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# Our Warming World: The Mounting Imperative for Arctic Climate Diplomacy

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## ABSTRACT

*The climate in the Arctic is rapidly changing and new climate patterns in the Arctic impact the entire planet. Changes in precipitation patterns, the opening of the Arctic Ocean due to melting sea ice, and the quest for energy are causing an expansion of the traditional Arctic sphere into a truly global arena that brings in players from Africa and Asia. Highlighting the interconnectedness of the world, the climate crisis in the northern pole both affects these distant regions and is simultaneously affected by them. Though this region will grow in importance, what is less clear is whether traditional diplomacy will be sufficient to meet these interwoven challenges and mitigate the impacts of a warming Arctic on the rest of the world.*

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## INTRODUCTION

On the evening of February 24, 2022, a few hours after Russia invaded Ukraine, I was having dinner with several polar researchers, including Dr. Antje Boetius, director of Germany's Alfred Wegener Institute, when her phone rang. The German government was blocking scientific collabora-

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tion with Russia as part of its deepening sanctions against the country. The entire European Union and other governments further afield followed closely behind. Overnight, it seemed, everything had pivoted. All contact was severed. Losing access to formal joint scientific projects meant losing a tether to more than half of the Arctic. Moreover, it could mark the beginning of a generational loss in Arctic-Russian diplomacy at a time when the region is undergoing momentous transformations.

As a polar climate scientist, I was devastated. Currently warming four times faster than the global average,<sup>1</sup> the Arctic has an outsized influence

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..... on global systems, including extreme weather events, supply chain disruptions, resource-based conflicts, and vector-borne diseases. Addressing the climate crisis in the Arctic relies on positive relationships throughout its realm, and the loss of the Russian Federation as a partner felt insurmountable.

..... In this context, policymakers and Arctic officials—whether from the littoral Arctic Five,<sup>2</sup> northern Indigenous communities, or states along the equator—need to be cognizant of their relationship with a dynamic and multilateral northern polar region. What follows is a brief overview of the growing sphere of climate diplomacy relating to the Arctic. This overview is by no means exhaustive but rather briefly examines different elements of this growing field.

#### THE NEXUS BETWEEN SCIENCE AND DIPLOMACY

Despite all the devastation of the Cold War, the era presented new opportunities for international collaboration with the USSR through non-traditional means. One such method was science diplomacy. The pairing of science with diplomacy extends back millennia but began to be formalized only in the interwar period. During the Cold War, the role of science grew as an impetus for cooperation across the Iron Curtain when traditional diplomacy was stunted.<sup>3</sup> Interpersonal dialogue through scientific exchanges played a pivotal role in the development of key outcomes, including the Treaty on the Non-Proliferation of Nuclear Weapons and the European Monitoring and Evaluation Program, which measures long-range, cross-border air pollution.

However, the longstanding alliances and fora that have ushered the

Arctic through decades of negotiations and joint efforts are no longer adequate to withstand the new security concerns, energy demands, and social consequences of the climate crisis in the far North. Modern leading Arctic institutions, like the Arctic Council, explicitly do “not deal with matters related to military security,” largely seeing militarism in the region as part of extra-regional conflict.<sup>4</sup> However, Russia’s invasion of Ukraine, which happened during Russia’s Arctic Council chairship, resulted in a fifteen-month hiatus across the organization’s activities until Norway assumed the chair in 2023.

The climate crisis is unveiling new realities of the Arctic’s environmental and geopolitical landscape. Melting sea ice is bringing together new countries, the race for clean technology is prompting mining by foreign corporations, while Indigenous communities are losing land and place-based knowledge. In the process, Arctic interests flood well beyond the High North into new territories, involve new players, and encompass new themes. It is no longer hyperbole to claim that the fate of the Arctic affects the fate of humanity. In fact, each of the United Nations’ Sustainable Development Goals, from zero hunger to gender inequality, is dependent upon a viable North.<sup>5</sup>

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#### TIPPING POINTS: IN CLIMATE AND DIPLOMACY

Nine of the sixteen most commonly recognized so-called climate tipping points are in the polar regions.<sup>6</sup> The thresholds for five of the nine are primed to pass the +1.5 to +2.0 degrees Celsius limit set by the Paris Agreement.<sup>7</sup> Three of these, including the loss of both the Greenland and West Antarctic ice sheets, trigger cascading effects that will be felt globally in terms of sea level rise, ecosystem loss, and socioeconomic cost.<sup>8</sup> According to the Global Tipping Points program, housed at the University of Exeter’s Global Systems Institute, some changes are already set in motion as a result of existing warming with three tipping points set to be reached during the 2030s.<sup>9</sup> In the first two decades of the twenty-first century, damage caused by extreme weather events has had an average price tag of USD 143 billion per year.<sup>10</sup> The wide-reaching impacts associated with such tipping points are also literally and figuratively opening new playing grounds and threatening the traditional tenets of polar diplomacy.<sup>11</sup>

According to Duan et al., the loss of snow and ice in the Arctic

could worsen global warming by as much as 40 percent.<sup>12</sup> Christian Aid, a United Kingdom charity, identifies ten natural disasters in 2022 that each exceeded costs of USD 3 billion,<sup>13</sup> a doubling from the year before when USD 1.5 billion was the baseline for the ten costliest natural disasters.<sup>14</sup> The most expensive in 2022 was Hurricane Ian with approximately USD 112 billion in damages across Cuba and the United States.<sup>15</sup> Additionally, more than 36 million people were affected by the continued drought in the Horn of Africa, and a further 30 million were displaced by flooding in Pakistan.<sup>16</sup> Although it is not yet possible to attribute a degree with perfect certainty, each of these catastrophes has the fingerprints of Arctic change, through the intensification of Atlantic cyclones,<sup>17</sup> or the rising of temperatures,<sup>18</sup> and changing of precipitation patterns.<sup>19</sup>

One thing is vitally clear: as the world sets positive feedback loops in motion, there can be no further petroleum development in the Arctic and there needs to be a complete phase-out of all fossil fuels. Much of the international interest in the northern polar region has stemmed from the global addiction to fossil fuels. This region holds 30 percent of the world's natural gas and 13 percent of its untapped oil,<sup>20</sup> comprising trillions of U.S. dollars. However, a recent report by the International Energy Agency doubles down on the need for these to remain untapped if the world is to keep warming below +1.5 degrees Celsius.<sup>21</sup>

Beyond the need to keep temperatures below +1.5 degrees Celsius, fossil fuel extraction reinforces Western colonialism, which has imperiled the area since the sixteenth century.<sup>22</sup> For roughly four hundred thou-

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sand Indigenous people in the Arctic, petroleum, and mining industries have yielded a loss in land, identity, health, and biodiversity.<sup>23</sup> Additionally, with the United States, Russia, and China leading this modern gold rush, the climate is under even greater threat due to the Great Powers' simmering diplomatic tensions and sanctions.

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 Looking beyond the petroleum industry in the Arctic, the region holds another dangerous source of temperature-rising emissions: thawing permafrost. Even with moderations in warming, permafrost is quickly becoming an emitter on par with a large industrialized country. If emission growth is unchecked, permafrost alone could consume as much as 40 percent of the remaining carbon budget to

stay under +2°C.<sup>24</sup> Thawing permafrost is poised to release radioactive particles, microplastics that are often ingested by creatures (including humans), and soot which enhances local warming and melting by absorbing solar radiation. However, due to historical gaps in data, the impact of permafrost on global emissions remains excluded from global stocktakes.<sup>25</sup> This means that the projections and modeling of the local and global impacts as well as the timescales of a warming world are grossly underreported.

### THE INTERDEPENDENT NATURE OF THE EXPANDING ARCTIC ARENA

At 1.35°N (that is, essentially on the Equator), the Republic of Singapore may not be the archetype of an Arctic state, but the country highlighted its interests in shipping and concerns over sea levels as reasons behind its observer membership in the Arctic Council,<sup>26</sup> which it gained in 2013. Singapore's interest isn't unique among non-Arctic countries; China has penned itself as a "near-Arctic" state<sup>27</sup> and France identifies as a "polar nation."<sup>28</sup> Since his appointment, Singapore's Special Envoy for Arctic Affairs, Sam Tan, has traveled across the planet to advocate for his city-state's Arctic role.

In addition to the country's interest in shipping, Singapore's National Climate Change Secretariat was forced into the northern conversation because glacier melt is a key driver of the rising sea levels that are already affecting the low-lying state.<sup>29</sup> Rising waters also instigated a joint call from Indigenous leaders representing the Inuit Circumpolar Council, the Saami Council, the Pacific Indigenous Network, and the Government of Seychelles that amplified the need to limit further warming at the signing of the Paris Agreement in 2015.<sup>30</sup>

Furthermore, melting sea ice also redefines national borders in the process. Suddenly, by using the Northern Sea Route, a country like China, which is—per Beijing—721 miles closer to the equator than the North Pole, becomes a de facto Arctic state and is 30 to 40 percent closer to Europe by water. While it entails potential serious issues, including ice and the lack of infrastructure and disaster response, transiting through the Northern Sea Route piques

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economic interest for countries engaged in long-haul shipping, especially as traditional bottlenecks such as the Suez and Panama canals are increasingly time-consuming and unreliable. Any environmental benefits of such shorter routes, however, are likely outweighed. Despite reduced transit times, Wang et al. find that only 0.004 percent of all voyages experience even a small reduction of emissions, estimated to average a mere 0.24 percent.<sup>31</sup> Moreover, whether extracting resources or developing shipping routes, economic gains are often short-lived as a result of climate-induced losses from added emissions and environmental disruption. These expansions highlight that the Arctic cannot be seen as a confined area.

According to a dynamic emulator run by Yumashev et al., the global economic hit from the loss of Arctic sea ice and snow combined with permafrost thaw is ten times greater than these economic gains.<sup>32</sup> In fact, the majority of the brunt of any economic development in the Arctic is expected to be concentrated in Africa and Southeast Asia, furthering the northern teleconnections with this region. Modeling data show, for example, as much as two-thirds of the global costs of emissions associated with increased shipping through the Northern Sea Route are expected to impact these regions negatively, with Africa incurring absolute losses comparable to the positive gains enjoyed by South Korea or Japan.<sup>33</sup> The worldwide cost of emissions typically follows entrenched patterns of socio-economic well-being with wealthier countries facing fewer climate-related losses than poorer ones.<sup>34</sup>

Greenland is currently the largest contributor to sea level rise in the world.<sup>35</sup> Existing planetary warming has destabilized the Greenland ice sheet so much as to have committed a minimum loss of 3 percent of its volume, which translates into at least twenty-seven centimeters of sea level rise without further emissions.<sup>36</sup> Taking into consideration further glacier loss due to accelerating warming, the global average could be one meter over the next forty-five to fifty years.<sup>37</sup> However, due to ocean dynamics, some areas, such as the highly vulnerable Pacific islands, expect significantly more.

The reciprocal style of Arctic environmental influence, however, means that far away states like Singapore or China are not just receivers of Arctic change, but are also drivers. One area where this is captured is through certain forms of pollution. Pollution is prolific throughout the Arctic, both within communities and also in the most remote regions. Through organizations like the European Monitoring and Evaluation Programme, researchers are able to track cross-national pollution, including nuclear waste, plastics, and black carbon. All three of these pose grave concerns in

the Arctic and can boomerang effects back to the rest of the world. Recent studies have identified how global atmospheric systems transport nano and micro-plastics<sup>38</sup> around the world, depositing them in the Arctic within days to weeks.<sup>39</sup> A similar system involves black carbon, the particulate matter from the incomplete combustion of fuels. Although some are born in the Arctic, notably through shipping exhaust or wildfires, the majority of these short-lived carbon pollutants travel through the atmosphere, in a matter of days, from the Americas and Eurasia.<sup>40</sup>

Building upon increasing concerns by extra-Arctic countries like Singapore, an increasing number of collaborations have been developed. Co-chaired by Iceland and Chile, one such network is the Ambition on Melting Ice (AMI). AMI is a high-level ministerial group that apprises policy-makers on the global risks and irreversible impacts of cryosphere loss.<sup>41</sup> AMI was launched at the 27th United Nations Climate Change Conference in Egypt with the support of more than twenty governments. The West African nation of Senegal and the Pacific island states of Vanuatu and Samoa were early signatories. Although these countries are physically far from the Arctic, the effects of Arctic melt are lapping at the shores of these states. Initiatives like AMI highlight that the risks associated with the warming Arctic need to be brought into broad-reaching, multilateral discussions around the world.

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## LOOKING FORWARD

Taken together, all of this underscores that the Arctic cannot be restricted to its traditional boundaries, whether the area within the geographic Arctic Circle or the 10-degree isotherm.<sup>42</sup> Many new coalitions have formed as a result of the Arctic's rise in influence in recent years, such as the AMI.

As our planet continues to warm, the Arctic will be in the global spotlight in the decades ahead. Current temperature predictions continue the trend of exponential warming. Through the region's loss of both ice and snow, the consequences of temperature increase will be felt universally. As the world faces existential questions concerning the climate crisis, decision-makers must understand the global consequences of their Arctic engagement. From extracting resources and routing ships, to renewing Cold War

rivalries and signing multilateral agreements, the future scope of the Arctic will define international relations.

As the climate crisis strengthens, Russia's relations with the other Arctic states deteriorate, and global economic pressures rise, decision-makers around the world must prioritize their relationship with the evolving and changing North. Ultimately, following the example of countries like Singapore and Senegal, states throughout the world need to define their roles within the emerging Arctic arena. Moving forward, policies must incorporate two-eyed seeing and mitigate the perpetuation of colonialism and power.<sup>43</sup> Likewise, apparent opportunities in the Arctic must be seen holistically and include the economic downsides that are amplified in regions like the Pacific Islands. As tensions involving Russia continue to shape the field, environmental diplomacy stands as a way to work through conflict, support sovereignty, and avoid the catalytic responses that will be set in motion with unabated polar warming. *f*

#### ENDNOTES

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 +2.0°C-3.7°C: East Antarctic Subglacial Basins collapse.\*  
 +3.8°C-6.0°C: Boreal permafrost collapse.\*  
 > +6.1°C: Arctic winter sea ice collapse,\* East Antarctic Ice Sheet collapse.\*
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for example, the loss of sea ice for financial gain through shipping routes and claims over resources.

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