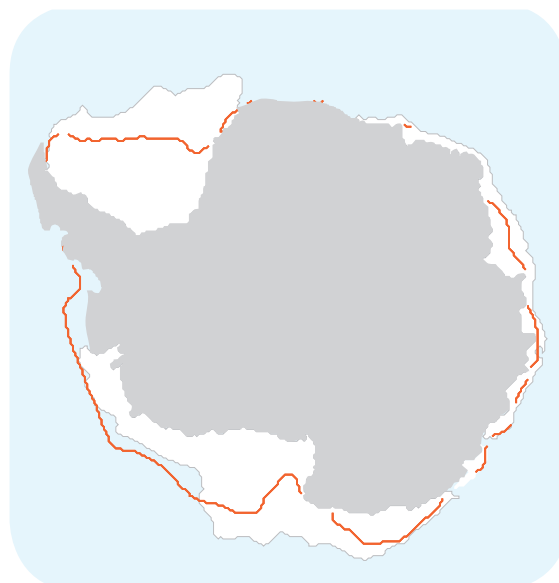


Figure 1 b Antarctic sea ice in March 2008 (end of summer)



Figure 2:

Opening of new maritime routes through the frozen Arctic Ocean during the 21st century

1) "Northwest Passage" through the Canadian Arctic Archipelago

2) "Northeast Passage" (also known as "Northern Sea Route"), along the Siberian coastline



1) NEW MARITIME ROUTES THROUGH THE ARCTIC:

With climate change and the melting of the Arctic ice, taking the northern route round North America or Siberia could soon become a reality for container ships, [supertankers](#) and [bulk carriers](#). If these two sea routes were to become used on a frequent basis in a few years or decades from now, (see figure 2), it could raise many concerns for the indigenous peoples of the Far North, who fear the risk of pollution from oil slicks caused by ships [venting](#) their tanks illegally, oil spills or shipwrecks.

Sailing round America via the North is one of the oldest dreams of sailors. Over the course of five centuries, countless men and boats have been added to the list of those reported "missing" in their perilous search for new routes such as the mythical Northwest Passage. Entire expeditions, involving superhuman effort and suffering, have tried to make their way through the ice, narrow straits and islets in a quest to find a short-cut to the **riches of the Far East**.

Now, with the rapid warming process currently affecting the Arctic, the summer sea ice is extending less and less towards the borders of the Arctic basin. This leaves an increasingly wide ice-free shipping channel between the maximum extent of the sea-ice and the continental coastline. As a result, sailing through these regions, which were formerly totally iced over, could become possible in a few years' time. Plans are already being made for small convoys of cargo ships sailing in the wake of an ice-breaker or two. However, the risk of encountering icebergs is still a very real one.

For the time being, vast expanses of ice-free water on the edges of the Arctic Ocean during

the summer months are not yet a reality. But climatologists are predicting that the Northwest and Northeast Passages will be completely ice-free during the summer some time in the next fifty years – and perhaps well before that! This will undoubtedly attract a whole fleet of cruise ships, container carriers and oil tankers, operating under the close surveillance of naval ships from the countries bordering the Arctic, anxious to maintain a degree of control over the waters that lap their coastlines. The enthusiasm of [shipowners](#) for these new "**Panama Canals of the North**" will match the savings in time and money that the new routes offer (see figure 3).

The biggest beneficiaries of this change of route will be the huge oil tankers and bulk carriers that are too big to go through the Panama Canal on account of their size (length and [draught](#)), which currently forces them to sail round South America through the **Straits of Magellan**.

Opening up the Northwest Passage would also fan the flames of the old legal battle between the United States and Canada. At the moment, the international community is of the opinion that any waterway that links two oceans through a strait must be considered as international waters. Thus far, the impenetrability of the Northwest Passage, blocked as it is by ice, has kept quiet any claims over the Arctic basin, thereby recognising Canada's sovereignty over these frozen archipelagos. However, if the ice was to melt sufficiently to make sea traffic possible, a decision would have to be made along the lines of setting up a "**maritime toll**" system, implemented by those countries granted the rights of sovereignty over the waters in question. The development of maritime traffic would also mean significant disruption for the local fauna (polar bears, caribou, whales, etc.) and create contraband networks to trade illicitly in the skins

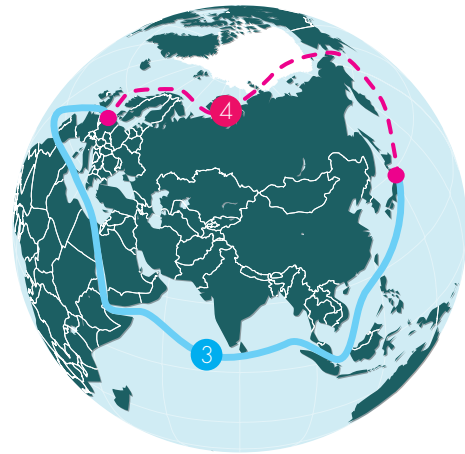
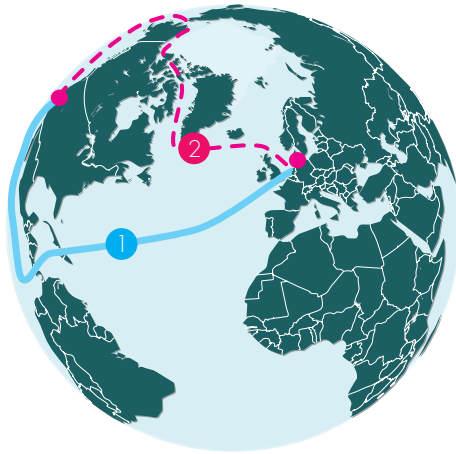


Figure 3:

Considerable gain of time and money could be achieved by shorter maritime routes.

From Rotterdam to San Francisco:
Present route via the Panama Canal
Future route via the "Northwest Passage"

From Rotterdam to Yokohama:
Present route via the Suez Canal and the Red Sea
Future route via the "Northeast Passage"



of fur animals and walrus tusks. Inevitably, ships using the passages would also generate waste left behind by tourists who would become more numerous as the years passed.

But the threat of greatest concern, of course, is the risk of oil spills in these pristine regions. We should never forget that Prince William Strait is still recovering today from the [Exxon Valdez](#) disaster in 1989, when 42 million litres of oil were spilt and washed up along the coastline, creating unprecedented pollution.

2) THE DEVELOPMENT OF TOURISM IN ANTARCTICA

Tourism in the Antarctic began back in the 1950s. During the early years, visitor numbers were kept very low, with just a few hundred tourists, usually wealthy, who after boarding a ship in Chile or Argentina, set foot on the sub-Antarctic islands and the Antarctic Peninsula, to experience the great thrill of Antarctica.

Between the 1960s and the 1980s, the first cruises to Antarctica gradually began aboard specially equipped ships. And it was during the 1990s that for the first time the number of tourists exceeded the number of scientists based on the continent, seasonally or annually (the population of scientists is estimated at 1000 in winter and approximately 4000 in summer). This led to the foundation, in 1991, of the **International Association of Antarctica Tour Operators** (IAATO). This body, which encompasses the main players in the tourism sector in Antarctica, is there to protect the environment of the frozen continent, while promoting practices that are healthy and non-harmful for the Antarctic environment. The

year 2000 saw a significant increase in the number of visits to Antarctica, which multiplied by three over a period of 5 to 6 years.

We should also point out that tourism does not focus uniformly on the continent itself, but is concentrated virtually exclusively on the Antarctic Peninsula and the neighbouring islands (98% of tourism).

There are a number of reasons to explain this concentration of tourism activities on the Antarctic Peninsula. First of all, there is the question of access. This is far easier from South America as it is the closest point to Antarctica and so shipping times are shorter. The **Antarctic Peninsula** also has a good number of accessible landing sites and a greater biodiversity of flora and fauna than areas further south, due to the less harsh climate. Finally, there is a high concentration of scientific bases and other infrastructure, such as a landing strip on King George Island in the South Shetland Islands.

So, why does the development of tourism constitute a threat to the Antarctic? The development of tourism presents a range of risks including disruption to animals, particularly during the breeding season, the physical trampling of sensitive vegetation areas (fragile moss and lichen), and intentional or accidental introduction of foreign species to the Antarctic environment, which could then colonise existing [ecological niches](#). Finally, there is the growing risk of pollution caused by the increase in maritime traffic and consequent risk of oil spills - for example the sinking of the MS Explorer near King George Island in 2007. To a lesser extent, there is also a risk of air crashes, such as the one in 1979 when an Air New Zealand DC10 crashed into Mount Erebus, killing all 257 people on board.



GLOSSARY:

Bulk carrier: n. Shipping. – Cargo ship designed to carry solid goods in bulk, such as iron or copper ore (ore carriers). Their size varies from tens of thousands to hundreds of thousands of tons.

Draught: (syn. in the US: draft): n. Shipping. – Depth of the immersed part of a ship or boat below the water line. The draught varies according to the load being carried and is equivalent to the vertical distance between the water line and the lowest part of the hull, usually the keel.

Ecological niche: n. Biology. – Position occupied by an organism, colony or more generally a species within an ecosystem.

Exxon Valdez: Shipping. – Name of the American oil tanker that ran aground during the night of 23rd to 24th March 1989 off the coast of Alaska, releasing 42 million litres of oil into the water.

Shipowner: n. Shipping. – The party who crews and operates a ship, whether or not it is the actual owner of the ship. The shipowner provides the equipment, supplies and everything required to operate the ship on the high seas. Whereas the "shipowner" only leases the ship, the term often used is "charterer".

Supertanker: n. Shipping. – Ship specialised in carrying crude oil from where it is extracted (usually an offshore oil drilling platform) to the port facilities of the refineries. The largest supertankers can carry several hundreds of thousands of tons of oil.

Venting: v. Petrology. – The discharging (often partial) of fuel oil from the hold or tanks of a ship. This type of operation, which is extremely polluting for the environment, is punished severely under international maritime law when detected.

WEB:

See the teaching dossier on "**Fossil and renewable energies**", as well as the animations on "**Arctic exploration**", "**Oil: looking for black gold**" and "**The polar regions: the first areas of the planet to be affected by climate change**" at EDUCAPOLES, the educational website of the International Polar Foundation (IPF).

<http://www.educapoles.org>

Other websites containing interesting information related to this subject:

<http://www.iaato.org/>

<http://arctic-transform.org/download/ShipBP.pdf>

http://www.pame.is/images/stories/PDF_Files/AMSA_2009_Report_2nd_print.pdf