

Governance of the Global Commons: The Deep Seabed, the Antarctic, Outer Space

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Bo Min Kim Research Fellow, Cooperation Policy Team, Department of International Cooperation Policy
(bmkim@kiep.go.kr)

1. Governance of the Global Commons

The global commons are resource domains or areas which no nation exerts sovereignty over. Three typical global commons include the deep seabed, Antarctica and outer space. These domains are considered important due to not only their abundant resources, but also for the security of mankind. These commons, however, have been free of any national or international regulation. The absence of exclusive property rights could lead to economic inefficiency and international conflicts. This inherent problem is put forth by Garrett Hardin in his famous article. In order to avoid such problems,

many theories or principles are postulated. One of these principles is the principle of the common heritage of mankind (CHM). It has been accepted and applied to the global commons since it was incorporated into the United Nations Conventions on the Law of the Sea (UNCLOS). With improving technology and the emergence of developing countries, the application of the CHM has been a source of controversy. It has therefore become necessary to suggest new principles for the governance of the global commons. This article looks into the common properties of the global commons and the governance they are currently under.

A. Deep Seabed

Governance of the deep seabed is supervised by the United Nations Convention on the Law of the Sea (UNCLOS) and the International Seabed Authority (ISA) which was founded on this Convention. The path leading to the conclusion of UNCLOS was a struggle of conflict and balance between the two contrasting perspectives of freedom of the seas and common heritage of mankind, and this was clearly exposed in the process of founding the ISA. Enacted in 1973, it was only after a long-term dispute that UNCLOS took effect in 1994. This was made possible after the demands of developed nations were reflected in an implementation agreement added in 1982. As per Part XI of UNCLOS, the ISA was established and to this day is managing regulations on all resource exploitation activities in the deep seabed area and on environmental conservation.

As of yet, resource investigation and exploitation of the deep seabed area is still in its early stages and progress-wise has not properly ventured beyond resource investigation. Resource investigation can be categorized into prospecting, which is non-exclusive, and exploration, which is granted exclusive rights. One round of exploration takes place in two mining areas, and the explorer can then claim exclusive rights over one mining area. Meanwhile exploitation, the ultimate goal of resource investigation and exploitation, has not been initiated as of 2013 and is foreseen to begin around 2016. Mining exploitation, however, does not yet have a defined set of detailed regulations. Given the many concerns over hasty exploitation at a point when investigative research on deep seabed environment and environmental impact assessment on resource exploitation is insufficient, it is timely and necessary to pose further measures that seek sustainable development.

While a large number of countries are involved in the governance of the deep seabed, only a limited few are actually capable of exploration and exploitation. Among these few, of particular note is the US. The US is not yet a party to UNCLOS, and instead applies domestic law on the approval of deep seabed exploration and exploitation. Nonetheless, the mining areas being explored or waiting to be explored by the US do not overlap with the areas sanctioned by the ISA, and the ISA also seems to be tolerating the US's exploration projects. Meanwhile Japan and the EU are actively participating in ISA activities after securing the condition that developed countries will be guaranteed pioneer investor and consumer status. These countries were eager to accede to UNCLOS as, unlike the US, they have large stakes in not only the deep seabed but also in their territorial waters and exclusive economic zones. Although there was conflict with developing countries in discussions over the deep seabed, developed countries managed to reflect their opinions over the course of long-term negotiations. They have thus formed a multinational consortium and are carrying out resource exploration and exploitation under ISA governance. While in the early days of UNCLOS China represented developing countries who were in favor of collective joint management, after reforming and opening its economy the country has shifted to underlining market principle allowing freedom of resource exploration and exploitation. China has been especially keen in exploration and exploitation, securing exploration licenses to all deep seabed mineral resources recognized by the ISA.

B. Antarctica

Governance of Antarctica is managed by the Antarctic Treaty System (ATS). The system's main pillar is the Antarctic Treaty, which was signed in 1959 as a tacit agreement between

the US and the Soviet Union during the Cold War, without involving UN discussions. Unlike deep seabed governance, governance of the Antarctic is defined by its denial of dominium and exclusive exploitation/exploration rights to any country. The Protocol on Environmental Protection to the Antarctic Treaty, which was signed in 1991 and came into force in 1998, explicitly prohibits the exploitation of mineral resources.

In contrast to deep seabed governance, governance of the Antarctic took shape in a fairly simple manner. US and Soviet Union efforts to avoid further military collision under the cold war system as well as the harsh geographic/natural conditions in the Antarctic made it difficult to discuss ownership or exploitation. Governance establishment was also made easy thanks to the similar level of economic development among parties to the Antarctic Treaty, which served as the basis for the stable operation of the current system. Citing grounds of geographic proximity and exploration history, seven countries including the UK claimed dominion to the Antarctic, but effective leadership from the US enabled the conclusion of the Antarctic Treaty, including conditions that such claims be put to a standstill. Along with this, the exploitation of mineral resources was also completely prohibited.

Although mineral resources activities are outright prohibited, exploration is permitted under the Antarctic Treaty System for scientific purposes. So while this has led to active investigation and research into living resources in particular, it is still being disputed as to how the benefits of such activities should be shared.

For while scientific research activities are governed under the Antarctic Treaty System, ensuing commercial benefits are not covered by this framework. Another controversy related to scientific research activities would be

cooperation among national research stations. A common shipping system for supplies should be set up within the Antarctic Peninsula, which has a concentration of research bases. It is also important to create a system that encourages cooperation among national research bases to facilitate the storage and use of supplies like food and daily necessities that can be shared.

A top priority would be to look at how climate change affects the Antarctic. A more urgent issue at this point than discussions on the distribution of competitive goods like resources would be an examination of externalities as a result of change in the Antarctic. Unlike the melting Arctic, which presents direct economic opportunities like newly opened seaways, melting in the Antarctic may damage the common heritage of mankind by destroying the ecosystem neighboring the South Pole. Some point out that Antarctic melting may accelerate resource exploitation, but the severity of rising sea levels caused by the thawing of glaciers largely outweighs any potential benefits that resource development in the South Pole may bring. Thus, on the topic of the Antarctic, more attention should be paid to externalities on the continent as opposed to distribution of competitive goods.

It is noteworthy that governance of the Antarctic, due to the continent's unique traits, prohibits resource exploration and exploitation altogether rather than attempting management. There is also a focus on reducing externalities like melting induced by climate change. As mentioned, investigation and research is permitted for scientific purposes, and this comprises the main activities of parties to the Antarctic Treaty System. All participating countries, from early members like the US to late-comers like Korea, place a priority on investigation and research activities with scientific purposes. A question to be considered within

the Antarctic Treaty System would be whether these research activities will be able to benefit not only developed, but also developing countries.

C. Outer Space

Outer space covers a much more comprehensive and vast domain than the deep seabed and the Antarctic. This is because within space, all objects are moving relative to earth. As of now, there is no existing international consensus on the boundary between space and airspace. On this topic, national security is also more emphasized than for the two global commons mentioned above. Thus, compared to these global commons outer space governance is actually uninfluenced by regulations such as prohibition of military use. Contrary to the above domains, as of yet there is no proper institution or system that can solve disputes arising from outer space activities or exercise regulation on space activities by nation. All this is because outer space governance has been unable to keep up with the extremely fast pace of space technology development.

The history of outer space governance dates back to the founding of the UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS), officially set up in 1959. After UNCOPUOS discussions led to the entry into force of the 1967 Outer Space Treaty, the 1968 Rescue Agreement, 1972 Space Liability Convention, 1976 Registration Convention and 1979 Moon Treaty followed suit. Back when the 1967 Outer Space Treaty was formed, the US and Soviet Union were the only countries capable of outer space activities. With the rapid advancement of such activities, however, in the form of launcher development and so on, treaties adopted at a later stage experienced considerable difficulties. The Moon Treaty, in particular, which included the common heritage of mankind principle, was

not ratified by countries actually engaged in outer space activities. Since the Moon Treaty, four declarations on satellites, nuclear power use in space, international cooperation in outer space taking into account the needs of developing countries, etc. were adopted. Despite this, there is currently no single convention on outer space activities - in contrast to the deep seabed and the Antarctic - and the establishment of such a convention is still being actively discussed.

There are three practical, important issues being discussed in outer space governance. First would be the definition and boundary delimitation of space. Being related to the definition of airspace, space boundary delimitation is also directly linked to security issues. As a rule, space and the celestial body are domains that can be freely entered without exercising national sovereignty. The second issue would be competition among limited goods including satellite frequency and orbit allocation, and a third issue is externalities like space debris. There are ongoing discussions related to these three issues, closely linked to private sector usage of outer space, but conflict and discord divides countries actively engaged in space activities and those, mostly developing countries, which are not. While the former lean toward the liberal use of resources and self-regulation by nation, developing countries show a preference for equitable use - regardless of technology advancement levels - of resources and principles bound by international law.

The allocation of radio spectrum and geostationary satellite orbits is not covered by outer space governance as defined by the Outer Space Treaty, but is instead governed by the Radio Regulations - an international treaty - and the International Telecommunication Union (ITU), the relevant UN specialized agency. These governing bodies serve as the basis for

discussions on the commercial use of radio spectrum and geostationary satellites. With the growing number of such man-made commercial objects in space, the increase of space debris is also becoming a concern. A sudden rise in disputes associated with space debris is proving to be an obstacle to the use of space orbits. To tackle this issue, UNCOPOUS adopted space debris mitigation guidelines, based on which countries leading space development activities are submitting reports to the UN on space debris. This will also lay the grounds for discussions on binding space debris mitigation measures, which are expected to be at the center of discussions under a new space governance regime.

The last issue linked to outer space governance would be the enforcing mechanism. The power to physically control outer space activities should come from the involvement of a large number of countries. Since, however, space activities are concentrated in the US, Russia and China, it would be realistically unfeasible to apply enforcing mechanisms that undermine the economic and security benefits arising from space development activities in these countries. This is why, unlike the other two global commons, binding space governance founded on a single treaty or convention on space is still under discussion.

2. Comparing Governance of the Global Commons

It was since the 1950s that the three global commons discussed above started being perceived as commons instead of ownerless land (*terra nullius*). Following science and technology advancement since the mid-20th century, mankind started to appreciate ownerless land like the deep seabed, the Antarctic and outer space as land with potential resources to be exploited. In contrast to rivers or air, which

circulate and move, the deep seabed, the Antarctic and outer space are fixed in place like land. Thus, major developed countries with unmatched technological and economic power held the absolute advantage in entry and resource exploitation. For if any part of the deep seabed, the Antarctic or outer space remained ownerless, the first country to occupy the area would gain exclusive rights to exploitation. To prevent the concentration of such rights to certain world powers, and to prevent related conflict to be ignited under the cold war system, third-world developing nations worked to create a joint management system of global commons outside national jurisdiction - i.e. the deep seabed, the Antarctic, outer space - under the global governance regime of the UN. Such efforts helped the deep seabed, the Antarctic and outer space to be perceived as non-exclusive global commons. Still, the resources situated in these domains are limited and take on a competitive nature, which may cause problems like the “tragedy of the commons.” Thus, this calls for a global governance system that can prevent such troubles and supervise all three global commons.

A comparison of these three global commons with others like international waters or the atmosphere reveals that these three overlap in terms of governance systems. Global commons like international waters or the atmosphere are in close proximity of our lives and are available for daily access and use.

Therefore, the corresponding governance regulates how these commons are used as well as allocation or cooperation measures. On the contrary, for the deep seabed, the Antarctic and outer space, we have infinitesimal information on what resources there are and how they should be exploited. Although the past 50 years have witnessed exponential technology development and a vast volume of research and exploration based on this technology, even

technology powerhouse are not properly informed on the three global commons.

Since it is essential to gather and share such information, it will be necessary to build governance that can efficiently guide research and exploration activities. Given such attributes, further attention is being focused on how

global governance (of the deep seabed, the Antarctic, outer space) can help more effectively carry out research and exploration activities, and how to share the information gathered from these activities between developed and developing nations.

Table 1. Comparing Governance of the Global Commons

	DEEP SEABED	ANTARCTIC	OUTER SPACE
Key Decision-making Mechanism	International Seabed Authority (ISA)	Antarctic Treaty Consultative Meeting (ATCM)	UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS)
Key Decision-maker	ISA Board	Antarctic Treaty Consultative Party	UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS)
Relevant International Law/Treaty	1.UN Convention on the Law of the Sea (UNCLOS) 2.ISA mining regulations	1.Antarctic Treaty 2.Protocol on Environmental Protection to the Antarctic Treaty / Madrid Protocol 3.Convention for the Conservation of Antarctic Marine Living Resources	1.Outer Space Treaty 2.Rescue Agreement 3.Space Liability Convention 4.Registration Convention 5.Moon Treaty
No. of Parties to Treaty	165 parties to UNCLOS (36 Council Members)	50 parties to the Antarctic Treaty (29 to the Antarctic Treaty Consultative Party)	102 parties to the Outer Space Treaty (72 Member States of UNCOPUOS)
Accession Requirement Levels	LOW	HIGH	HIGH
Monitoring Agency	ISA	National regulating authority	National or UN outer space organizations (NASA, JAXA, ESA)
Exploration & Exploitation Levels	Mineral resource exploration: HIGH	Mining resource exploration: Exploitation prohibited Marine living resources: Within quota Other living resources: HIGH	Geostationary satellite orbits / Radio spectrum: HIGH Alien resources: Very low
Resource Allocation	First-come first-served	Mineral resources: Prohibited Marine living resources: Quota Other living resources: Non-regulated	Geostationary satellite orbits / Radio spectrum: Varied between allocation and first-come first-served
Sustainable Development Measures	Designated as special environmental care zone in environmental impact assessment	Resource exploitation prohibited Total allowable catches (TACs) set as catch limits for fish	Ongoing discussions on securing safety for satellite orbits by reducing space debris

Pioneer-Latecomer Dynamics	Shifting from latecomers to pioneers	Pioneers (Low participation from latecomers)	Pioneers
Necessary Cooperation with Other Countries for Exploitation	NORMAL	HIGH	HIGH
Private Sector Participation	HIGH	LOW	LOW
Relevant International Agencies, Treaties, Institutions	UN Convention on Biological Diversity (UNCBD) International Maritime Organization (IMO) UN Food and Agriculture Organization (FAO) Marine Protected Areas (MPA)	Marine Protected Areas (MPA) Antarctic Specially Protected Area (ASPA) Antarctic Specially Managed Area (ASMA) International Association of Antarctica Tour Operators (IAATO) Antarctic and Southern Ocean Coalition (ASOC) Scientific Committee on Antarctic Research (SCAR) Council of Managers of National Antarctic Program (COMNAP)	International Telecommunication Union (ITU) Conference on Disarmament (CD)

Source: MOON Jin Young et al. (2013), "A Study on the Governance of the Global Commons", pp.190-191.

From the summaries of each global commons seen above, it can be deduced that the governances of these three domains have common features, but also display considerable differences. Such differences can be summarized and organized as seen in Table 6.1. The first difference worth noting is the dynamics between leading nations and latecomers. In the course of formulating governance for the deep seabed, latecomers took the reins. Later on, the establishment of the ISA and of detailed regulations on deep seabed exploitation required compromise between the two different groups. Since then, exploration of mineral resources has been led by developing countries, while the ISA has prepared a system that encourages fair participation in deep seabed activities from both pioneers and latecomers.

On the other hand, governance of the Antarctic experienced hardly any conflict between pioneers and latecomers. After the Antarctic Treaty System emerged from leading efforts

by the US and the Soviet Union - both powerful nations in the 1950s - to invalidate any dominium claims on the Antarctic, nations mostly at the forefront have been those who have base stations or are able to carry out science activities on the continent. This is because key activities in the Antarctic are research and exploration, after exploitation activities were fully prohibited by the Antarctic Treaty.

Meanwhile, in the early stages of outer space governance there were hardly any countries able to launch a man-made object into space, and therefore governance was centered on technology leaders. A boost in space activities led latecomers to advocate the fair, equal use of space resources, and also to make outer space a common heritage of mankind through the Moon Treaty. All technology leaders and other potential leading nations, however, refused to ratify the Moon Treaty.

Especially after the collapse of the Soviet Union, the US has been maintaining a dominant position in the outer space arena, and is also opposing the formation of an international institution that could restrict its space activities.

For these reasons, outer space governance is different from the other forms of governance in that there is no single treaty that manages space exploitation, and thus no single organization that supervises space activities. 