

Patterns of international governance in the Arctic and China's approach

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Abstract The process of rapid change in the Arctic is creating both opportunities and challenges. This paper highlights interactions between different actors in the Arctic in response to multidimensional environmental, political, commercial, and human challenges. It shows that international governance in the Arctic can be characterized by global, multilateral, and regional patterns derived from different mechanisms such as the Arctic Council or the Ilulissat declaration platform, and these interactions are based on common acknowledgment of challenges, mutual interests, and coordinated actions. The paper also examines China's participation in international governance in the Arctic. Distinguish from non-Arctic states in a general sense, China as an important stakeholder has both the rights and the capacity to be engaged in multilevel governance patterns. The substantive contribution of China's participation—an explorer in scientific cooperation, a pioneer promoting environmental protection, a potential consumer and investor in relation to economic opportunities, and a promoter of local development—are deeply interdependent with the future of development of three governance patterns relating to international governance in the Arctic.

Keywords Arctic, governance patterns, China's approach

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1 Introduction

In recent decades, dramatic changes, mainly caused by global warming and globalization, have been evident in the Arctic. Given their global spill-over effects, various issues relating to this region have attracted widespread attention within international debates and discussions. These include research on the Arctic, potential business opportunities, Arctic governance, multilateral cooperation, and the peace and stability of the region. With the expansion of diversified actors, cross-border challenges, and increasing options for cooperation, the international community is making concerted efforts to explore various governance approaches for the Arctic aimed at resolving disputes, tackling challenges, and fostering new opportunities. The future of the Arctic does not just concern Arctic states and the well-being of this region's communities; it also concerns the international community. The cooperative engagement of relevant actors in coordinated

efforts aimed at acknowledging, protecting, and utilizing the Arctic are thus a common objective at all of these scales.

2 The multiple dimensions of the Arctic's global significance

There is no universally agreed definition of the Arctic from an environmental perspective. Widely used definitions include the area located within the Arctic Circle, the area located within the July 10°C isotherm, and the area located within the Arctic tree line. An accelerated process of ice melting that is taking place in the Arctic under the influence of global climate change has been identified as a major driving force of change in the Arctic. According to the latest statistics, the average extent of Arctic sea ice during the November in 2015 was the sixth lowest in satellite data records, and the monthly ice extent in November during the period 1979–2015 showed a decline of 4.7% per decade^[1]. Moreover, this melting trend evidences an accelerating pace. Sea ice has become thinner in recent decades, with reductions in its average thickness

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across the Arctic estimated at 10%–15%. Some areas have shown reductions of up to 40% between the 1960s and the late 1990s^[2].

Changes in the Arctic impact on the global climate and on sea levels. The melting of glaciers, ice caps, and the Greenland ice sheet have contributed to over 40% of the 3.1 mm rise in the global sea level that has been observed annually between 2003 and 2008^[3]. In general, climate change generates interactive effects on the Arctic region. On the one hand, decreasing sea ice, permafrost, and increasing freshwater entering the Arctic Ocean have significant impacts on the Arctic environment and ecosystems, and also affects the weather and climate of mid-latitude states, including China. On the other hand, these changes are increasing the possibility of additional human activities in the region, giving rise to more challenges that have a bearing on the Arctic's fragile natural environment, the traditional values and ways of life of its indigenous populations, as well as on the global climate.

Defined according to international law, the Arctic includes the northern continents, islands, waters under national jurisdiction, the high seas, and the international seabed areas of Europe, Asia, and North America. Although there is no unified international treaty that is applicable to the Arctic, this region is nevertheless regulated under general international law and conventions, including *the United Nations Convention on the Law of the Sea* (UNCLOS) and the Spitsbergen Treaty (also known as the Svalbard Treaty).

The Arctic consists of about 8 million square kilometers of continental and island areas, and its territorial sovereignty is shared by eight Arctic countries, namely, the United States, Russia, Canada, Norway, Sweden, Finland, Denmark, and Iceland. Coastal states adjoining the Arctic Ocean enjoy rights of territorial seas, contiguous zones, exclusive economic zones, the continental shelf, other waters of the Arctic Ocean comprising high seas and the international seabed area.

Non-Arctic states have no territorial sovereign rights in the Arctic. However, in accordance with the provisions of the UNCLOS, they enjoy rights relating to scientific research, navigation, environmental protection, fishing, and other rights in the high seas of the Arctic Ocean. Moreover, they enjoy rights of exploration and resource exploitation in international seabed areas and rights such as freedom of navigation in waters under the jurisdiction of individual Arctic states. In addition, states that are signatories to the Spitsbergen Treaty have been accorded additional specific rights in areas such as nature protection, hunting, fishing, mining, and industrial and commercial activities.

Although the basic political framework and legal system for the governance of this region are well established, a number of security challenges remain. A confrontational security structure inherited from the Cold War era has not yet been entirely dismantled. Moreover, in recent years, there have been new developments relating to military deployments in the Arctic. Some of these developments include unresolved disputes between Arctic states over territorial and maritime

rights. Further, non-traditional security issues such as navigational safety, environmental disasters, and organized crime at sea are affecting the peace and stability of the Arctic.

Viewed from a commercial perspective, the Arctic may become a key alternative corridor for international shipping within the global industry of maritime transport and shipping. Thus, in conjunction with the melting of sea ice, glaciers and permafrost, and increased coastal activities in the Arctic^[4], this region also has potential to develop into a transport corridor within the Northeast Passage (NEP). This corridor would include the route along the Norwegian and Russian Arctic coasts, and the Northwest Passage (NWP), passing through the Canadian Archipelago and the waters north of Alaska. The Northern Sea Route (NSR) constitutes the majority of the NEP, while their difference is that the NEP comprises the Barents Sea and provides access to the port of Murmansk and to the Atlantic^[5]. Within Russian law, NSR is formally delineated as extending from the Novaya Zhelaniya Straits to Cape Dezhnev via the Bering Strait^[6]. According to estimates, the sailing distance from the port of Yokohama in Japan via the NEP to the port of Rotterdam in the Netherlands could be reduced by more than 4000 nautical miles, which would be 37% shorter than the traditional Suez Canal route. Traveling through the NWP from the port of Seattle to the port of Rotterdam would shorten the route by 2000 nautical miles, resulting in a 25% reduction in shipping costs compared with the costs associated with the traditional route via the Panama Canal^[7].

During the Soviet era, the NSR was frequently used by Soviet shipping companies, reaching peak usage for transit and domestic shipping in 1987, with a total cargo volume of 6.7 million tons transported by 331 ships over 1306 voyages. Following the dissolution of the USSR, due to recession in demand of domestic transportation, usage of the NSR fell sharply, with the total cargo volume reduced to just 1.5 million tons in 2000. Statistical data reveal that in 2010, four transits were conducted through the NSR, with traffic increasing to 71 transits during 2013. Cargo volumes also increased between 2010 and 2013, falling slightly in 2013. However, it is noteworthy that most commercial transits are not recognized as international transits, because the origin and destination ports may both be Russian ports. In 2013, out of a total of 71 transits, 28 entailed Russian ports and 19 comprised trans-Arctic voyages, completely traversing the Arctic^[8]. Given unprecedented loss of sea ice, driven by climate change, during the last 35 years, and the expansion of international trade supported by the rise of Asian economies, navigable conditions for shipping in the Arctic have become more favorable. As a result of further development of port infrastructure, the NEP may emerge as a seasonal shipping route or even as an alternative corridor to the Suez Canal. However, because of the unstable condition of sea-ice cover, limited navigational experience in ice-covered water, and less advanced port infrastructure and navigation still pose major challenges to regular international commercial usage of Arctic shipping routes. Some scholars have argued that the

Arctic passages are unlikely to be able to compete with the Panama or Suez Canals and will not become major transit seaways. Shipping aimed at servicing local communities and exploiting local resources (destination trips) are more likely to experience real growth^[9].

The Arctic can also be considered an area for the potential exploitation of hydrocarbons. The discovery in 1962 of huge oil and gas fields in Tazovskiy District of the Soviet Union constituted a milestone in the development of the Arctic's natural resources. In 2008, the United States Geological Survey published *Arctic Resource Assessment: Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle*, which presented estimates of the total undiscovered oil and gas resources within the Arctic Circle. The sum of the mean estimates for each province indicated that 90 billion barrels of oil, 1669 trillion cubic feet of natural gas, and 44 billion barrels of liquefied natural gas may remain to be tapped in the Arctic. Approximately 84% of these resources are believed to occur in offshore areas^[10]. This survey suggested that 22% of the world's oil and natural gas may be located beneath the Arctic. The vast energy resources of Russia account for 52% of the Arctic's total energy resources, while Norway's stocks account for 12% of these resources^[10]. According to a report released by the Russian Academy of Science, Russia's undiscovered petroleum stocks are estimated to be 142 billion tons of oil equivalent (BTOE)^[11]. As of 2013, Russia was exporting 88% of its crude oil via pipelines, with a major proportion of its natural gas also being transported in the same manner. A total of 76% of its natural gas and 79% of its oil were exported to Europe, with China being the second largest oil purchasing market and Japan being the second largest consumer of natural gas. Russia has continued to expand both its pipeline networks and its seaborne capacity. While its absolute maritime transportation of petroleum has expanded, this remains a small portion of the country's overall exports^[12]. From the 1970s onward, Norway has been engaged in petroleum extraction from the North Sea. From the beginning of the current decade, it has anticipated new discoveries of petroleum in the Barents Sea^[13]. The economy of this region is evidently based primarily on natural resources ranging from oil, gas and metal ores to fish, reindeer, whales, seals, and birds. In recent decades, tourism has emerged as a growing sector contributing to the economies of many Arctic communities and regions.

Viewed from a societal perspective, the Arctic is also home to four million people, including indigenous peoples and other groups that maintain a traditional lifestyle and associated knowledge and are highly dependent on the Arctic's biodiversity and intact ecosystems. The rapid process of change that is occurring in the Arctic raises opportunities as well as challenges for populations in this region. Its abundant natural resources such as forests, fish, and wild animals play a key role in the economic development of Arctic countries. The acceleration of the ice-melting process is providing easy access to these biological resources, as

well as to non-biological resources, potentially leading to further development and growth in several areas. However, the impacts of climate change and increased offshore and onshore commercial activities have made it more difficult for indigenous peoples to maintain their traditional customs and livelihoods. In this context, political solutions should be based on a coherent and interdisciplinary analysis of gaps in knowledge. Active participation of indigenous peoples in decisions that affect them is necessary to enable them to meet future challenges^[14].

3 Arctic governance as an important component of global governance

In 1972, *The limits to growth* was published by the Club of Rome. This landmark publication explored how exponential growth interacted with finite resources. It defined five major development trends: accelerated industrialization, rapid population growth, widespread malnutrition, depletion of non-renewable energy sources, and deterioration of the environment. The book's conclusion was that if current growth trends in the world's population, industrialization, pollution, food production, and resource depletion continued unchanged, the limits to growth on this planet would be reached sometime within the following 100 years^[15]. With the deepening of globalization, which commenced in the late 20th century, global issues have posed challenges that extend beyond the institutional and ideological differences existing between individual countries, affecting the common interests of the international community and all of humankind.

The Commission on Global Governance, which is a fundamental mechanism for stimulating new ideas on governance in the post-Cold War era, released a controversial report titled *Our Global Neighborhood* in 1995. This report adopted a standard definition of governance as the sum total of the many ways in which individuals and institutions, public and private, manage their common affairs. It entails a continuing process through which conflicting or diverse interests may be accommodated and co-operative action may be taken. According to this definition, at the global level, governance must be understood as involving non-governmental organizations (NGOs), citizens' movements, multinational corporations, and the global capital market. Interacting with these are global mass media of dramatically enlarged influence^[16].

In recent years, climate change, environmental pollution, ecological imbalances, diminishing resources, and other global issues have emerged as key subjects of global governance. Addressing these issues requires a complex combination of formal and informal institutions, mechanisms, relationships, and processes enacted between and among states through which collective interests are articulated, rights and obligations are established, and differences are mediated. In this context, multiple patterns of governance at different scales, ranging from the global to the regional and sub-regional, are required for the Arctic. One scholar has

formulated a structure of Arctic governance characterized by four categories of approaches, including pragmatic, prescriptive, functional and critical, the substantive goals of these approaches differ depending on the context—the likeliness of implementation, compliance with law, efficiency and effectiveness of process, framing or re-framing of issues^[17].

3.1 Global pattern of governance

The global pattern of the Arctic's governance entails an emphasis on collective action initiated on cross-border issues concerning individuals and institutions. The involvement of governments, and of other prominent emerging non-state actors at the global level, is usually required to address the most common issues. These issues relate to local or international fishing enterprises; the role of financial institutions in the development of shipping and exploitation of natural resources; and the participation of civil society, NGOs, and groups of scientists in decision-making processes.

Thus, the structure of Arctic governance at the global level is diversified, entailing a plurality of actors. The horizontal organizational structure comprises both state and non-state actors, while the vertical organizational structure comprises central and local governments and self-governed indigenous peoples. Countries located both within and outside of the Arctic region, as well as members and non-members of international organizations, comprise a wider composite structure. Within the dual organizational structure of state and non-state actors, the question of how to define related states is particularly important. For example, the Arctic Ocean and issues relating to the Arctic's marine resources and environment come under the jurisdiction of the UNCLOS. Theoretically, all signatories to this convention may also be considered as global stakeholders of Arctic governance. However, collective action by all types of actors is only prompted by common challenges relating to issues that do not entail specific geographical or jurisdictional characteristics. Such issues include acidification of the Arctic Ocean, protection of biodiversity and maritime ecosystems, and prevention of maritime pollution.

3.2 Multilateral pattern of governance

The multilateral pattern of the Arctic's governance is based on the establishment of institutions and a consultative process evolved within an institutional framework that exhibits significant regional features^[18]. Scholars have long argued that common features facilitate increased cooperation relating to public good by increasing participation within regional institutions, building consensus, and deterring free-riding. The Arctic region is characterized by certain common features, such that any single issue can be affected by other sectors, making it difficult to identify boundaries between topics using general criteria such as protecting Arctic maritime ecosystems, reducing pollution in the Arctic, and protecting the region's flora and fauna. Hence, the successful performance of multilateral governance in the

Arctic is contingent on the ability and willingness of actors to contribute to strengthening public good through the design of multilateral, multidimensional, and multi-sectorial interactive institutions.

The history of conducting experiments relating to the formation of multilateral governance regimes in the Arctic dates back to the beginning of the 20th century. The four-nation Treaty for the Preservation and Protection of Fur Seals, which was signed in 1911, prompted multilateral involvement relating to Arctic issues. Subsequently, the Treaty of Spitsbergen, which was signed in 1920 as a component of the peace settlement established at the end of the First World War, created an international governance regime for the Svalbard Archipelago that remains in force today^[19]. The 1973 Agreement on the Conservation of Polar Bears, which is widely regarded as an important force in ensuring the welfare of polar bear stocks, is particularly noteworthy, because it was established during the Cold War era^[20]. Last, Mikhail Gorbachev's remarkable speech on international cooperation in the Arctic, delivered in Murmansk on 1 October 1987, set forth a multidimensional program entailing cooperative initiatives in the North. These initiatives included nuclear-free zones, restrictions imposed on naval activities, cooperation in developing Arctic resources, and cooperation in scientific research and initiatives to protect the environment. Moreover, they included the opening up of the NSR and recognition of the rights of indigenous people^[21]. This speech has been regarded as a symbolic turning point in the shift toward a new pattern of international relations in this region.

On 14 June 1991, representatives of the eight Arctic states met and signed the Declaration on the Protection of the Arctic Environment in Rovaniemi. This declaration signified their commitment to initiate a series of activities aimed at deepening understanding of transboundary environmental concerns in this region, and enhancing joint capabilities to deal with these challenges. The Arctic Council (AC) was established in 1996 as a major institutional outcome of the Rovaniemi process, which began with the implementation of the Arctic Environmental Protection Strategy. The AC constitutes a regular meeting mechanism comprising several working groups. To formulate a common identity, it has accepted a wide range of actors, including both Arctic and non-Arctic states, indigenous groups and other intergovernmental institutions. As a result of increasing numbers of participants, combined with increased resources of public good, the AC, like other similar regional governance mechanisms, is facing mounting difficulties relating to the efficiency of its decision making and policy implementation.

Consequently, the Rovaniemi process also entailed the creation of various codes of conduct between different actors. These codes relate to recognition of sovereignty, sovereign rights, and the jurisdiction of Arctic states in the Arctic; recognition of existing legal frameworks like the UNCLOS, which provides a solid foundation for responsible management of the Arctic Ocean; and respect for the values, interests, cultures, and traditions of indigenous peoples

and other inhabitants of the Arctic. Observers of the AC are encouraged to demonstrate political willingness as well as to contribute financially to the work of the Permanent Participants and other Arctic indigenous peoples. They are invited to support the work of the AC through partnerships forged with member states and by bringing Arctic concerns to the attention of global decision-making bodies. The first public good to be achieved through multilateral interactions between actors has been the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, which was passed during the Nuuk meeting held in 2011. This agreement was the first legally binding agreement to be formalized after the founding of the AC^[22].

The access and responsibility for observers is restrictively defined to protect exclusive interests of Arctic states. Thus, in the Nuuk Declaration^[23] and the Annexes to the Senior Arctic Official (SAO) Report^[24] issued by the AC in 2011, observers are defined as actors with limited access who can express their positions or views only through member states. They do not have any veto power on any specific topic. Decision making at all levels of the AC are the exclusive right and responsibility of the eight Arctic States, with the involvement of the Permanent Participants. All decisions taken by the Arctic states are based on consensus.

The primary role of observers is to observe the work of the AC. Furthermore, observers are encouraged to continue to make relevant contributions through their engagement primarily at the level of working groups. They are also invited to provide financial support for research projects implemented by the AC's various working groups. It is noteworthy that the amount of this funding must be lower than the contributions of member states. Observers are required to obtain the approval of the member states, among whom the presidency rotates, before submitting a written or oral opinion on related issues, and these opinions must be expressed after member states and Permanent Participants^[25]. The Rovaniemi process further clarifies the relations between Arctic states and other countries that are actors with limited access, and specifies the standards, methods, and paths to preserve exclusive rights of Arctic states.

3.3 Regional pattern of governance

State actors within geographically based institutions play a dominant role in the Arctic's governance. This pattern of regional governance emphasizes a traditional model of governance entailing jurisdictional features. The Ilulissat process, which was initiated during a ministerial meeting of the five Arctic coastal states in 2008, provides a typical example of this model. During that meeting, states discussed issues relating to climate change, the marine environment, and navigational safety. At the conclusion of the meeting, all five countries were signatories to the Ilulissat Declaration, agreeing that there was no need to develop a new comprehensive international legal regime to govern the Arctic Ocean^[26]. Coastal states are instead committed to settling possible conflicts under the legal framework of the UNCLOS.

The Arctic coastal states have claimed that the above meeting mainly focused on a legal system and jurisdiction over the Arctic Ocean. However, other Arctic states, including Iceland, Finland, and Sweden, as well as organizations of indigenous people, were not invited to participate. Topics discussed during the meeting were not confined to rights and obligations concerning the delineation of the outer limits of the continental shelf. Issues relating to the protection of the marine environment, navigational freedom, scientific marine research, and the use of maritime resources in the Arctic Ocean, which are of interest to all countries with international shipping, fishing, and scientific research capacities, were also discussed.

Furthermore, implementation of the Ilulissat process exceeds the scope of peaceful settlement of disputes relating to the extension of the continental shelf. It entails the management of fisheries beyond national jurisdictions in the central Arctic Ocean, which has emerged as a major issue in Arctic marine governance. In July 2015, the five Arctic coastal states signed the Declaration Concerning the Prevention of Unregulated High Seas Fishing in the Central Arctic Ocean^[27]. At the Arctic High Seas Fisheries Meeting hosted in April 2016, most states expressed their intention of formulating a legally binding instrument that included a commitment to regularly review the question of whether to establish one or more additional regional organizations for managing fisheries or arrangements for the Central Arctic Ocean (CAO). Such decisions would be based on the best available scientific evidence and relevant policy considerations, with the long-term objective of promoting the conservation and sustainable use of living marine resources in the Arctic^[28].

Despite the fact that the Arctic states share a wide range of common interests, potential or even ongoing competition, caused by imbalances of power and abilities between the states, are still evident in the context of agenda setting. States like Denmark and Norway that are disadvantaged in terms of their lack of comprehensive national power are very keen to cooperate bilaterally with other Arctic states, or even with stakeholders from outside the region, using external power to maintain a strategic balance with big players like Canada, Russia, and the United States. Under the regional pattern of Arctic governance, non-coastal states like Iceland, Finland, and Sweden are also in inferior positions compared with coastal states, consequently seeking power balancing approaches via cooperation with outsiders. The successful launch of the first round of bilateral talks between China and Iceland on Arctic issues in November 2015^[29] is illustrative of this trend. Iceland's president has called for an expanded role for China and other Asian countries in safeguarding the future of the Arctic, arguing that the rapid melting of summer sea ice has effects that extend far beyond the region^[30]. The Ilulissat process is seeking to establish a governance mechanism with qualified, centralizing cooperation among Arctic coastal states, facilitating internal consultations over specific maritime delimitation disputes, and barring participants from outside of the region from having exclusive jurisdictional rights.

4 China's approach to international governance in the Arctic

4.1 Self-orientation: an important stakeholder in Arctic affairs

All of China's moves relating to the Arctic have been regarded with suspicion in light of its population, which comprises one-fifth of the world's population, and its status as one of the largest consumers of oil and natural gas products. The "China threat" has become a hot topic that is highlighted in the media worldwide^[31]. It also features within scholarly arguments that have misinterpreted China's involvement in the Arctic^[32].

In fact, China is an important stakeholder in the Arctic. Geographically, China can be considered to be a "near Arctic state" as its northern region is bordered by Russia, which is one of the biggest Arctic states. The climate system of northern China is located downstream of the Arctic's climate system, and the changing natural environment of the Arctic directly impacts on China's climate and on its biological, and environmental systems. Moreover, it impacts on China's economic interests relating to its agricultural, forestry, and fishing sectors.

China has a strong interest in cross-regional and global issues in the Arctic, especially climate change, security, the environment, scientific research, usage of shipping routes, resource exploration and development, and international governance. Some of these issues have a bearing on the survival and development of humanity as a whole, and cannot be separated from the interests of all of the non-Arctic states, including China. In accordance with the provisions of the UNCLOS, China enjoys rights of scientific research, navigation, environmental protection, fishing, and resource exploration and development rights in the high seas and international seabed area of the Arctic. China is a permanent member of the UN Security Council, sharing in the important mission of safeguarding peace and security in the Arctic. Given China's irreplaceable role in international regulatory regimes, its participation is necessary for establishing an international governance mechanism for the Arctic. Globally, China's trade and energy consumption levels are high, and Arctic shipping routes and resource development may have potentially significant impacts on China's energy strategy and economic development. Some scholar has argued that a stable and peaceful Arctic is in China's interests, as a primary focus for China will be on the use of the NSR in relation to the future diversification of fuel shipments and other economic opportunities^[33]. Indeed, Chinese capital, technology, and markets can play an important role in developing the Arctic's shipping network and promoting the economic and social development of its coastal states.

Changes in the Arctic not only impact on the political, economic, social, and security interests of individual countries, but also on the integrated interests of the

international community and on future livelihoods and development for all humankind. Rapid climate change will connect the Arctic's environment, resources, and shipping routes more closely to global markets. China shares many interests and concerns relating to Arctic affairs with the Arctic states.

As an important stakeholder in this region, China can first of all assume the responsibility of an influential power in the United Nations and other international organizations, thereby contributing to governance of the Arctic environment and protection of its ecosystems. Environmental protection should be prioritized and any exploration conducted at the cost of the environment should be opposed. In practice, as a global economic power, a Permanent Member of the UN Security Council, a signatory to the UNCLOS, and an important initiator of many international environmental protection regimes, China is playing a leading and coordinating role in several areas. These include peace-keeping, rational handling of the contradiction between state sovereignty and the common heritage of humankind, balancing the interests of Arctic and non-Arctic countries, and protecting the fragile Arctic environment. In fact, Arctic governance entails not only high-level politics, but also agenda of low-politics that includes climate change and environment protection and require the provision of public good and contributions by competent actors.

A second role that China can play as an important stakeholder relates to Arctic regional organizations. Thus, it can strengthen ties and communication with governance organizations such as the AC, highlighting the importance of wider participation of non-Arctic countries in Arctic governance. In practice, China has been an active player in scientific research and cooperation relating to the Arctic. Chinese experts have also been active in the research projects of several working groups under the AC. The international scientific community values the contribution of China's scientists in addressing conundrums in polar science. China is one of the few countries equipped with the precise land, marine, atmospheric, and space technologies required to monitor and prevent disasters and thereby contribute to governance of the Arctic. Moreover, it has the necessary conditions and capabilities for providing public good needed for Arctic R&D and economic activities^[34].

A third role for China, as an important stakeholder, would be to strengthen its engagement with issues such as navigation and resource exploration to ensure that future mechanisms and arrangements take global interests into account. The development of new shipping routes brings new opportunities for China's trade and shipping. Chinese merchant ships are exploring the possibility of using Arctic sea routes^[35]. Moreover, China has been constructively involved in the formulation of the Polar Code by the International Maritime Organization (IMO)^[35].

A fourth role for China would be to provide public good that can play a direct role in fulfilling the tasks required for Arctic governance. As the largest developing country, China

is closely engaged with processes of globalization. China's funds, markets, and proficiency relating to infrastructure construction and resource exploitation are highly valued by some Arctic countries. However, 88%–95% of the Arctic's resources fall within one of five exclusive economic zones (EEZs) of the Arctic coastal states, and China has never challenged this provision within the UNCLOS. China has initiated a few business ventures in this region through partnerships forged with companies from the Arctic states. These entail relevant programs of economic development or natural resource exploitation. The Yamal LNG project typically illustrates the model of China's involvement in Arctic resource exploitation. In November 2008, Gazprom announced that it had prepared a list of potential partners for the LNG plant of the Yamal project. The project proposed establishing a liquefied natural gas plant at Sabetta, located northeast of Russia's Yamal Peninsula^[36]. This project is expected to cost \$27 billion^[37]. The planned LNG plant will have three compartments with a total annual production capacity of 16.5 million tons of liquefied natural gas^[35]. The first compartment will be operational by the end of 2017 and will operate at full capacity by 2021^[38]. Despite the involvement in this project of one of China's biggest state-owned companies, China National Petroleum Corporation (CNPC), Novatek, which is Russia's largest independent natural gas producer, has retained a 50.1% share, while the French company, Total South Africa and CNPC each owns a 20% shares in the project. China's Silk Road Fund has also signed an agreement to purchase a 9.9% share as an investment project^[39]. Thus, China is not a major player in this large-scale project, which is controlled by major investors.

4.2 A contribution based partnership of Arctic cooperation

The territorial jurisdiction and legal status of the Arctic differ entirely from those of the Antarctic. Therefore, China will not attempt to apply the provisions of the Antarctic Treaty to the Arctic, or to establish any new legal mechanism, accepting national sovereignty in the Arctic as the primary legal basis for dealing with Arctic affairs^[40]. China's position is that the AC is one of the most influential regional intergovernmental organizations dealing with Arctic affairs. It plays an important role in coordinating scientific research on the Arctic and promoting cooperation on environmental protection and the sustainable development of this region^[41].

China has proposed six policies that are specific to Arctic affairs. These policies relate to further exploration and understanding of the Arctic, protection and proper utilization of the Arctic, respecting the inherent rights of Arctic countries and the indigenous people of this region, valuing the rights of non-Arctic countries and the interests of the international community as a whole, building a multi-tiered Arctic cooperation framework to achieve win-win results, and upholding the Arctic governance system based on existing international law^[42]. In particular, China's contribution to the

Arctic can be divided into the components described below.

From the 1920s onwards, China has been engaged in its own activities relating to the Arctic. It has thus established its role as an explorer relating to scientific cooperation in the Arctic. In 1925, China acceded to the Svalbard Treaty, which marked the onset of China's participation in Arctic affairs. From the 1990s onward, China's involvement in Arctic-related activities has mainly focused on scientific research. China has successfully conducted six scientific expeditions^[43] and has established the Arctic Yellow River Station, thus instituting a basic Arctic observational system. China joined the International Arctic Science Committee (IASC) in 1996, and its experts have been active in the research projects of several of the working groups under the AC.

China has emerged as a pioneer in protecting the Arctic's environment and ecosystems. As the largest developing country, China actively participates in global processes for addressing climate change and is the first developing country to have implemented a national climate change program. Moreover, China has joined the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity, and other international conventions associated with ecological and environmental protection of the Arctic. China can contribute to protecting the Arctic environment by reducing its gas emissions. In fact, in 2014, China spent around \$115 billion on solar and wind power, as well as other forms of renewable energy, putting it far ahead of the European Union and the United States in terms of its investments in this area^[44]. Moreover, China intends to cut its greenhouse gas emissions per unit of gross domestic product by 60%–65% from their 2005 levels according to a plan submitted to the United Nations ahead of the 21st session of the Conference of Parties (COP21), a UN climate change conference held in Paris in 2015^[45].

China is also a *potential consumer and investor* in relation to the economic development of the Arctic. As a potential user of Arctic shipping routes, China's commercial activities in the Arctic will be strictly based on international law and market and trade rules in accordance with the domestic regulations of the coastal states, as well as scientific assessments and environmental standards based on state of the art knowledge. Moreover, China will collaborate with other countries in putting the concept of sustainable and green development into practice. China has constructively participated in the formulation of the Polar Code by the IMO. Although shallow waters limit vessel size and ice movements lead to unpredictable navigation, the NEP is a less reliable seasonal alternative to the Suez Canal, especially for container transport, but it still has considerable potential in the short term^[46]. Chinese merchant ships are currently exploring the possibility of using Arctic sea routes. Thus, the China Ocean Shipping (Group) Company (COSCO) is actively investigating the feasibility of operating regular services on the northern route^[47]. China's mature external trade market will drive the development of Arctic shipping, leading to

increased shipping traffic along the NEP.

China can become a *promoter* of the development of indigenous communities. A multilevel stakeholder should pay particular attention to the social responsibilities entailed in its cooperative initiatives in the region while being engaged in economic as well as scientific and technological cooperation with Arctic countries. By doing so, it demonstrates its humanitarian and environmental concerns relating to its investment and cooperation in host countries. China has been very attentive to the development of indigenous Arctic populations. In 2013, China hosted the fifth World Reindeer Herders Congress, seeking through appropriate programs to provide financial support for capacity building of the indigenous people of this region.

4.3 Multilevel engagement in Arctic governance process

At the global level, China is active participating in the rule-making process regarding the global environment, climate change, and international maritime affairs, while fully complying with its international obligations. China has consistently sought to strengthen cooperation with international organizations and countries on environmental issues, actively promoting energy conservation and engaging in the global climate change agenda. It adheres to the principles of common but differentiated responsibility, fairness, and capabilities in dealing with climate change, and encourages developed countries to fulfil their commitments under the UNFCCC. China is also constructively engaged in the work of the IMO to ensure the safety of maritime navigation in Arctic waters and the protection of the region's marine environment.

China is also actively participating in intergovernmental regional mechanisms relating to the Arctic. As an observer of the AC, China recognizes the active role that the AC has played in Arctic affairs, and has abided by the commitments it made during its application for observer status. It has supported the AC's work by sending its experts to participate in the AC's working groups and task forces. Moreover, it has respected agreements adopted by the AC such as the *Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic*, *Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic*, and Agreement on Arctic scientific cooperation as a third legally binding document will be signed at a ministerial meeting of AC in May 2017. China also supports cooperation within the framework of the IASC.

At the multilateral and bilateral levels, China has been actively promoting pragmatic bilateral cooperation in the Arctic, especially efforts relating to climate change, scientific research, environmental protection, shipping routes, resource development, cultural exchanges, personnel training, and other fields of exchange and cooperation. China has established bilateral consultative mechanisms with all of the Arctic states. Commencing from 2010, China initiated a Dialogue on the Law of the Sea and Polar Affairs with

the United States, with these countries having engaged in seven rounds of talks to date. Commencing in 2013, three rounds of talks have been held relating to the Sino-Russian Dialogue on Arctic Affairs. In 2012, China and Iceland signed an agreement on cooperation in the Arctic. This is the first special agreement on Arctic affairs that China has entered into with an Arctic state.

China attaches great importance to cooperation among non-Arctic states. Consequently, it has initiated bilateral dialogues on the law of the seas and polar affairs with the United Kingdom and France, respectively. In 2016, China, Japan, and South Korea held the first round of high level talks on Arctic affairs, sharing policies, practice, and experience in areas including Arctic international cooperation, scientific research, and business cooperation.

In support of multi-stakeholder Arctic governance, China has been actively participating in the Arctic Circle and other non-governmental platforms. It has established the China-Nordic Arctic Research Center to promote exchanges and cooperation among all stakeholders in the Arctic. It also supports the participation of enterprises and research institutions in Arctic governance according to their own advantages, encourages scientific research institutions to carry out exchanges and engage in dialogue with foreign think tanks and academic institutions, and supports the participation of enterprises in the commercial development of the Arctic.

5 Conclusion

Against a background of ice melting in the Arctic, accelerated by global warming as well as economic globalization, the strategic and economic significance of the Arctic, as well as its importance relating to scientific research, environmental protection, navigation, and resources have rapidly increased, attracting the attention of the international community. Multi-level patterns of international governance are evidently required in this region. At the global scale, this entails an emphasis on the collective action of individuals and institutions. The expansion of diverse non-state actors and institutional arrangements has begun to change the dynamics and outcomes of Arctic politics. New actors in areas such as business, civil society, and science now play a more prominent role internationally as well as in multi-actor and multilevel governance networks. The Rovaniemi process reflects a multilateral pattern of governance that seeks to forge a common identity across a wide range of actors. The AC is making efforts to become a more institutionalized platform that promotes legally binding outcomes, and is attempting to secure its position as a key intergovernmental forum on environmental preservation and sustainable development of the Arctic. The Ilulissat process reflects a regional pattern of governance entailing centralized cooperation among state actors, facilitation of internal consultations, and exclusive participation on specific issues. However, disagreements relating to the establishment of a suitable mechanism and deviation from responsibilities and interests are pending issues. Governance of the Arctic extends

beyond the scope of issues arising between individual Arctic states and regions and involves the interests of non-Arctic states and the common interests of the international community.

As an important stakeholder and contribution based partner, China is actively participating in all-levels of the Arctic governance process. These relate to its responsibility as a major power within international organizations, combating climate change and enhancing the protection of ecosystems, playing a positive role in existing regional platforms such as the AC, becoming a major player in formulating rules for Arctic shipping, being a potential consumer and investor regarding economic opportunities, and promoting local development. China's participation in the Arctic is guided by the rules regulating activities in this region. It adheres to the existing framework of international law, including the Charter of the United Nations, the UNCLOS, relevant conventions on climate change and the environment, and rules formulated by the IMO. It also respects regional agreements between Arctic states and supports global, multilateral, regional, and bilateral patterns of governance, dealing with various traditional and non-traditional challenges and seeking to establish a healthy, orderly, fair, and rational system of governance in the Arctic. Internally, China is working to regulate its domestic affairs and its activities in the Arctic, adhering to existing laws and regulations.

With the further expansion of the impacts of climate change, and of technological innovations, China's contributions to international governance process in this region will be closely connected with the future development of three governance patterns, depending on developing confidence-building measures among different actors, acknowledging the rights and duties of different states, enhancing the flexibility and adaptability of approaches to governance, joint exploration, and enhancing understanding and utilization of this region.

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