ArcticRisk Platform

ARCTIC BASECAMP

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AMBASSADORIAL BRIEFING

ISSUE

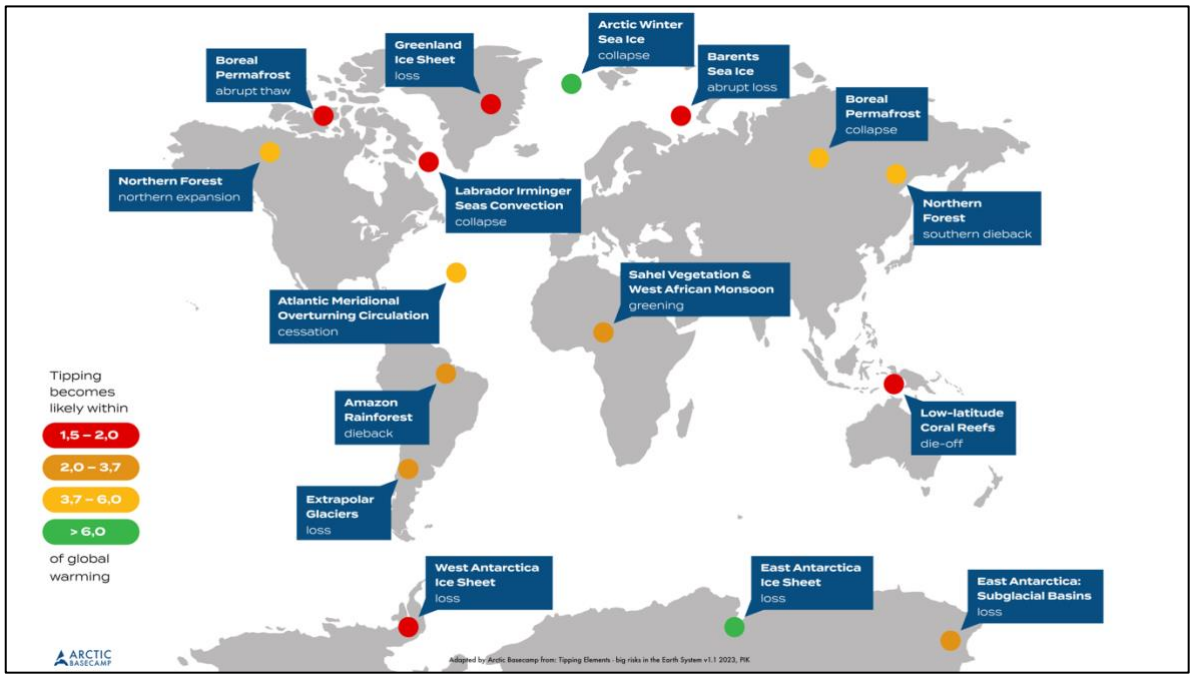
Governments, both within and outside the Arctic region, need to incorporate Arctic change into all policies and strategies relating to the global climate crisis, including global and local risks.

BACKGROUND

The Polar regions, particularly the Arctic, will determine the fate of humanity. What happens in the Arctic doesn't stay there but ramps up societal and economic risks globally through *inter alia* extreme weather, supply chain disruptions, conflicts over resources, food and water insecurities, economic stresses, wildfires, and disease.

The Arctic is warming nearly four times faster than the globe's average, and nine of the world's 16 global climate tipping points are located in polar regions with five expected to be crossed **before +2°C of warming.** Thus, the poles—and especially the Arctic—have an outsized importance as drivers of present and future global risks.

On its current trajectory, climate change is annually projected to lead to 3.4M deaths by 2100 and impose health costs of $2-4B by 2030. Halfway through the period of the UN's Sustainable Development Goals (SDGs), progress has also stymied on the 17 global goals and 169 embedded targets. Without preserving the Arctic, each goal is under threat.



Global risks linked to Arctic change (see *Annex I* for more details):

- *Extreme weather*: Arctic change disrupts global weather systems that have been linked to droughts, floods, storms, and other extreme weather events.

- *Food insecurity*: The Arctic's effect on extreme weather hampers efforts to feed the planet, increasing the risk of simultaneous harvest failures across all six breadbasket regions.

- *Heat waves and heat stress*: Loss of ice and snow in Polar regions amplifies the risk of more intense and prolonged heat and drought globally.

- *Sea level rise*: Greenland is the largest contributor to global sea level rise, leading to catastrophic coastal flooding worldwide. Research has shown that there is now an unavoidable, locked-in sea level rise of at least 27 cm based on current CO_2 in the atmosphere. This is the new baseline for global adaptation needs.

- *Water insecurity*: Arctic change threatens water security around the world through droughts and changes to global precipitation patterns.

- *Economic impacts*: The extreme weather triggered by Arctic warming is causing significant economic losses, disproportionately affecting lower-income countries in tropical regions.

- *Disease exacerbation*: Arctic change increases favorable conditions for vector-borne diseases such as malaria, dengue and the zika virus.

- *National security*: As the Arctic melts, global nations are racing to claim its natural resources, shipping routes, and territories, creating a new hotspot for geopolitical tension.

- The potential long-term economic gains from developing shipping routes and extracting natural resources in the Arctic is about ten times less than the global economic cost of losing Arctic sea ice and land snow along with increased carbon emissions from permafrost thaw. The estimated cost peaks at just under $70 trillion at the mitigation levels consistent with the national pledges from the Paris Agreement.

Regional Impacts in the Arctic (see *Annex II* for more details):

- Melting sea ice, receding glaciers, thawing permafrost, and a greener Arctic threaten the economies and ways of life for Arctic Indigenous communities.

- The Arctic holds 13% (90 million barrels) of the planet's untapped oil and 30% of its natural gas resources. These must remain untapped if the world is to achieve net-zero by 2050, as per a flagship report by the International Energy Agency.

- Arctic warming is also creating the allure of shortened shipping routes. While transiting the Northern Sea Route (NSR) could cut transit time between 30-50%, only a very small percentage of ships—**one out of 25,000**—would see a reduction (24%) in emissions by being rerouted through the Arctic. Without abatements (RCP8.5), the additional warming associated with economic growth through the NSR from short-term pollutants, including black carbon, is expected to add $2.15 trillion to the new present value of global climate change costs through 2200 under an SSP2 socio-economic scenario. The largest of these losses will be felt in climate vulnerable regions, especially throughout Africa and southeast Asia.

CONSIDERATIONS

- The vulnerability of the Arctic is due to our continued reliance on fossil fuels and widespread interest in mining;

- There is a lack of real-time observation systems in the Arctic, which is likely leading to an underestimation of change. There are only 250 ground observation systems - approximately one per the size of Ireland;

- Global warming could increase by up to 40% if we lose the Arctic snow and ice cover;

- In determining global carbon budgets, the World Meteorological Organization does not account for thawing permafrost, which would eat 25-40% of the budget to stay under 2°C;

- Fossil fuel expansion and natural resources extraction in the Arctic does not correspond to increased energy and resource security nor lower costs to the producer or consumers.

RECOMMENDATION / NEXT STEPS

- Arctic risk mitigation must be achieved through regional policies combined with global actions to halve by 2030 and achieve net-zero by 2050;
- Global coastal adaptation strategies must be prioritised given locked-in sea level rise from Greenland.
- Prioritising the Arctic climate needs to be woven into broad, multi-lateral discussions, including on the SDGs;
- Interest-driven strategies, including fossil fuel development and shipping, must be viewed holistically and include systemic economic costs of a warming Arctic. However, a moratorium on new fossil fuel development in the Arctic/sub-Arctic should be considered due to environmental and financial implications. Governments should position renewable energy in Arctic National Security Strategies;
- Invest in low-cost sensors to be implemented throughout the Arctic to ensure adequate data that will inform local and global risks models;
- Include science-driven approaches and Indigenous knowledge in policies;
- Invest in nature-based solutions and ecosystems as carbon sinks.

Overall, global strategies must address the inherent worldwide risks in a warming Arctic.

What happens in the Arctic doesn't stay in the Arctic.

Annex I: Global Risks Linked to Arctic Change

Extreme weather
Arctic change disrupts global weather systems that have been linked to droughts, floods, storms, and other extreme weather events. In 2023, there has so far been an increase in significant climate anomalies and events. The Northern Hemisphere is seeing an increase in extreme weather, such as cold waves, superstorms, and heatwaves, all of which are linked to Arctic climate change.

Supply chain disruptions
The changing Arctic amplifies disruptions to global trade as a result of climate change. Shipping routes, port activity, roads, railways and other coastal infrastructure are compromised by sea-level rise, hurricanes severe storms, and other extreme weather. A McKinsey analysis found that the probability of a hurricane of sufficient intensity to disrupt semiconductor supply chains is set to grow two to four times by 2040. Risks to food supply chains are also elevated by Arctic warming through changes to global precipitation and weather systems.

Sea level rise
A minimum of 27cm of global sea level rise has been committed due to the destabilization of Greenland's ice sheet. The greatest impact will be felt in small island developing states and Indigenous communities. 600 million individuals will be forced to migrate. US$1tr in wealth held within these coastal communities. Around the world, rising sea level is causing infrastructure damage, saltwater intrusion into cropland, and more powerful storm surges. Sea level rise is a key reason we have lost 85% of the world's mangroves and saltwater marshes, which absorb significant amounts of carbon.

Food and water security
Unchecked, greenhouse gases from food production could alone add 1°C to global warming by century's end (Ivanovich 2023) by which point 90% of the world's population could face increasing food and water insecurity (Vaughan 2019). Food and water security is a key issue, as it can both be a contributor to escalating devastation whilst also being a consequence of it. The climate disaster that impacted the most people in 2022 was the drought in the Horn of Africa, which saw more than 36 million people go without food last year. This still on-going disaster has roots in the Arctic through northern warming altering precipitation patterns.

Wildfires
2023 has been a record-smashing year for global wildfires. Boreal fires throughout the northern hemisphere have been especially notorious. Canada broke its fire-driving emissions record whilst it was still June and has, as of mid-September, more than tripled its previous record (410 megatonnes of carbon versus 138 megatonnes set in 2014). At this point, acreage burnt exceeded 600% of the annual burn. Outside of the Arctic, in early autumn, Greece saw a deadly fire that became Europe's largest in known history. Blocking patterns in the jet stream, in part due to the loss of colder Arctic air, that led to prolonged heat domes and drought have fuelled these fires.

Heat
For 35 consecutive days in July and August, the planet's average temperature was the hottest in more than 125,000 years. World Weather Attribution determined that the heatwaves in North America and Eurasia would have been "virtually impossible" without climate change (2023). Heat is currently the deadliest climate-related risk. The Arctic is influential in planetary heating because as its albedo declines, it can absorb more heat, which then gets dispersed around the world. In other words, instead of being the planet's refrigerator, it is primed to become a radiator. For each degree centigrade the atmosphere warms, it can hold onto 7% more moisture, leading to more powerful flooding events. More than one million species are at risk for extinction, and heat is standing as the biggest natural killer.

Annex II: Regional Impacts to the Arctic

According to the US Geological Survey, the Arctic holds 13% (90 million barrels) of the planet's untapped oil and 30% of its natural gas resources. These must remain untapped if the world is to achieve net-zero by 2050, as per a flagship report by the International Energy Agency. Moreover, accessing these fuels is often twice as expensive due to the remote locations, which require specialised infrastructure and technologies due to thawing ground and cold temperatures. Additional concerns include the lack of emergency response, increased dangers of spills in frozen regions, Indigenous health and sovereignty, more complicated supply chains and the escalated environmental impacts.

Arctic warming is also creating the allure of shortened shipping routes. While transiting the Northern Sea Route (NSR) could cut transit time between 30-50%, only a very small percentage of ships—one out of 25,000—would see a reduction (24%) in emissions by being rerouted through the Arctic. Without abatements (RCP8.5), the additional warming associated with economic growth through the NSR from short-term pollutants, including black carbon, is expected to add $2.15 trillion to the net positive value of climate change through 2200 under an SSP2 socio-economic scenario. These climatic losses are estimated to offset as much as a third of the NSR's economic growth. Highlighting the global risks associated with Arctic warming, the largest of these losses will be felt in climate vulnerable regions, especially throughout Africa and southeast Asia. Beyond warming, this region has the lack of infrastructure to respond to crises, such as spills and groundings, and involves increased costs with remote operations.

Overall, the potential long-term economic gains from developing shipping routes and extracting natural resources in the Arctic is about ten times less than the economic costs of losing Arctic sea ice and land snow along with increased carbon emissions from permafrost thaw. The estimated cost peaks at just under $70 trillion at the mitigation levels consistent with the national pledges from the Paris Agreement. Globally speaking, the economic losses due to climate warming will likely be higher in poorer climate vulnerable regions, which are also less likely to benefit from the economic opportunities associated with a warmer Arctic.