NANSHAN
MODEL UNITED NATIONS CONFERENCE 2025

Background Guide

The Committee on the Peaceful Uses of Outer Space

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Welcome Letter

Dear Esteemed Delegates,

Welcome to the English division of NanShan Model United Nations on the topic of “The international norms and regulations for the amicable use and security of outer space” in The Committee on the Peaceful Uses of Outer Space(COPUOS). As the chair of our committee, I am honored to oversee our discussions on this critical topic.

During this conference, we will delve into pressing issues. As delegates, you are tasked with representing your countries' interests while striving for solutions that benefit humanity as a whole. Your insights, negotiations and collaborative spirit will be crucial in shaping international norms and regulations that promote the amicable use and security of outer space.

I encourage you to engage actively, listen attentively, and negotiate thoughtfully. The success of our conference depends on your dedication and commitment to finding common ground. On behalf of the entire Dais, I extend my heartfelt welcome and best wishes for a productive and inspiring conference.

Sincerely,

Abby Yang Amy Hsu Aaron Pu

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Introduction to the Committee

The first human-made satellite orbited the Earth in 1957, marking the dawn of the space age. This milestone not only represented the first use of satellite technology for scientific advancement but also the beginning of human efforts to ensure the peaceful uses of outer space.

Shortly after the launch of the first artificial satellite, the Committee on the Peaceful Uses of Outer Space (COPUOS) was established in 1959 by the General Assembly. With two subsidiary institutions—the Scientific and Technical Subcommittee, and the Legal Subcommittee, both established in 1961—the committee has overseen the exploration and use of space since then[1].

Through the establishment of five treaties and five principles, the Committee has pushed the space agenda at the global level. These agreements cover a wide range of issues, from the peaceful use of space and the prohibition of weapons of mass destruction in space to the rescue of astronauts and the liability for damage caused by space objects. Every year, the Committee discusses international cooperation in space exploration and the application of space technology to meet global development goals, playing a pivotal role in the evolution of humanity[2].

"To Infinity...and beyond!"—Buzz Lightyear, a character from the animated series *Toy Story*.

As we venture to infinity and beyond, space development promises not only scientific and economic benefits but also the inspiration for future generations to dream bigger and reach farther than ever before. However, these possibilities come with risks. The rapid pace of space exploration presents challenges such as space debris management, the potential for international conflicts over space resources, and the ethical implications of extraterrestrial colonization.

In this COPUOS conference, delegates will confront challenges related to the utilization of outer space. While considering the universal benefits, delegates must also account for the interests of the countries they represent and the positions of COPUOS itself.

[1] Robert.wickramatunga. (n.d.). United NationsOffice for Outer Space Affairs. COPUOS. https://www.unoosa.org/oosa/en/ourwork/copuos/

[2] Robert.wickramatunga. (n.d.-b). United NationsOffice for Outer Space Affairs. COPUOS History. https://www.unoosa.org/oosa/en/ourwork/copuos/history.html

Statement of the Problem

On April 24, 2024, the Security Council voted on a draft resolution(S/2024/302) aimed at regulating the arms race in outer space. Proposed by Japan and the United States, the draft reaffirmed the obligation to fully abide by the Outer Space Treaty, prohibited the deployment of nuclear weapons and any other kinds of weapons of mass destruction(WMDs) around Earth, and promised effective provisions for verification[3]. However, the Russian Federation strongly opposed it, calling it "a cynical ploy" to serve political purposes and tarnish Russia's image.

Before taking a vote on the draft resolution, the council voted on the amendment proposed by Russia and supported by China to ban all types of weapons of mass destruction, aiming for a more comprehensive and balanced resolution. However, the amendment was rejected by 7 for 7 against and 1 abstaining. With that being said, the draft resolution remains intact and then put into a vote. In the end, it received 13 votes in favor, 1 against (Russia), and 1 abstention (China), failing to pass due to Russia's veto as a permanent member of the Security Council.

The point of contention lies in the differing perceptions among countries regarding the positioning of this resolution. Some countries believe that the resolution should focus solely on upholding the Outer Space Treaty, while others argue that more comprehensive measures should be taken to prevent an arms race in space.[4] Another issue is the mistrust between Russia and Western countries like the United States. Instead of focusing on how to take further steps, building mutual trust is seen as more crucial for the progress of space regulations.

In recent discussions surrounding space security, it has become increasingly evident that space issues are often entangled with political intention, leading to stalemates that undermine the broader vision of amicable and equitable use of outer space. For instance, on May 20, 2024, a resolution proposed by Russia failed, just as a similar U.S.-backed resolution had earlier. Although the two resolutions differed only subtly, mutual boycotts ensued, with countries prioritizing political posturing over genuine cooperation. This impasse highlights the risk of sacrificing the shared goal of peaceful space exploration and the potential for an international consensus that ensures equal access to space for all nations.

As space becomes an essential domain for both public and private sectors, and a novel one for the future survival of humanity, the absence of enforced, universally accepted regulations could lead to the destruction of space environments.

Furthermore, achieving a consensus on space issues requires the involvement of all UN members, not just technologically advanced nations. Restricting discussions with the Security Council risks creating gaps in information exchange and representation, unlike the more inclusive and comprehensive dialogues held in the

[3] Vote on a Draft Resolution on the Prevention of an Arms Race in Outer Space. (2024, May 17). SECURITY COUNCIL REPORT. https://www.securitycouncilreport.org/whatsinblue/2024/05/vote-on-a-draft-resolution-on-the-prevention-of-an-arms-race-in-outer-space.php

[4] S/PV.9616

General Assembly. Therefore, new space regulations should be brought about to reflect the dynamics of modern space activities, fostering an open, equal, and rational international dialogue.

On the other hand, according to an annual report by the United Nations Office for Outer Space Affairs (UNOOSA), some African countries, often seen as outsiders to space issues, are deploying satellites and related technology with UNOOSA's assistance[5]. This demonstrates that space development is a right for all nations, not just those with advanced capabilities.

Besides access rights, several other issues have arisen, including the legal validity of international laws, the use of armed force, and long-term sustainability in outer space. Despite COPUOS concluding five international treaties and sets of principles on space activities, the rejection of two draft resolutions in the Security Council indicates unclear mandates and legislative statuses, often misinterpreted due to political stances.

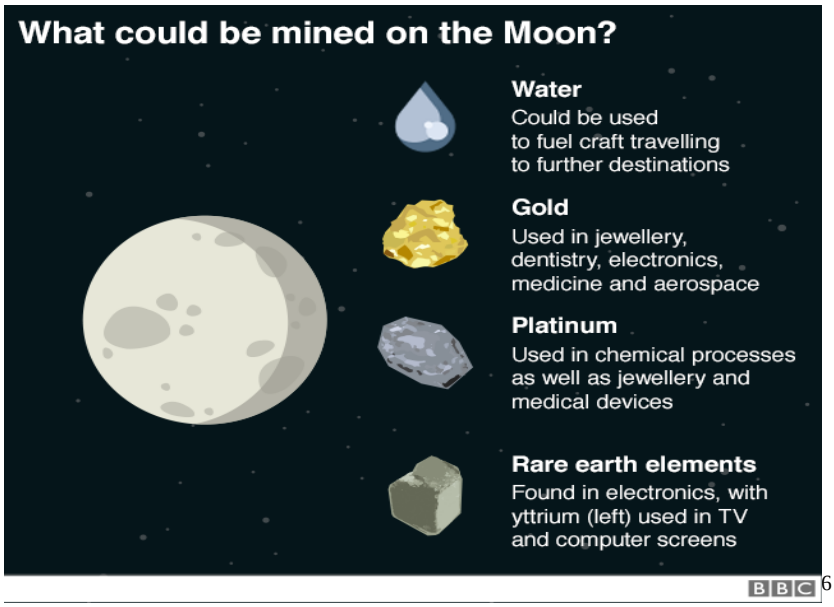
Given the increasing prominence of this field, it is imperative that we engage in discussions and build consensus to address potential issues, promote peaceful and safe use of outer space, and guarantee a sustainable future for generations to come.

[5] ST/SPACE/90

History and Discussion on the Issue

Equitable Utilization of Space Resources

As we venture into the realm of the unknown, we gain not only knowledge but also open access to incredible resources, such as solar energy and minerals. This journey into space offers us the potential to harness energy directly from space, providing an abundant, renewable energy source that can significantly reduce our dependence on fossil fuels and help combat climate change. Additionally, the extraction of minerals from asteroids and other celestial bodies can supply us with essential materials for technological and industrial advancements. However, to ensure the equitability of utilization, there are still a few aspects that we should consider, including the two sub-sub-topics below: *International Legal Framework and Cooperation Mechanisms* and *Infrastructure Development and Technology Sharing*.



[6]

- Infrastructure Development and Technology Sharing

Including satellites, space stations, telescopes, and missions, space infrastructure enables future development and progress. With these infrastructures, nations can ensure scientific development for future generations. However, space is a realm full of secrets; humanity has yet to fully understand its complexities. Without global information exchange, the infinite potential of development could be severely limited. Cooperation and sharing of knowledge across nations are essential to unlocking the infinite possibilities that space exploration offers, thereby maximizing the benefits for all of humanity.

[6] Parkinson, J. (2019, January 20). *Can anyone "own" the Moon?* BBC News. https://www.bbc.com/news/science-environment-46877417

- International Legal Framework and Cooperation Mechanisms

To achieve the goals of equitable utilization, establishing an international cooperation framework is necessary. Currently, COPUOS adheres to the "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies" (Outer Space Treaty)[7] as the guiding principles for this issue. This treaty, which serves as the foundation of international space law, highlighted that space exploration should benefit all member countries, regardless of their economic or scientific states[8]. By promoting peaceful cooperation and preventing the monopolization of space resources, the treaty ensures that the benefits originated from outer space activities are shared equitably among all nations, fostering global harmony and progress.

However, the Outer Space Treaty came into force 57 years ago, and some of its clauses may now be outdated. With humanity advancing rapidly, these older treaties may no longer fully address the needs of modern society. A new agreement, aligned with today's social and technological conditions, should be established—setting clear goals and targets for all signatory parties to adhere to and collaborate on.

Non-appropriation and Arms Control of Outer Space

The development of outer space is a promising yet controversial industry, capturing the attention of both companies and countries. As the space industry moves toward an estimated $1 trillion in revenue by 2040, driven by technological advancements and decreasing costs, the legal and regulatory frameworks governing space activities should be revised and renewed[9] [10]. Therefore, the dais team has come up with two subtopics to illustrate the issues, namely the *Insufficient Regulation of Private Activities* and the *Lack of Consensus on the Arms Race*.

- Insufficient Regulation of Private Activities

Historically, space was claimed only by nation-states, with the Soviet Union and the United States leading the charge. The regulatory framework was hence drafted mainly to address the geopolitical interests of these two powers during or right after the Cold War[11].

Due to the rapid advancement of space technology and the slow pace of international legislation, no new ones have been introduced since the Moon Agreement, the last multilateral treaty entering into force in 1984 through the adoption in the General Assembly. Current regulations for private space operators focus chiefly on commercial relationships and are limited in certain countries. The lack of unanimous

[7] Robert.wickramatunga. (n.d.). United NationsOffice for Outer Space Affairs. The Outer Space Treaty. https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html
[8] ibid
[9] Resolving disputes in outer space: The Role of International Arbitration. DLA Piper. (n.d.). https://www.dlapiper.com/en/insights/publications/2023/04/resolving-disputes-in-outer-space-the-role-of-international-arbitration
[10] Thesheetztweetz. (2022, May 21). The space industry is on its way to reach $1 trillion in revenue by 2040, Citi says. CNBC. https://www.cnbc.com/2022/05/21/space-industry-is-on-its-way-to-1-trillion-in-revenue-by-2040-citi.html
[11] supra note 9, at 9

standards raises concerns about accountability, liability, and human safety under the circumstances that companies are equipped with the ability to manufacture large-scale weapons for outer space[12].

In addition to establishing new agreements suggested above, when discussing this topic, delegates are encouraged to provide practical strategies to ask for full compliance with international treaties from private sectors.

- Lack of Consensus on the Arms Race

The failure of recent UN Security Council resolutions aimed at regulating space weapons highlights the deep divisions within the international community. Key countries have differing views on the scope and nature of arms control measures, exacerbating to achieve a comprehensive agreement, and complicating efforts to achieve a comprehensive agreement.

The April 24 draft[13], proposed by the US and Japan, emphasizes the importance of reinforcing existing frameworks and ensuring compliance, receiving support from a broad coalition of countries. Conversely, the May 20 draft[14] from Russia, supported by a different coalition, stresses the urgency of creating new legally binding agreements and addresses specific concerns about weapon placement in space. These differences underline the need for open dialogue and cooperation to prevent the escalation of tensions in outer space and ensure space remains a domain for peaceful exploration.

The disposal of space debris and environmental sustainability

- What is space junk? What are its origins?

Space junk, or space debris, refers to any artificial object or fragment left in space as a result of human activities. This encompasses both big entities and small remnants, such as defunct satellites or debris from rocket launches. At present, millions of pieces of space junk orbit the lower Earth orbit (the LEO), hurtling at speeds of up to 18,000 miles per hour.

- Why is space junk a problem?

Space junk in fact remains benign until it collides with another object. Due to its high velocity, even a tiny paint fleck can puncture a spacesuit or damage sensitive electronics. In order to prevent such a catastrophic disaster from happening, scientists have gone the extra mile in their efforts to devise a method for clearing space debris.

- Current plans for space debris disposal

Presently, there exists a substantial initiative for the disposal of space junk called Clear Space, with its primary objective being to ensure the sustainability of space. Currently, Clear Space is dedicated to the pioneering ClearSpace-1 mission, marking the world's first effort to remove space junk. The mission aims to pave the way for the

[12] supra note 10, at 9
[13] S_2024_302
[14] S_2024_383

future of space exploration, addressing the longstanding threat posed by debris left in space. By removing debris and mitigating collision risks, Clear Space aims to create a safer space environment for future generations.

Case Studies

Artemis Program and Lunar Gateway

Named after the Greek goddess of the Moon and the twin sister of Apollo, the Artemis Program is directed by the National Aeronautics and Space Administration (NASA). It holds four key objectives: first, landing humans on the lunar surface; second, developing a sustainable human presence on the Moon; third, using the Moon as a base for technologies and operations essential for future missions to Mars and beyond; and lastly, inspiring a new generation and engaging the public in space exploration.[15]

In addition to collaborating with six organizations, including the European Space Agency (ESA), the Japan Aerospace Exploration Agency (JAXA), the German Aerospace Center (DLR), the Italian Space Agency (ASI), the Israel Space Agency (ISA), and the Canadian Space Agency (CSA), the Artemis Program leverages artificial intelligence to support its lunar exploration efforts, which heavily depend on advanced technologies.[16]

The Lunar Gateway serves as a critical component of NASA's Artemis Program, aiming to establish a sustainable human presence on the Moon and prepare for future missions to Mars. This international project involves building a space station that will orbit the Moon, acting as a staging point for crewed missions to the lunar surface. The Gateway will support long-term exploration and scientific research, enabling astronauts to conduct more extensive lunar missions and experiments. By providing a platform for various space activities, it significantly enhances our capacity for deeper space exploration.[17]

The Gateway fosters unprecedented collaboration among space agencies and commercial partners worldwide, facilitating joint efforts in space exploration. Key contributions include the European Space Agency's ESPRIT refueling module and International Habitation Module, the Japanese Aerospace Exploration Agency's life support systems, and the Canadian Space Agency's Canadarm3 robotic arm.[18] Commercial partners like SpaceX[19] and Northrop Grumman[20] are also involved in developing essential components. This international cooperation ensures that the benefits of space exploration are shared globally, advancing scientific knowledge and technological innovation.

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[15] Harvey, A., & Mann, A. (2022, August 17). NASA's Artemis Program: Everything you need to know. Space.com. https://www.space.com/artemis-program.html

[16] NASA. (2024, July 3). Artemis. NASA. https://www.nasa.gov/humans-in-space/artemis/

[17] NASA. (2024b, July 29). Gateway. NASA. https://www.nasa.gov/mission/gateway/

[18] NASA. (2023, April 13). Gateway International Partners. NASA. https://www.nasa.gov/general/gateway-international-partners/

[19] Foust, J. (2023, January 23). SpaceX wins NASA commercial cargo contract for Lunar Gateway. SpaceNews. https://spacenews.com/spacex-wins-nasa-commercial-cargo-contract-for-lunar-gateway/

[20] NASA. (2023b, July 26). NASA, Northrop Grumman Finalize Moon Outpost Living Quarters Contract. NASA. https://www.nasa.gov/news-release/nasa-northrop-grumman-finalize-moon-outpost-living-quarters-contract/

The two programs highlight the collaborative connections between countries and private entities. However, plans for landing on the Moon or Mars still hinge on the development of infrastructure, information sharing, and cooperative mechanisms among nations. Key questions to consider include how to clearly define the do's and don'ts, as well as the specific duties and responsibilities of each party involved.

International Space Station (ISS)

The International Space Station (ISS) is currently one of two orbiting space stations. Its key features and functions include serving as a laboratory for scientific research across various disciplines, such as biology, human biology, physics, astronomy, and meteorology. It accommodates astronauts who live and work aboard the station for missions typically lasting six months. The ISS also tests new technologies critical for future deep space missions, including life support systems, health monitoring technologies, and systems for autonomous spacecraft docking. Additionally, the ISS fosters international cooperation, bringing together space agencies and researchers from around the world.[21]

It is divided into two parts: the Russian Orbital Segment (ROS) and the US Orbital Segment (USOS). It is currently operated by five entities: NASA, the Russian Federal Space Agency (Roscosmos), JAXA, CSA, and ESA. China once expressed interest in participating in the ISS but was turned down by the USA due to political issues. The division of the ISS has placed emphasis on the allocation of responsibilities in its construction, which has, at times, intersected with political issues. Although nations have achieved unity in certain areas, there remains a need to establish broader principles to address and resolve these underlying concerns.

Composed of multiple interconnected modules, each serving specific functions, the ISS is a significant testament to international cooperation. The Russian modules, Zarya and Zvezda, provide living quarters, life support, and guidance functions. The American modules, including Unity, Destiny, and Tranquility, are used for laboratory space, crew quarters, and life support. The European laboratory module, Columbus, is dedicated to scientific experiments, while Kibo, the laboratory module from Japan, also supports scientific research. Additionally, the Canadarm series from Canada consists of robotic arms used for the construction, maintenance, and docking of spacecraft.

The ISS is expected to remain operational until at least 2031. Plans are to eventually transition to commercial space stations, such as the Lunar Gateway, inheriting the knowledge and experience gained from the ISS. These future stations will continue to support research, technology development, and international cooperation in space exploration, which help humanity fulfill another ambitious goal[22].

[21] NASA. (2024b, July 22). International Space Station. NASA. https://www.nasa.gov/international-space-station/

[22] Howell, E. (2022, August 24). International Space Station: Everything you need to know about the Orbital Laboratory. Space.com. https://www.space.com/16748-international-space-station.html

Moon Village

Five decades after the first Moon landing, a new mission was put forward, aiming to establish a permanent human presence on the lunar surface. ESA, in collaboration with Skidmore, Owings & Merrill LLP (SOM) and Massachusetts Institute of Technology (MIT), has designed the "Moon Village," a concept for the permanent human habitat on the Moon. Serving as a stepping stone for further exploration of the solar system, this project, led by ESA, aims to enable a variety of activities such as scientific research, resource extraction, and technology development, at the same time fostering peaceful international collaboration[23].

Unlike traditional space missions, which are often dominated by individual national efforts, the Moon Village envisions a cooperative approach where multiple countries, private entities, and academic institutions contribute to a shared lunar base. Developing space technology requires cross-disciplinary collaboration, especially in an era where the innovation capabilities of private companies are keeping pace with those of national institutions. For example, in this project, ESA provides valuable insights into astronaut training and space exploration, while MIT and SOM share their extensive knowledge in architecture, engineering, urban planning, and sustainable design to bring holistic[24].

Therefore, governments must find a balance between regulating and collaborating with the private sector in space technology development. Given the immense funding and advanced technology required for space exploration, large-scale efforts have traditionally been led by states. However, involving private companies in decision-making is becoming increasingly essential. Take SOM for example. Through hosting competitions and submitting blueprints for lunar, Martian, and planetary structures, it aims to extend these initiatives to other celestial bodies, highlighting the importance of private sector involvement in shaping the future of space exploration[25].

The Outer Space Object Registration System

The Outer Space Object Registration System is a critical component of international space law, established under the Convention on Registration of Objects Launched into Outer Space (commonly known as the Registration Convention), which was adopted by the United Nations in 1976. This system is designed to enhance transparency and accountability in space activities by requiring that states register every object they launch into outer space with the United Nations Office for Outer Space Affairs (UNOOSA)[26].

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[23] Som releases concept for Moon Village, the first permanent human settlement on the Lunar Surface. SOM. (2021, September 7). https://www.som.com/news/som-releases-concept-for-moon-village-the-first-permanent-human-settlement-on-the-lunar-surface/

[24] ibid

[25] Emre, M. (2024, August 5). Moon Village, the first self-sufficient lunar masterplan by SOM and ESA. Parametric Architecture. https://parametric-architecture.com/moon-village-by-som-and-esa/

[26] Robert.wickramatunga. (2015, April 22). United NationsOffice for Outer Space Affairs. Registration Convention. https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introregistration-convention.html

According to the Registration Convention, launching states must provide specific details about each space object, including the date and location of the launch, the object's basic orbital parameters, and its general purpose or function. This information must be submitted to the UNOOSA, which maintains a publicly accessible registry[27].

By having a centralized database of all space objects, the system helps the international community monitor and track these objects, thereby reducing the risk of conflicts or misunderstandings that could arise from unregistered or unidentified space activities[28].

The system also plays a vital role in fostering international cooperation in space activities. By making registration data publicly available, the system encourages states to share information and collaborate on space missions, which is crucial for preventing the weaponization of outer space and ensuring its sustainable use for all humankind.

ClearSpace Mission

Addressing the challenge of space debris had not been a significant concern until the 2009 collision between the operational commercial satellite Iridium 33 and the derelict Russian military satellite Kosmos 2251. This event had a profound impact, leading to the eventual formation of the Swiss-based organization ClearSpace in 2018. With its two primary objectives: in-orbit servicing and space debris removal, ClearSpace has since engaged in regular collaboration with ESA, working jointly to address the challenge of space debris.

In one of their pivotal initiatives, the "ClearSpace-1 mission," they seek to mitigate orbital debris and consequently diminish the likelihood of space collisions, thereby fostering a more secure and enduring space environment. In 2023, ClearSpace, in collaboration with Arianespace, formalized a launch contract for the ClearSpace-1 mission[29]. This launch represents the first-ever active debris removal endeavor, aiming to capture or deorbit a derelict space debris object weighing over 100 kilograms. The launch is slated to commence as early as the second half of 2026, with its servicer spacecraft ascending to the target object for rendezvous, capture, and eventual deorbiting via atmospheric reentry.

ClearSpace has finalized a EUR 26.7 million financing round to advance the sustainable utilization of outer space[30]. As part of this funding, which includes the ClearSpace-1 mission launch anticipated by 2026, ClearSpace is establishing a strategic operational base in Luxembourg, capitalizing on the region's robust focus on space and satellite technology. These initiatives are aimed at ensuring the sustainability of space and fostering a resilient and enduring future space environment.

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[27] A/RES/3235

[28] A/72/65

[29] ClearSpace to launch the first active debris removal mission with arianespace vega C. ClearSpace. (2023, December 14). https://clearspace.today/clearspace-to-launch-the-first-active-debris-removal-mission-with-arianespace-vega-c/

[30] ClearSpace raises €26 million to cleanup space in a Series A round led by OTB Ventures and Swisscom Ventures. ClearSpace. (2023a, December 14). https://clearspace.today/clearspace-raises-e26-million-to-cleanup-space-in-a-series-a-round-led-by-otb-ventures-and-swisscom-ventures/

UNOOSA: Space Debris Mitigation Guideline

In 2007, UNOOSA promulgated the Space Debris Mitigation Guidelines, which have since constituted a seminal framework for the ongoing management and mitigation of space debris even till now. Member States and international organizations are urged to adopt these voluntary, non-binding space debris guidelines through their respective frameworks, particularly for new spacecraft and orbital stages, while also considering their application to existing ones. The following are the main guidelines and their concise goals:

1. Limit debris released during normal operations

   Space systems should be designed to obviate the release of debris during routine operations. If such prevention is infeasible, the repercussions of any debris release on the extraterrestrial environment must be minimized.

2. Minimize the potential for break-ups during operational phases

   Spacecraft and launch vehicle stages must be designed to prevent failure-induced break-ups. Upon detection of conditions conducive to such failures, comprehensive disposal and passivation strategies must be enacted.

3. Limit the probability of accidental collision in orbit

   In designing spacecraft and launch vehicle stages, the likelihood of inadvertent collisions with known objects during both launch and orbital phases must be evaluated and minimized. Should orbital data suggest a collision risk, adjustments to the launch schedule or implementation of on-orbit avoidance maneuvers should be considered.

4. Avoid intentional destruction and other harmful activities

   To mitigate the risk of collisions that threaten space operations, the intentional destruction of on-orbit spacecraft, launch vehicle stages, or any activities that generate long-lived debris should be avoided. When intentional break-ups are unavoidable, they should be carried out at low altitudes to minimize the orbital lifetime of resulting fragments.

5. Minimize potential for post-mission break-ups resulting from stored energy

   To reduce risks to other spacecraft and launch stages from accidental break-ups, deplete or secure all on-board stored energy when it is no longer needed. Effective mitigation involves passivating these objects by removing residual propellants, compressed fluids, and discharging electrical storage devices at mission's end.

6. Limit the long-term presence of spacecraft and launch vehicle orbital stages in the low-Earth orbit (LEO) region after the end of their mission

   Spacecraft and launch stages in LEO should be removed in a controlled manner after their operational phases. If removal isn't possible, dispose of them in orbits

that avoid long-term LEO presence. Ensure that any surviving debris poses minimal risk to people, property, and the environment.

7. Limit the long-term interference of spacecraft and launch vehicle orbital stages with the geosynchronous Earth orbit (GEO) region after the end of their mission

   Spacecraft and launch stages that have completed their missions and orbit through the GEO region should be left in orbits that prevent long-term interference with GEO. To reduce future collision risks, end-of-mission objects should be placed in orbits above the GEO region to avoid interference or re-entry into GEO[31].

UNOOSA: The Space2030 Agenda

Aside from the guideline mentioned above, UNOOSA has also initiated a project titled "The Space2030 Agenda" in Pursuit of Sustainable Space Development. This agenda outlines four overarching objectives and has become the central framework for shaping the future development of space exploration and utilization. The following are the four overarching objectives and their concise goals:

1. Enhance space-derived economic benefits

   Strengthen space as a driver of sustainable development by raising awareness, promoting partnerships, and addressing commercial issues to improve investment and create jobs.

2. Leverage space innovation to improve quality of life

   Use space technologies to solve everyday challenges, from disaster management to environmental preservation, and improve health, safety, and urban development.

3. Improve access to space for all

   Ensure all nations can benefit from space science and technology, enhance global capacity-building, and promote inclusiveness and gender equality in space activities.

4. Build partnerships and strengthen international cooperation

   Foster international collaboration for peaceful space exploration, improve legal frameworks, and enhance the long-term sustainability of space activities[32]

[31] Space debris mitigation guidelines of the committee on ... (n.d.). https://www.unoosa.org/documents/pdf/spacelaw/sd/COPUOS-GuidelinesE.pdf

[32] United Nations Office for Outer Space Affairs. (2024). *The Space2030 agenda: Space as a driver of sustainable development*. United Nations. https://www.unoosa.org

Key Actors and Positions

Equitable Utilization of Space Resources

- Canada

Canada has committed itself to advancing scientific communications in outer space, contributing groundbreaking technologies such as the Canadarm and the RADARSAT program. Instead of venturing into space independently, Canada consistently seeks partnerships for its space missions, demonstrating a strong willingness to share its discoveries and collaborate on a global scale. By sharing its technologies and expertise, Canada emphasizes the importance of equity in space exploration.

The Canadarm is a series of robotic arms used on the ISS, aiding in tasks such as deploying, maneuvering, and capturing payloads[33]. This project, known as the Shuttle Remote Manipulator System (SRMS), was developed by the National Research Council of Canada and SPAR Aerospace. Controlled from inside the shuttle by astronauts using a computer-based system, the Canadarm played a crucial role in assembling the ISS[34]. The success of the Canadarm has bolstered Canada's reputation in space exploration and paved the way for further international collaborations, such as Canada's involvement in NASA's Lunar Gateway project.

The RADARSAT program is an Earth observation satellite initiative managed by the CSA. Utilizing synthetic aperture radar (SAR) technology, which produces high-resolution images from resolution-limited radar systems, the satellites can collect data regardless of weather conditions or time of day, making them exceptionally versatile and reliable. Governments, organizations, and research institutions worldwide use the collected data for various purposes, from environmental monitoring to national security[35], benefit equally from the information shared by the nation.

The CSA plays a vital role in Canada's development of space science, exploration, technology, and global collaboration. It consistently partners with international space agencies, including NASA and JAXA, to foster global partnerships in space exploration. Additionally, the CSA actively participates in the COPUOS and the Group on Earth Observations (GEO). By collaborating with leading space agencies and organizations, the CSA ensures that Canada remains at the forefront of space science, contributes to international missions, and brings the benefits of space exploration to Canadians and the world[36].

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[33] Canadian Space Agency. (2024, January 23). Canadarm. https://www.asc-csa.gc.ca/eng/canadarm/

[34] Canadarm2: Learn about Canada's contribution to the International Space Station - 2024. MasterClass. (n.d.). https://www.masterclass.com/articles/learn-about-canadas-contribution-to-the-international-space-station

[35] Canada, N. R. (2024, April 11). Radarsat Constellation Mission. Natural Resources Canada. https://natural-resources.canada.ca/science-and-data/research-centres-and-labs/canada-centre-remote-sensing/radarsat-constellation-mission/21831

[36] Canadian Space Agency. The Canadian Encyclopedia. (2006, June 26). https://www.thecanadianencyclopedia.ca/en/article/canadian-space-agency

- United States of America

The United States of America plays a pivotal role in navigating the direction of outer space development, guiding other nations toward deeper exploration. Through advanced technologies and collaborative strategies, the U.S. sets a high standard for space exploration efforts. Space agencies like NASA foster international partnerships, ensuring that the collective efforts of multiple nations contribute to the advancement of humanity's understanding and utilization of outer space resources.

NASA, the official agency responsible for the nation's civilian space program and relevant research, has been at the front lines of space exploration since its inception in 1958. It works closely with international space agencies, including ESA, JAXA, the Roscosmos, and CSA. The ISS is a classic example of their collaboration. The Artemis Accords, initiated by NASA, further extend this spirit of collaboration by establishing guidelines for the peaceful and collaborative exploration of the Moon and beyond.[37]

As the leader in outer space exploration, the U.S. plays a crucial role in shaping principles and practices related to the equitable utilization of space resources. This includes advocating for international norms, participating in global agreements, and spearheading initiatives that promote the fair use of outer space for the benefit of all humanity. The U.S. has been a key proponent of the Outer Space Treaty, emphasizing that the exploration and use of space should benefit all countries. Additionally, the U.S. has taken a leadership role in developing the Artemis Accords, which align with the Outer Space Treaty and are designed to promote sustainable and transparent exploration of the Moon and beyond. Signatory countries commit to peaceful exploration, transparency in activities, and the sharing of scientific data, ensuring that the utilization of space resources is conducted fairly and collaboratively [38].

Outer space may not belong to any one nation, but under the leadership of the U.S. and other leading countries, humanity is gradually shaping its future, building a framework through a slow but steady progression.

- African region

Due to a lack of financial and technological infrastructure, many African countries continue to face challenges in self-development. Despite these limitations, they remain hopeful and ambitious about participating in space activities and shaping space policies.

Although most African nations are currently focused on building foundational space capabilities, a few leading countries have established space agencies and programs, including Nigeria's National Space Research and Development Agency (NASRDA)[39], South Africa's South African National Space Agency (SANSA)[40], and Egypt's Egyptian Space Agency (EgSA)[41]. While NASRDA and EgSA concentrate on satellite technology for national development, SANSA has emerged as a key player in

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regional discussions on space policy, particularly in advocating for the equitable sharing of space resources. Furthermore, the African Space Agency[42], with its headquarters currently under construction in Egypt, was officially established to foster policy and strategy cooperation and coordination among African Union (AU) member states.

While most of Africa's current space activities are centered on satellite technology, particularly for communications, disaster management, and agriculture, there is a growing interest in space exploration and the future exploitation of space resources. The Square Kilometre Array (SKA)[43], a massive telescope project in South Africa, exemplifies Africa's ambition in space exploration. This project aims to enhance the continent's research and technological capabilities, positioning Africa to play a more active role in space exploration and resource utilization in the future.

The AU supports frameworks that ensure all countries have fair access to space resources and the benefits of space exploration, emphasizing the principle that space, as outlined in the Outer Space Treaty, should be the 'province of all mankind' and not subject to national appropriation. This aligns with African nations' advocacy for equitable access to space resources.

Non-appropriation and Arms Control of Outer Space

- China

China's space ambitions have expanded dramatically over the last two decades. In 1993, the China National Space Administration (CNSA) was established[44]. It is responsible for developing policies and regulations, formulating long-term programs and plans for the space industry, and managing international collaborations[45]. CNSA's vision reflects China's ambition of becoming a global space superpower by 2045[46]. The agency oversees several prominent programs, such as the Chang'e lunar missions, the Tianwen Mars exploration program, and the Tiangong space station.

The Chang'e lunar exploration program showcases China's advancing space capabilities. In 2019, Chang'e-4 became the first spacecraft to land on the Moon's far side[47]. This was followed by the successful Chang'e-5 mission in 2020, which returned lunar soil samples to Earth, making China the third country to achieve this feat[48]. On

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[44] 1993 年 4 月 22 日 國家航天局正式成立. (2024, April 22). 當代中國. https://www.ourchinastory.com/zh/3816/%E5%9C%8B%E5%AE%B6%E8%88%AA%E5%A4%A9%E5%B1%80%E6%AD%A3%E5%BC%8F%E6%88%90%E7%AB%8B

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[47] China Moon Mission Lands Chang'e-4 Spacecraft on Far Side. (2019, January 3). BBC. https://www.bbc.com/news/science-environment-46724727

[48] Chinese Spacecraft Carrying Rocks and Soil from the Moon Returns Safely. (2020, December 16). The Guardian. https://www.theguardian.com/science/2020/dec/16/chinese-spacecraft-carrying-rocks-and-soil-from-the-moon-returns-safely

June 25, 2024, the Chang'e-6 mission marked another world first by returning samples from the Moon's far side, reinforcing China's growing leadership in lunar exploration[49]. At the same time, China has expanded its reach to Mars, with the 2021 Tianwen-1 mission successfully landing the Zhurong rover to study the planet's geology and atmosphere[50]. In addition, China completed its own space station, Tiangong, in 2022, aiming to support large-scale scientific, technological, and application experiments[51].

To foster international cooperation and enhance its diplomatic influence, China promotes peaceful exploration and offers opportunities for developing nations to participate in space missions through the International Lunar Research Station (ILRS), co-developed with Russia[52]. Notably, the Asia-Pacific Space Cooperation Organization (APSCO) and Thailand joined this initiative in 2024, furthering cooperation on space exploration and the peaceful use of outer space[53] [54]. These collaborations, formalized through agreements and joint projects, emphasize China's commitment to space diplomacy and the peaceful utilization of outer space while expanding its influence.

However, China's space program has also been increasingly focused on military applications. For instance, its 2007 anti-satellite missile test, which created significant space debris, was condemned globally as a destabilizing act. While China has since called for the prevention of an arms race in space, its growing military capabilities in space, including the development of counter-space weapons, create ambiguity[55].

As China pushes the boundaries of lunar exploration and space infrastructure, which reflects its dual role as a spacefaring nation with both civilian and military interests in space, international norms need to evolve to address new questions about the peaceful use of space, ensuring that no projects can inadvertently lead to territorial appropriation.

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- Russia Federation

Being the successor of the Soviet space program, Russia founded its State Space Corporation ROSCOSMOS in 2015, trying to ensure a leading role in space exploration. By managing development, regulation, and international collaboration in space, the company's mission is to execute Russia's space program while integrating space activities into the nation's socio-economic development [56]. However, since the annexation of Crimea in 2014 and the invasion of Ukraine, Russia's space program has faced significant obstacles, including sanctions, embargoes on advanced technology, and economic inefficiencies[57].

Despite these setbacks, Russia continues to pursue ambitious goals. The Luna-25 mission launched in August 2023, marks Russia's return to lunar exploration after nearly five decades. Aimed at studying lunar soil and the exosphere, Luna-25 highlights global interest in the moon's resources, even as Russia's partnership with ESA ended due to the Ukraine conflict[58].

Unfortunately, the spacecraft encountered issues while entering its pre-landing orbit, ultimately losing control and crashing into the lunar surface. Roscosmos confirmed that the lander had "ceased to exist" following the collision[59].

The failure caused Russia's space strategy to shift, in turn prioritizing two areas: manned space flights and military space capabilities [60]. The manned program is politically significant, upholding its status as a great power, especially after its exclusion from international projects like the Lunar Gateway. On the other hand, the military program focuses on maintaining and developing satellite constellations to ensure national security.

Russia plans to increase the production of small, short-lived satellites using consumer-grade electronics, favoring quantity over quality, also exploring asymmetric approaches, such as nuclear-powered spacecraft and technologies to disrupt enemy satellite systems. However, limited resources and technological deficits, particularly in GLONASS and imaging satellites, prevent Russia from competing with Western space powers[61].

Despite its large degradation in space capability, a 2021 anti satellite missile test suggests that Russia views space as a critical domain for national defense. The test, possibly involving an S-500 Prometey missile, not only heightened tensions between the U.S. and Russia but also created over 1,500 pieces of debris, putting astronauts

[56] ROSCOSMOS. (n.d.). International Astronautical Federation. https://www.iafastro.org/membership/all-members/roscosmos.html
[57] Luzin, P. (2024, July 22). Russia's Space Program After 2024. Foreign Policy Research Institute. https://www.fpri.org/article/2024/07/russias-space-program-after-2024/
[58] Luzin, A. (2023, August 10). Russia's Luna 25 Mission Launches to the Moon. CNN World. https://edition.cnn.com/2023/08/10/world/russia-luna-25-launch-scn/index.html
[59] Walsh, A. (2023, August 20). Russia's Luna-25 Spacecraft Crashes into Moon. BBC News. https://www.bbc.com/news/world-europe-66562629
[60] supra note 55, at 19
[61] supra note 55, at 19

aboard the ISS at risk[62]. These activities have led to concerns about an arms race in space, raising urgent questions about the future of international space security and the need for new agreements to prevent further militarization of outer space.

- General Assembly 1 - Disarmament and International Security Committee

When addressing the non-appropriation and arms control of outer space, the mandates of GA1 and COPUOS differ. GA1, with a broader range of member states and greater influence, adopts resolutions aimed at fostering cooperation and preventing the militarization of space. However, these resolutions are not legally binding and only reflect the collective will of the international community. Once member states ratify them, the treaties become enforceable for those nations[63].

Regarding the five United Nations treaties on outer space, the Moon Agreement has significantly fewer ratifications compared to the others. Major spacefaring countries like China, Russia, and the U.S. have not ratified it, with only 15 countries in support, compared to nearly 100 for the other treaties[64]. The Moon Agreement sought to govern the exploration and exploitation of the Moon's resources, designating them as the "common heritage of mankind" and proposing an international regime for their management[65]. However, this conflicted with the interests of advanced spacefaring nations, concerned that the treaty would restrict future resource exploitation on the Moon[66].

To address this, solutions could include revising or reinterpreting the Moon Agreement to clarify its terms and manage space resources more transparently and effectively, encouraging wider ratification. Alternatively, a new treaty could be developed with clear regulations and principles agreed upon in international conferences. It is also essential to consider the distinct mandates of GA1 and COPUOS when discussing these issues.

The disposal of space debris and environmental sustainability

- Republic of Korea

Since the establishment of the Korea Astronomy and Space Science Institute (KASI) in 1974 and the Korea Aerospace Research Institute (KARI) in 1989, the Republic of Korea has been vigorously pursuing advancements in space exploration and development.

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[62] Roulette, J. (2021, November 15). *Debris From Test of Russian Antisatellite Weapon Forces Astronauts to Shelter*. The New York Times. https://www.nytimes.com/2021/11/15/science/russia-anti-satellite-missile-test-debris.html

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[64] A/AC.105/C.2/2024/CRP.3

[65] A/RES/34/68

[66] Expert comment: Why many countries are refusing to sign Moon exploration agreement. Northumbria University. (2020, October 19). https://www.northumbria.ac.uk/about-us/news-events/news/expert-comment-why-many-countries-are-refusing-to-sign-moon-exploration-agreement/

KASI is South Korea's leading research center for astronomy and space sciences, excelling in cutting-edge research, managing advanced facilities, and overseeing space situational awareness. It also handles national timekeeping, public outreach, R&D collaboration, and policy development.[67] In contrast, KARI boosts national economic growth and quality of life through advancements in aerospace technology.[68] It develops systems for aircraft, satellites, and space launch vehicles, collaborates on test facilities with industry and academia, supports aerospace SMEs, and drives technology commercialization. KARI also promotes R&D cooperation and technical outsourcing with government and private sectors while cultivating a skilled workforce.[69]

On May 27, 2024, the Korea Aerospace Administration (KASA) was officially established to oversee South Korea's space affairs and international cooperation. KASA aims to foster a robust aerospace economy in the country, focusing on space transportation, satellite technology, space exploration, and aviation. KASA has outlined ambitious objectives for the future, including deploying a robotic lander to the moon by 2032 and another to Mars by 2045. The current space investment stands at approximately one trillion won ($720 million), with projections indicating a 50% increase by 2027.[70]

KASA's activities will cover several areas:

1. Space Transportation:

   The agency will continue developing the Nuri (KSLV) rocket, invest in reusable launch vehicle technology, and expand launch facilities.

2. Satellites:

   KASA aims to support the development of very-high-resolution imaging satellites with a target resolution of 15 centimeters, invest in optical communications, and establish a regional navigation system.

3. Spaceflight:

   Planned missions include lunar and Martian landers, as well as a spacecraft designed to observe the sun from the Earth-sun L4 Lagrange point, a unique position in the Earth’s orbit not yet explored by other agencies for space science missions.

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[67] *Profile: About Kasi*. KASI. (n.d.). https://www.kasi.re.kr/eng/pageView/51

[68] Korea Aerospace Research Institute. (2023). *Annual report 2023*. Korea Aerospace Research Institute.

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- Japan

Japan's space programs are primarily managed by JAXA, which was established on October 1, 2003. JAXA was formed through the merger of three organizations: the National Space Development Agency of Japan (NASDA), the National Aerospace Laboratory of Japan (NAL), and the Institute of Space and Astronautical Science (ISAS).[71][72]

Among recent noteworthy launches is the BepiColombo mission, which was launched aboard a rocket named Ariane 5. This mission, a collaboration between JAXA and ESA, aims to investigate Mercury's surface, atmosphere, and magnetic field. Launched in 2018, BepiColombo consists of two orbiters: the Mercury Planetary Orbiter (MPO) and the Mercury Magnetospheric Orbiter (MMO). Each orbiter is equipped with advanced scientific instruments designed to provide valuable insights into Mercury's geology, geochemistry, and magnetosphere. The mission promises to significantly enhance our understanding of the solar system's innermost planet.[73]

In terms of future plans, JAXA's space exploration initiatives encompass the Lunar Polar Exploration Mission (LUPEX) and the Lunar Orbiter Mission (LOX), which focus on exploring the moon's south pole and investigating its resources. The Martian Moons Exploration (MMX) mission is designed to study Mars' moons, Phobos and Deimos, with the goal of returning samples from Phobos to Earth. The successful Hayabusa2 mission, which returned samples from the asteroid Ryugu, underscores JAXA's advancements in celestial body research. Additionally, JAXA prioritizes international collaboration, partnering with global space agencies to bolster exploration capabilities and advance scientific knowledge.[74]

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[74] Jaxa Space Exploration Center. (n.d.). https://www.exploration.jaxa.jp/e/index.html

Questions to Considered

1. How should existing treaties, such as the Outer Space Treaty, be updated to address space-related problems? Alternatively, should member countries consider developing a new legal framework for this emerging field?

2. What role should international organizations play in the governance of space resource utilization? And how can global governance structures ensure the fair distribution of space resource benefits?

3. Considering COPUOS's mandate, how can the committee effectively address issues involving sovereign disputes between countries while maintaining its independence and impartiality?

4. Given that not all countries possess the ability to develop space technology, how can COPUOS ensure that discussions prioritize an equitable future for all, rather than focusing solely on the interests of wealthier nations?

5. As the amount of space debris intensifies, should we contemplate imposing restrictions on the frequency of space exploration and satellite deployments to mitigate future space contamination? What would be the potential ramifications of such restrictions on technological advancement?

6. If a nation or corporation opts to commercially exploit space debris in the future, should these activities be subject to international legal regulation? Within the framework of global cooperation, who should be responsible for the remediation of space debris, and how can we ensure the equitable distribution of the related resources?

Position Paper

Please give the Dais and other delegates a brief introduction to your country's attitude or actions toward the topic. **The deadline will be 23:59 1/5/2025**. Please hand in your positionpaper to **nsmun2025copuos@gmail.com**. All position papers should be handed in as Google Documents (12pt, Times New Roman font, single-spaced) and saved as "Country/Names" (e.g., Sweden/Judy Chen, Iris Yang). The rest of the details regarding the format of the position paper please refer to the Academic Handbook. Delegates are reminded that the works plagiarized from the internet or other delegates, violating the format, or late on the submission will NOT be checked and recognized. Those who violate the rules will NOT receive any awards.

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