



# Arctic: the challenges of opening up the northern route

**As the northern route opens, the melting ice will have a significant impact on the transportation of goods around the world, and the consequences are manifold, said Didier Schmitt, a scientific adviser at the European Commission.**

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For over a decade, a 'new Arctic' has been taking shape. The countdown is well underway, so without further delay we need to ask what is at stake, the opportunities and the challenges for Europe.

## **When the Arctic awakens**

When the Arctic awakens – feverishly - the world will have its feet in the water. Almost half of the increase in sea level will come from the melting ice caps, including that of Greenland. While predictions are for an average increase in global temperatures of 2 degrees Celsius within a few decades, those beyond the Arctic Circle could reach 6 degrees Celsius. If we include the fact that the Arctic ecosystems are more fragile than elsewhere, we can be almost certain that the observed phenomena and their consequences will be irreversible.

Alongside activities to mitigate climate change (the origin of this upheaval), a clear analysis of adaptation strategies would also be welcome. For that, forward thinking which includes all the different parameters should enable us to evaluate the positions we need to take and the important decisions we need to make, starting now.

## **A mechanism that is still poorly understood**

Scientists are perplexed: over the last fifteen years, the melting of the ice in the Arctic Ocean has accelerated at a level that was never predicted. The mechanism is still not well understood because no current climate model is able to explain it with certainty, as this part of the globe has been poorly studied in the past due to the difficulties in accessing it.

A second reason is that the equilibrium of the Arctic environment is inherently fragile, and therefore prone to disruptions. Even the weather is more temperamental than elsewhere. If we want to improve our analysis so we can make enlightened decisions, we need to better understand the complexity and fragility of the northern

regions. The corollary is the improvement of our forecasts using more measuring stations and more satellite observations. Not to mention the role of the social sciences in understanding the impacts on local populations.

### **15 % of world seaborne trade by the northern route**

The economy has no qualms, unfortunately. It is almost certain, according to climate models, that from 2030 navigable routes between Asia and Europe will be open for much of the summer, which can shorten the distance between Europe and Asia by half. We estimate the proportion of global traffic that will pass through this route is 15 %. China already tested it in August 2013.

In addition to the benefits for the merchant navy, access will also be facilitated for the fishing sector – Arctic waters are the richest fishing grounds in the world and global warming will make a number of economically valuable species head north. It will also be easier to access gas resources – estimated at 30 % of undiscovered reserves – and facilitate the development of ‘cruise liner tourism’. One of the consequences feared by scientists is the deposition of soot particles from diesel ship engines, which will further contribute to the melting of snow and ice.

Therefore the potential arises, for example, for cleaner engines or even for nuclear motors for the propulsion of ‘Nordic ships’, especially as their size will not be limited by having to pass through the Panama and Suez canals. For a long time, Russia has made this choice to propel icebreakers because it allows for autonomy and power.

### **A programme required for satellite positioning**

With transport comes safety. Because of geographical isolation, technological solutions need to come predominantly ‘from the sky’. But at the moment, satellite positioning systems such as the European Galileo system – which also has a component for sea rescue – are in orbits that cover the most populated latitudes. As for European satellite telecommunications and meteorology satellites, in general they operate on an equatorial orbit and have even less ‘visibility’ to the north. There is little the four million-odd people who live around the Arctic have been able to do about it. But in the future, maritime activities won’t be able to become routine unless a specific space programme is implemented.

### **Significant investments**

The polar orbiting satellites have constraints compared to their geostationary cousins, which rotate from west to east in time with the earth and are, in that way, permanently over the same area. In contrast, a ‘polar satellite’ can only pass over the same spot every few hours, at best. This must be compensated for by a large number of identical satellites which follow in single file. The investments will be significant, but of global interest. These satellites ‘sweeping’ the whole earth’s surface could be used for many other applications.

In addition, the needs for security and research in the Arctic are similar to those of Antarctica and would in fact be covered by the same satellites, a nice win-win situation. We should also consider the possible synergies between satellites and drones or high-altitude balloons which could constitute complementary observation, geolocalisation or communication platforms. The time has come to develop integrated forward thinking, because it will take time to find partners and agree on common needs and divisions of responsibilities. It will take a decade for the technological developments, so 2030 is not far off at all!

### **Unite European efforts**

What is not visible from an equatorial world map is that, viewed from the northern hemisphere, the world is very different: the borders between Russia, Canada, the United States and Europe are merging. These neighbours are discussing the development of the Far North as part of the Arctic Council, and observers to the council are becoming more and more numerous, with China at their head. As Europeans, we have rights and duties but also assets to make use of, such as in the space sector, shipyards, and also skills in developing cooperation programmes, as is already the case for several large-scale scientific programmes. In fact, Europe should go further and establish an ‘[Arctic observatory](#)’ rationalising and bringing together European and international efforts – we have the legitimacy.

### **From technological needs to geopolitics**

Any considerations must integrate several facets: a better understanding of specific climate change in the Arctic, possible mitigations, technological requirements, long-term economic consequences (trade, fishing ...) and even geopolitical consequences such as the potential self-determination of Greenland, Russian ambitions for the polar seabed, and equilibrium in the field of defence.

Finally, we must note that it is not climate change that opens shipping lanes or provides access to new resources, it is political decisions. All of Europe should pay more attention to its own hemisphere, because it may well dramatically shift some centres of gravity, and for a long time.

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The opinions expressed in this article are those of the author and do not necessarily reflect the position of the European Commission.

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