

Evolution and impacts of the United States' Arctic strategy and China's responses

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Abstract On 7 October, 2022, the Biden administration released an updated version of the National Strategy for the Arctic Region based on new developments in the Arctic region and global affairs. This strategy emphasizes traditional security issues in the Arctic, attaches great importance to climate governance in the region, and advocates for restoring American leadership through international cooperation. In view of the strong influence of the United States (U.S.) in the Arctic region, the changes of the U.S. Arctic strategy will inevitably have an impact on China's scientific research rights, economic interests, and governance rights in the Arctic region. To respond to the new situation brought about by the changes in the U.S. Arctic strategy, China should take the initiative to maintain positive relationships with all Arctic countries, and continue its active participation in Arctic affairs.

Keywords the United States' Arctic strategy, Arctic security, Arctic governance

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1 Introduction

The Biden administration released the National Strategy for the Arctic Region, marking a shift in the focus of the United States (U.S.) Arctic strategy from the Obama administration's "protection first" to the Trump administration's "development and security" and now to the Biden administration's "security and protection", gradually developing a trend towards traditional security interests. The attitudes of the three U.S. administrations towards climate governance and international cooperation in the Arctic region have fluctuated. The Obama administration's Arctic strategy focused on protecting the Arctic environment, emphasizing international cooperation on Arctic climate change governance and environmental protection, and took a conservative stance on the issue of exploiting Arctic resources. After Trump took office, his

foreign policy emphasized "America first" and unilateralism. As a part of its foreign policy, its Arctic strategy also pursued the idea of "America first", strongly supported Arctic development, regarded the Arctic as a "potential strategic competition corridor", strengthened military capacity building, and guarded against the presence of China and Russia in the Arctic region.

The Biden administration's Arctic strategy emphasizes enhancing its presence in the Arctic region for the purpose of national security interests, and pays greater attention to climate change and environmental protection, which is conducive to advancing international cooperation. Due to the United States' dual identity as an Arctic state and the world's only superpower, the adjustments to the U.S. Arctic strategy will profoundly impact China's pursuit of its own interests in the Arctic region. Therefore, based on the Arctic policy released by the Biden administration, this article will summarize the features of the Biden administration's Arctic policy, evaluate the possible impact of its new strategy on China's Arctic interests, and consider China's response

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measures to the changes in the U.S. Arctic strategy through text analysis and comparative research.

2 The changes and features of the U.S. Arctic strategy

The Arctic strategy of the Obama administration was mainly embodied in the National Strategy for the Arctic Region issued by the U.S. in 2013, while the Arctic strategy of the Trump administration was reflected in two types of strategies: One is the Arctic strategy released by the Department of Defense, and the others are the Arctic strategy reports released by various military branches (Wang, 2022). Based on its assessment of changes in Arctic regional power and global strategic situation, the Biden administration has issued the U.S. 2022 Arctic Strategy, which inherits the Arctic strategy of the Obama administration and continues the Arctic strategy of the Trump administration. This strategy presents the following changes and new features.

2.1 The U.S. Arctic security strategy: emphasizing traditional security and implementing as concrete policies

Since the Obama administration released its Arctic strategy, every U.S. government has made the maintenance of national security interests a priority in the Arctic region. The Obama administration's National Strategy for the Arctic Region states at the outset that the most important priority for the U.S. in the Arctic region is to protect the American people, sovereign territory and rights, natural resources, and interests of the U.S.. The Obama administration's Arctic security perspective is more diversified, with a broader definition of security interests. Its Arctic strategy mentions that U.S. security in the Arctic encompasses a broad spectrum of activities, ranging from "supporting safe commercial and scientific operations to national defense" (The White House, 2013), covering both traditional and non-traditional security. The Trump administration narrowed the definition of Arctic security, emphasizing traditional security. After President Trump took office, the U.S. enhanced its military presence in the Arctic region, including increasing the deployment of military bases and combat forces, strengthening U.S. military exercises in the Arctic region, and rebuilding the Second Fleet to respond to China and Russia's challenges (Guo and Zou, 2019).

The Biden administration's Arctic strategy defines the national security aspect goals as ensuring security interests in "national defense and homeland security to safe commercial and scientific activities" (The White House, 2022). It can be seen that although the Biden administration's definition of U.S. national security interests is more diversified, defense has taken a more prominent

place in the United States' security concerns in the Arctic region, that is, it places greater emphasis on traditional security. The strategy also mentions managing the risk of further militarization or accidental conflict, including risks stemming from geopolitical tensions with Russia. In addition to responding to Russia as a threat, the strategy also explicitly points out that China is increasing its influence in the Arctic through various activities and actively seeking to participate in Arctic governance. The strategy believes that China's scientific activities in the Arctic region are dual-use for intelligence and military purposes, and its expansion of its icebreaker fleet and sending warships to the Arctic region constitutes a potential challenge to the U.S. position in this area (The White House, 2022).

The Biden administration's emphasis on traditional security is based on the increasingly challenging international situation. The Arctic strategy adopted by the U.S. during the Trump era reflects the intensifying great power competition in the Arctic region. A White House spokesperson for the Trump administration once stated in a brief summary of the U.S. Arctic strategy that "we also are in the process of adjusting our Arctic policy to today's new strategic realities, and those are characterized by the return of geopolitics" (The White House, 2020). The Obama administration positioned the Arctic as a "peaceful, stable, and free of conflict" region (The White House, 2013), while the Trump administration positioned it as a "potential corridor for strategic competition" (U.S. Department of Defense, 2019). The Biden administration has gone even further, emphasizing Russia's threat to U.S. security, believing that since 2013, strategic competition in the Arctic has become increasingly fierce, and "Russia's unprovoked war in Ukraine" has intensified this competition (The White House, 2022). Thus, although Democrats were dissatisfied with Trump, the Biden administration's Arctic strategy still continues the Trump administration's emphasis on traditional security in the Arctic region.

In terms of specific policies and response to Russia's Arctic military threat, the Biden administration will strengthen Arctic infrastructure and enhance its strategic deployment in the region. On one hand, the new Arctic strategy mentions that the U.S. will strengthen and utilize its military and civilian capabilities in the Arctic region to deter threats and to anticipate, prevent, and respond to both natural and human-made incidents. This includes developing communication and data networks that can operate in the Arctic; improving weather forecasting technology; enhancing emergency preparedness and satellite coverage to meet both traditional and non-traditional security needs; ensuring homeland security through effective maritime operations and emergency response, including increasing the number of U.S. Coast Guard icebreakers and improving the defense capabilities of critical infrastructure to resist the impacts of climate change and cyberattacks (The White House, 2022). It will also

strengthen the ability to understand, collect and perceive environmental information in the Arctic region to respond to air and sea threats at any time. For example, the U.S. Department of Defense is installing a remote radar system in Alaska that can detect hypersonic missiles in the future, and ensuring that satellites and ground-based radars can work together in Alaska (Judson, 2021).

On the other hand, the U.S. government is investing hundreds of millions of dollars on the west coast of Alaska to expand the port of Nome as a future deep-water hub, which is expected to cater to coast guard and navy vessels navigating into the Arctic Circle. Currently, Alaska is one of the most militarized states in the U.S.. While the U.S. condemns Russia's aggressive military expansion in the Arctic, the Pentagon also plans to increase its presence and capabilities in the region, trying to rebuild its operational capability in cold regions that was neglected during the 20-year war in Iraq and Afghanistan. The Air Force has transferred dozens of F-35 fighter jets to Alaska, announcing that the state now has the most advanced fighters in the world. Currently, over 20000 active-duty personnel are stationed at various locations in Alaska, including Eielson Air Force Base near Fairbanks, Joint Base Elmendorf-Richardson in Anchorage, and the Coast Guard Air Station in Kodiak. Additionally, Alaska serves as a critical component of the United States' missile defense system (Baker, 2022).

The U.S. has been increasingly involved in Arctic security operations and has conducted frequent military exercises with Arctic states. In 2011, the U.S. perceived a weakened threat from Russia and temporarily suspended activities of the Second Fleet responsible for North Atlantic security. However, the fleet was reactivated in 2018. During the same year, the USS Harry S. Truman aircraft carrier became the first carrier to operate in the Arctic since the end of the Cold War, participating in the largest military exercise in decades, known as Trident Juncture, held in the Nordic region. B-1 bombers, Virginia-class submarines, and the U.S. Marine Corps have also been increasingly engaged in military exercises and have had a sustained presence in the Arctic region. This is driven by the need of Arctic allies for U.S. assistance in deterring and monitoring Russia, as well as the U.S. security interest in countering the threat posed by Russia's Northern Fleet to its homeland. Following the Russia-Ukraine war, the task of guarding against Russian "aggression" in the Arctic region has become even more pressing.

2.2 The U.S. Arctic climate strategy: advancing clean energy revolution to protect the State of Alaska

During the Obama administration, climate change was a priority concern for the U.S. in the Arctic region. Climate change and environmental protection were seen as the core of the U.S. Arctic strategy. However, when the Trump

administration took office in 2016, it abandoned the climate change agenda that had been highly valued by the Obama administration. Trump himself scoffed at climate change, believing it to be a hoax, and withdrew from the Paris Agreement, hindering U.S. participation in climate change governance and environmental protection processes. The Trump administration issued an "America First" energy plan, supporting energy development in the Arctic region and repeatedly attempting to lift the bans on new oil and gas drilling in most of U.S.-owned Arctic oceans (Rosen, 2020). It announced the largest oil sale order in Alaska's history and supported oil drilling in wildlife conservation areas (Rosen, 2020). Former Secretary of State Pompeo did not discuss climate change governance at the 2019 Arctic Council Ministerial Meeting, instead focusing on competing with China and Russia, which led to the first-ever failure to reach a joint agreement at the meeting due to unilateral opposition from the U.S. (Xu, 2019).

Compared to the Trump administration's regressive policies on climate change and environmental protection, President Biden promised to restore America's credibility in climate action and signed an executive order to rejoin the Paris Agreement on his first day in office. The administration is actively participating in global emission reduction initiatives and promoting climate change action domestically. For instance, the Biden administration has proposed their plan for clean energy revolution and environmental justice, with "historic" investments in clean energy and climate research. It is expected to invest up to \$400 billion in total over the next ten years to achieve the goal of a clean energy economy and net-zero carbon emissions by 2050 in the U.S.. Facing the challenges of climate change and environmental degradation in the Arctic region, the Biden administration has decided to prioritize the most affected Arctic communities and support raising Alaska's ecological resilience, investing in scientific research and protecting the Arctic ecosystem (The White House, 2022).

The U.S. Department of Energy's Arctic strategy, which is complementary to the Biden administration's Arctic strategy, mentions that the U.S. will invest in research and utilization of clean energy in the Arctic region, including solar, wind, geothermal, ocean, biomass, and nuclear energy. The department is investing in smart grid technology to support energy efficiency and renewable energy development in the Arctic region. The U.S. Department of Energy is also studying key mineral resources in the Arctic region and evaluating the possibility of constructing micro nuclear reactors and small modular reactor systems in the Arctic region. In addition, the department is investing in improving Earth system models to better simulate changes in sea ice and the Greenland ice sheet, reducing global and regional climate uncertainty (U.S. Department of Energy, 2022).

At the same time, the position of Arctic indigenous peoples as a key concern in the U.S. Arctic strategy has

become more prominent. The Biden administration's Arctic strategy outlines the negative impact of climate change on the people of Alaska, particularly indigenous peoples, and declares that the U.S. will work with Alaska's indigenous peoples and communities to build resilience to climate change. The U.S. will increase its scientific understanding of the Arctic and effectively reduce emissions in the region to protect the Arctic ecosystem. In addition, as part of sustainable economic development, the U.S. government will consult, coordinate and jointly manage with Alaska's indigenous tribes, communities, companies, and other organizations to ensure fair participation of indigenous peoples and safeguard the livelihoods of the people of Alaska (The White House, 2022).

2.3 U.S. Arctic international cooperation strategy: cooperating with allies and partners to restore national reputation damaged by unilateralism

The 2013 National Strategy for the Arctic Region under the Obama administration aligned with the Democratic Party's liberal stance, emphasizing the strengthening of international cooperation and active participation in the Arctic's multilateral governance system. The Obama administration valued cooperation in the Arctic region, stating in the Arctic strategy that changes occurring in the Arctic region will have significant impacts on other Arctic nations and the international community as a whole, thus governance of the Arctic region is complicated and requires international cooperation. The U.S. will seek to strengthen partnerships through existing multilateral forums and legal frameworks regarding Arctic issues. And will also seek new arrangements to cooperate on shared concerns and address unique and unprecedented challenges. Additionally, the Obama administration established four major goals to promote international cooperation, including "pursue arrangements that promote shared Arctic state prosperity, protect the Arctic environment, and enhance security; work through the Arctic Council to advance U.S. interests in the Arctic region; accede to the Law of the Sea Convention; and cooperate with other interested parties" (The White House, 2013).

However, this Arctic strategy failed to provide stable guidance for United States' activities in the region. During Trump's four years in office, the U.S. not only abandoned the Arctic strategy of the Obama administration but also withdrew from global governance, and hindered the United States' participation in international cooperation in the Arctic. Although the Trump administration continued to value the collaboration with allies and partners in the Arctic, its unilateralism weakened the United States' international reputation and leadership (Xin and Zhang, 2021). This caused ongoing disagreements between the U.S. and Arctic countries, leading to centrifugal tendencies among Arctic countries.

Firstly, Trump had once expressed interest in buying

Greenland, which caused strong dissatisfaction from Denmark. The Danish Prime Minister called his view "ridiculous", and as a result, Trump postponed his plan to visit Denmark. Secondly, due to the Trump administration's implementation of trade protection policies, unilateral tariffs on steel and aluminum products were imposed on the EU, causing significant losses to steel and aluminum-producing countries such as Finland, Denmark, and Norway. This caused the trust of Nordic countries in the U.S. to sharply decline. Thirdly, Nordic countries have begun to seek small-scale independence in defense. In 2018, the five Nordic countries signed the Nordic Defence Cooperation Vision 2025, aiming to strengthen defense cooperation among the five countries. This shows that Nordic countries no longer completely trust the United States' security guarantees, so they are demanding more defense resources from the U.S. while slowly attempting to build their own defense capabilities (Wu, 2023).

The Biden administration's international cooperation and shared governance approach in the Arctic region aligns with the Arctic strategy of the Obama administration, which emphasizes the restoration of alliances and partnerships, and aims to restore the United States' reputation and leadership in Arctic affairs. In the new version of the National Strategy for the Arctic Region, allies and partners are mentioned multiple times, and in the context of the increasingly hostile relations between the U.S. and Russia, alliances and partnerships are given more security value. To support the United States' homeland defense, global military force projection, and deterrence objectives, the U.S. will cooperate with its Arctic allies and partners to enhance collective security, restrain aggression in the Arctic region, particularly from Russia, and deter potential adversaries (The White House, 2022).

The Biden administration also values Arctic allies and partners' important role in economic investment and maintaining Arctic governance mechanisms. Its Arctic strategy highlights the United States' close collaboration with Arctic allies and partners to support high-standard investments and sustainable development in the Arctic region, increase responsible Arctic investment, including investments in critical minerals, and work together to protect critical infrastructure and improve investment review for national security. Compared to the Trump administration's neglect of various governance issues in the Arctic region, the Biden administration emphasizes the maintenance of international law, rules, norms, and standards in the Arctic region and the preservation of existing multilateral forums and legal frameworks, including the Arctic Council, the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean, the International Maritime Organization's Polar Code, and the Agreement on Enhancing International Arctic Scientific Cooperation. The U.S. will also continue to promote its accession to the United Nations Convention on the Law of the Sea (The White House, 2022).

The Biden administration's Arctic strategy continues the Trump administration's concerns for traditional security and is wary of the security threat Russia poses to the U.S. in the Arctic region. It has translated the strategy into specific policies to promote infrastructure construction and strategic deployments in the Arctic region. In terms of climate change governance and environmental protection, it has returned to the Obama administration's ideas and taken more substantive measures, with greater attention paid to Alaska communities and indigenous peoples. In terms of international cooperation in the Arctic region, the Biden administration emphasizes cooperation between allies and partners in the areas of security, economy, and governance. Compared to the Obama administration's open cooperation, it has tightened up, but it is more inclusive than the Trump administration's unilateralism. The Biden administration's Arctic strategy is a "middle road" between the Obama and Trump administrations' Arctic strategies.

The evolution of the U.S. Arctic strategy is the result of various factors, both international and domestic. On one hand, the deterioration of U.S.-Russia relations following the outbreak of the conflict between Russia and Ukraine has led to an increased focus on the security of Alaska and its Arctic allies. Additionally, the Arctic region is an integral part of the U.S. global hegemony, making the U.S. highly vigilant about the activities of non-allied countries in the Arctic. On the other hand, the impact of global warming and the degradation of the Arctic environment directly affect U.S. interests. As major economies around the world prioritize emissions reduction and environmental protection, and given the Democratic Party's emphasis on climate change and environmental issues, the Biden administration has taken a more proactive stance in addressing climate change and protecting the Arctic environment.

3 Impacts of changes in U.S. Arctic strategy on China's Arctic interests

The Arctic region has significant environmental value and is an important component of the global climate system, having a profound impact on global climate change. With climate warming, significant changes have occurred in the ecological environment of the Arctic region. At the same time, the navigational value of the Arctic routes has attracted the attention of countries, and the international community is looking forward to equal participation in Arctic governance. In addition, the Arctic region has abundant petroleum, natural gas and mineral resources, and their development and utilization can bring enormous benefits to the world economy. As the global hegemonic power and a major Arctic nation, the United States' strategic shift in the Arctic will have significant implications for the region. It intensifies the risk of confrontation, conflict, and war among major powers in the Arctic, alters the cooperative processes in the region, and affects climate and

environmental governance in the Arctic. The changing Arctic strategy of the U.S. will have a profound impact on all countries involved in Arctic affairs, including China.

In the White Paper "China's Arctic Policy" released in 2018, China has set "understanding the Arctic, protecting the Arctic, utilizing the Arctic, and participating in Arctic governance" as the goal of its Arctic policy, attaching great importance to its scientific exploration rights, economic rights, and governance rights in the Arctic region (The State Council Information Office of the People's Republic of China, 2018). First, China supports and encourages scientific research in the Arctic region to better understand the geography, climate, biology, and resources of the Arctic. Second, China hopes to use Arctic waterways to improve the efficiency of global maritime transportation and promote global economic development. Meanwhile, on the premise of ensuring sustainable resource utilization, it hopes to participate in the development and utilization of Arctic resources on an equal basis. Finally, China has been working to play its role in the international community, actively participating in environmental protection in the Arctic region, reducing harm to the global ecological environment, and protecting the culture of Arctic indigenous communities. Through international cooperation, it hopes to participate in Arctic governance and promote the construction and maintenance of a just, reasonable, and orderly Arctic governance system. However, the Biden administration's Arctic strategy views China as a potential challenger in the Arctic region, which is not conducive to China's advancing its own interests in the Arctic.

3.1 China's Arctic scientific research activities may be impeded

In the context of global climate change, the Arctic, as an important component of the global climate system, is one of the most sensitive regions to climate change. Climate change leads to the melting of the Arctic ice cover, reduction in ground albedo, frequent extreme weather events, and deteriorating ecological environment (Yang et al., 2016). The climate change and environmental deterioration in the Arctic region will have an impact on China's ecosystem and economic activities such as agricultural production. The melting of sea ice will also pose a threat to China's coastal cities and infrastructure due to rising sea levels. This is one of the main reasons for China's development of scientific research in the Arctic region. However, the U.S. describes China's Arctic activities as "dual-use research with intelligence or military applications" (The White House, 2022). China's observation satellite deployment in the Arctic region is seen by the U.S. as dual-use technology for military purposes, and China's underwater mapping and acoustic research in the Arctic is seen as preparation for submarine passage by the U.S. (U.S. Department of State, 2020). The U.S. intentionally promotes the "China threat theory" in the

Arctic, changing the attitude of Arctic countries, which are important fulcrums of China's participation in Arctic affairs, thus hindering China's scientific cooperation with Arctic countries (Zhao, 2022b).

Due to the ongoing negative portrayal of China's Arctic activities by the U.S. government, most Arctic countries have heightened their vigilance regarding China's presence in the Arctic. For example, Sweden points out in its Arctic strategy that China is showing ambition in the Arctic, and China's pursuit of influence in the Arctic may lead to conflicts of interest (Yue et al., 2022). Finland believes in its Arctic strategy that China has shown increasing economic and strategic interests in the Arctic, and its Arctic goals may lead to tense situations in the Arctic region (Government of Finland, 2021). The Danish Defense Intelligence Service's 2018 report suggests that the Chinese People's Liberation Army is striving to enhance its understanding of the Arctic region (Sørensen, 2019).

On 30 May, 2017, Chinese scholars held a launching ceremony in the Greenlandic town of Kangerlussuaq for a proposed satellite dish antenna ground station for remote sensing. A group of more than 100 Chinese visitors attended the event along with two representatives of Greenlandic NGOs. However, the project did not receive approval from the Greenlandic and Danish governments and did not proceed. Marc Lanteigne, a social studies professor at the Arctic University of Norway, believes that Denmark, as a NATO member, is highly sensitive to the possibility of Greenland becoming a strategic beachhead of China (Lipin, 2022). In 2018, the Finnish Meteorological Institute and the Chinese Academy of Sciences initiated a joint research project for the establishment of the Sodankyla Joint Research Center for Arctic Space Observation and Information Services. When a three-year agreement expired, the Finnish side stated that "due to changes in the world's political situation, we were not any more so interested in deepening the cooperation activities" (Lipin, 2022). Following the outbreak of the Russia-Ukraine conflict, the Arctic Council entered a state of deadlock, and the scientific research of its working groups was also affected. In 2022, Chinese scientific research in the Arctic region and research cooperation with the U.S. and Nordic countries also stalled.

3.2 The geopolitical changes in the Arctic may hinder China's economic activities in the region

On the one hand, China is closely monitoring the navigation prospects in the Arctic region. The Arctic route may promote commercial exchanges between China and Nordic countries and facilitate China's import and export trade. Compared with the traditional China-Europe shipping route through the Suez Canal, the Arctic routes has reduced the distance between Chinese and European ports by 20% to 30%, and container ships do not need to call at multiple ports during navigation, which shortens the shipping time

by 10 to 15 days and saves time and fuel costs compared to the traditional route (Wang et al., 2017).

On the other hand, China is actively promoting cooperation with Arctic countries in the development of rich mineral, oil and gas, and fishery resources in the Arctic region. In the North American Arctic region, China has maintained good investment relations with Canada, Greenland, and Alaska (U.S.). China Investment Corporation once held a 45% stake in the Peace River Oil Partnership and about 10% stake in Teck Resources in Canada. In 2013, China acquired Nexen, a Canadian offshore oil company, for \$15.1 billion, and made investments in nonferrous metals. These investments did not attract special attention from the Canadian government at the time (Rosen, 2017). Greenland has a strong desire to have economic contact with China. China has cooperated with Greenland in the development of rare earth elements, and Shenghe Resources acquired a 12.5% stake in Greenland Minerals in 2016. The two companies agreed that Shenghe Resources could acquire up to 60% of Greenland Minerals (Volpe, 2020). Although the U.S. has low interest in economic cooperation with China in the Arctic region, Alaska hopes to establish good economic relations with China. China signed a Memorandum of Understanding with Alaska in 2017, committing to invest in the Alaska liquefied natural gas (LNG) project (Zhang, 2018).

However, since the Trump administration identified the Arctic as a key area of geopolitical competition, the U.S. has been pushing for remilitarization of the Arctic, leading to a gradual deterioration of the security situation in the region. The Biden administration's Arctic strategy indicates that this trend will continue, particularly as the conflict between the U.S. and Russia escalated following the outbreak of the Russia-Ukraine war, prompting the U.S. to increase its military deployment in Alaska, putting the Bering Strait at risk and affecting its expected traffic. If the Bering Strait remains in an unsafe state for a long time, it will undoubtedly be a major obstacle for China's future use of the Arctic route.

In recent years, the U.S. government has been hostile to China's presence in the Arctic, and Arctic countries that are U.S. allies have also adopted a follow-up strategy, showing high vigilance towards China's Arctic activities, including investments. The Trump administration was very sensitive to China's investment in Alaska and canceled the LNG project between China and Alaska in 2019 citing "national security" reasons. In 2018, the Canadian Parliament passed the Investment Canada Act, which gave the government the power to "review and prevent non-Canadian investment" and prevented Shandong Gold Group from acquiring TMAC Resources in 2020 (Wolfson et al., 2022). Although Greenland has a positive attitude towards Chinese investment and established an office in Beijing in 2021, focusing on trade, green energy, scientific research, and cultural exchange, it is also deeply influenced

by the U.S. strategy towards China (Quinn, 2021). In 2017, the then Prime Minister of Greenland flew to Beijing to invite Chinese investment in building three new airports (Hinshaw and Page, 2019). But the U.S. Secretary of Defense informed the Danish Minister of Defense of strong U.S. opposition to Chinese state-owned enterprise investment in Greenland airports. After a series of discussions, Denmark agreed to finance the construction of two airports in Greenland, Greenland agreed to finance the construction of the third airport, and the U.S. agreed to share some of the costs (Breum, 2018).

The Biden administration's Arctic strategy strengthens the blockade of China's Arctic activities, which sees China's Arctic investment intentions as expanding China's influence in the Arctic region, and therefore advocates "high standards" investment among allies and partners (The White House, 2022). For example, the U.S. has banned the use of Chinese 5G technology and prohibited Chinese communication companies such as Huawei from entering the U.S. 5G market. U.S. Arctic allies have also followed suit, replacing Chinese 5G equipment domestically. The U.S.-led malicious exclusion of Chinese Arctic investment is clearly detrimental to China's investment and cooperative development in the Arctic region.

3.3 The U.S.-led cooperation with Arctic allies and partners may hinder China's participation in Arctic governance

After the outbreak of the Russia-Ukraine war, the U.S., in conjunction with Canada, Finland, Sweden, Iceland, Denmark, and Norway, decided to revoke Russia's status as a member state of the Arctic Council and claimed to continue Arctic governance without Russia. While isolating Russia, the Biden administration has not shown a tendency to cooperate with non-Arctic countries in the Arctic region, but instead engaged in clique-style politics among Arctic allies and partners, rekindling the "Monroe Doctrine" in the Arctic region, which undoubtedly deals a heavy blow to non-Arctic countries that want to participate in Arctic governance (The White House, 2022).

Currently, China's participation in Arctic governance is seriously inadequate. In the Arctic Council, China can only participate in the Arctic affairs as an observer country, submit work reports on specific issues, and has no real decision-making power. Arctic countries, including Russia, have always tended to keep Arctic affairs within the Arctic countries, and even after the North Pole "flag-planting incident" led to intensified conflicts among Arctic countries in 2007, five Arctic countries (U.S., Russia, Canada, Norway and Denmark) still passed the Ilulissat Declaration in 2008, which reaffirmed that Arctic countries will take the United Nations Convention on the Law of the Sea as the governing rule for the region and explicitly stated that other governance systems like the Antarctic Treaty, are not needed. For Arctic countries, limiting the number of

countries participating in Arctic governance represents a way to maintain control over Arctic affairs. However, after the Russia-Ukraine war, the U.S. and its allies, for security reasons, have allowed NATO to participate in Arctic security affairs, which indirectly demonstrates the contradiction between the broad demands involved in Arctic affairs and the current situation dominated by the "Monroe Doctrine" in Arctic governance (Pan and Xu, 2021).

Nevertheless, the Biden administration's Arctic strategy still emphasizes exclusionary cooperation with allies, attempting to solve Arctic region problems through solidarity with allies and excluding the participation of non-Arctic countries such as China, which in the short term will hinder China's participation in Arctic governance. However, in the medium and long term, the current international system in the Arctic region is not conducive to the participation of non-Arctic countries in Arctic governance, and the contradiction between the global demand for Arctic governance and the U.S.-led regional cooperation in the Arctic cannot be concealed.

Although the U.S. has increased its efforts to exclude non-Arctic countries from the Arctic region, Russia is leaning towards cooperating with non-Arctic countries in the Arctic region against the backdrop of U.S.-Russia conflicts. Following the outbreak of the Russia-Ukraine war, the U.S., along with its allies and partners, imposed comprehensive sanctions on Russia. Especially in the energy sector, non-market intervention by the U.S. and European countries, as well as competition with Russia over energy pricing and market share, have put pressure on Russia to reduce its expected demand. Russia's awkward international status has also prompted it to look east and continue to develop and deepen its relationships with Asian countries. To sell more oil and gas resources to non-western countries, Russia will strengthen its energy development in the Arctic region and build more convenient transportation routes to Asia. China's funds, technology, and market will become important support for Russia's Arctic energy development, objectively increasing China's bargaining power and pushing China-Russia cooperation in various fields further, including future cooperation in oil and gas development, infrastructure construction, scientific research, technology and equipment in the Arctic region (Zhao, 2022a).

4 China's responses

Through a comparative analysis of the Arctic strategies of past U.S. administrations, this article summarizes the changes and impacts on China's Arctic interests of the Biden administration's Arctic strategy. Overall, the U.S. holds a relatively negative attitude towards China's Arctic participation, but the Biden administration also used the "three Cs" to define relations with China, that is, competition, cooperation, and confrontation. China and the

U.S. have common interests in the Arctic region. Against the backdrop of the sharp deterioration in Russia-U.S. relations, the Arctic region may provide space for cooperation between China and the U.S. To respond to the new changes in the U.S. Arctic strategy, China should take the initiative to strengthen its ties with the U.S. in the Arctic region and build strategic mutual trust with the U.S., actively participate in Arctic affairs, consolidate and expand China-Russia Arctic cooperation.

Firstly, China should endeavor to change the situation of no contact between the Chinese and U.S. governments on Arctic issues over the past three years (2020–2022). In the past three years, there has been almost no cooperation and communication between the Chinese and U.S. governments in fields such as scientific research, climate governance, and environmental protection. If the world's two largest economies continue to adopt this approach on Arctic issues, it will be extremely detrimental to the resolution of Arctic issues and the governance of the Arctic region. It is possible for the Chinese and U.S. governments to break through this gridlock in 2023, as the U.S. has slightly changed its attitude towards perceiving China as a threat in the Arctic region. China should take the initiative to build mutual trust and address concerns with the U.S. in the Arctic region, after the outbreak of the Russia-Ukraine war; the climate change in the Arctic region is the fastest among all regions in the world and, in light of the Paris Agreement on climate change, the Chinese and U.S. governments must cooperate to address it; and China has maintained cooperation with some NATO allies of the U.S. on Arctic issues.

Additionally, China should continue to participate in Arctic affairs. Firstly, China should actively engage in Arctic governance mechanisms, such as the Arctic Council, International Arctic Science Committee, and the Agreement to Prevent Unregulated High Seas Fisheries in the the Central Arctic Ocean. Secondly, China should collaborate with Arctic scientific organizations to promote climate governance and environmental protection in the Arctic. Arctic climate change impacts the future of humankind and is currently an important period for governance. China should cooperate with relevant countries, strengthen scientific research, understand glacier change patterns, and strive to promote human adaptation to climate change. Finally, China should strengthen cooperation with Arctic indigenous organizations. Arctic indigenous peoples live in the Arctic region. On one hand, they have a wealth of knowledge about the Arctic environment, on the other hand, they are also the human group most affected by climate change.

Thirdly, China needs to uphold and expand its cooperation with Russia. As the largest country in the Arctic region and the country with whom China has the most cooperation in the region, Russia is critical for China to maintain its presence in the Arctic. Since the Joint Statement on Comprehensive Strategic Partnership of Coordination in the New Era between the People's Republic

of China and the Russian Federation in June 2019, China-Russia sustainable cooperation in the Arctic has expanded to cover areas such as Arctic shipping routes, infrastructure, resource development, tourism, ecological protection, and scientific exploration. At the summit between China and Russia in March 2023, Russian president Putin announced the establishment of a joint working group to develop the Arctic routes. Due to the impact of the conflict between Russia and Ukraine on Arctic infrastructure and resource development, both China and Russia should work together to overcome difficulties, implement cooperative projects, and expand scientific cooperation on Arctic climate change.

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