



ESBLMUN'25 STUDY GUIDE

UNOOSA: Space Exploration & Space
Debris Management

Table of Contents

1. Welcoming Letter from the Secretary-General

2. Committee Overview

- 2.1 History and Mandate of UNOOSA
- 2.2 Structure and Functioning
- 2.3 Key Legal Instruments and Bodies (COPUOS, UN-SPIDER, etc.)

3. Agenda Introduction: Space Exploration and Space Debris Management

- 3.1 Definition of Key Terms
- 3.2 Importance of the Topic

4. Background of the Issue

- 4.1 History of Space Exploration
- 4.2 Rise of Private and Emerging Space Actors
- 4.3 Evolution of Space Debris: Causes and Consequences

5. Legal Frameworks and Previous International Efforts

- 5.1 Outer Space Treaty, Liability Convention, Registration Convention
- 5.2 UN Resolutions and COPUOS Guidelines
- 5.3 National and Regional Space Policies

6. Stakeholders and Challenges

- 6.1 Spacefaring vs. Non-Spacefaring Nations
- 6.2 Private Sector Involvement
- 6.3 Major Challenges: Debris, Militarization, Fair Access

7. Guiding Questions and Further Reading

- 7.1 Questions to Be Answered
- 7.2 Further Reading and Research Links

1. Welcoming Letter from the Secretary-General

Dear Esteemed Delegates, Respected Advisors, and Valued Staff,

It is with great pleasure, honor, and joy that I welcome you to the Eti Social Sciences High School Model United Nations Conference. As the Secretary General of ESBLMUN'25, it is both a privilege and a heartfelt responsibility to lead such a meaningful event, one that brings together bright minds and passionate voices from diverse backgrounds.

My journey through the world of Model United Nations has shaped the way I view the world. It has taught me to think critically, speak confidently, and most importantly, to care deeply about the global challenges that define our time. MUN is more than a simulation; it is a gateway to empathy, leadership, and growth. Here, your voice matters. Your ideas matter.

At ESBLMUN, our mission is to empower delegates to become confident speakers, creative thinkers, and collaborative problem-solvers. We strive to create an inclusive and dynamic platform where diplomacy meets innovation, and every debate becomes an opportunity for development.

Behind the scenes, our dedicated team has worked tirelessly to ensure a conference that is not only academically enriching but also socially unforgettable. From thought-provoking sessions to meaningful interactions, we hope every moment inspires you to explore, engage, and evolve.

Welcome to ESBLMUN'25. Let this be a conference where you challenge yourself, connect with others, and leave with new insights and lifelong memories.

With all my best wishes for an incredible experience ahead,

Warm regards,

Secretary General

Zümra Elif Dilek

2. Committee Overview

2.1 History and Mandate of UNOOSA

The United Nations Office for Outer Space Affairs (UNOOSA) was established in 1958 as a small expert unit to support the newly formed Committee on the Peaceful Uses of Outer Space (COPUOS), created by UN General Assembly Resolution 1348 (XIII). Over the years, it evolved through various UN departments, becoming a formal office in 1992 and relocating to Vienna in 1993.

UNOOSA promotes international cooperation in the peaceful use of outer space, helps implement space law, and supports developing countries in accessing space technologies. While it does not address space militarization—that is handled by the Conference on Disarmament in Geneva—UNOOSA plays a central role in maintaining space as a safe and accessible domain for all.

2.2 Structure and Functioning

UNOOSA operates under the United Nations Secretariat and is based at the United Nations Office in Vienna. It serves as the secretariat of the Committee on the Peaceful Uses of Outer Space (COPUOS), which has two subcommittees: the Scientific and Technical Subcommittee and the Legal Subcommittee. These bodies meet annually to discuss key space-related issues, from satellite safety to legal frameworks.

UNOOSA is also responsible for managing the UN Register of Objects Launched into Outer Space, promoting adherence to international space treaties, and coordinating emergency response through the UN-SPIDER program, which uses space-based data for disaster risk management.

Although UNOOSA does not have enforcement power, it plays a vital facilitating and advisory role, working closely with member states, space agencies, and international organizations to promote peaceful, sustainable, and inclusive space exploration.

2.3 Key Legal Instruments and Bodies (COPUOS, UN-SPIDER, etc.)

UNOOSA works with several important legal instruments and bodies that form the foundation of space governance. Delegates should be familiar with the following:

★ Key Legal Instruments:

Outer Space Treaty (1967):

The backbone of international space law. It declares outer space the *province of all humankind*, prohibits national appropriation of celestial bodies, and bans the placement of weapons of mass destruction in orbit.

Liability Convention (1972):

Establishes that launching states are liable for damage caused by their space objects on Earth or in outer space.

Registration Convention (1976)

Requires states to register all space objects launched into orbit with the UN, promoting transparency and coordination.

Moon Agreement (1979) (*less widely ratified*):

Extends the Outer Space Treaty to the Moon and other celestial bodies, aiming to ensure their use benefits all countries.

★ **Key Bodies and Programs:**

COPUOS (Committee on the Peaceful Uses of Outer Space):

UNOOSA serves as its secretariat. COPUOS discusses issues such as space sustainability, long-term cooperation, and debris mitigation, through its:

- Scientific and Technical Subcommittee
- Legal Subcommittee

UN-SPIDER (UN Platform for Space-Based Information for Disaster Management and Emergency Response) :

Supports countries—especially developing ones—in using satellite data for disaster risk reduction and emergency response.

UN Register of Objects Launched into Outer Space :

A central record maintained by UNOOSA to ensure transparency and prevent orbital conflicts.

3. Agenda Introduction: Space Exploration and Space Debris Management

3.1 Definition of Key Terms:

Outer Space: The area beyond Earth's atmosphere (~100 km up), beyond national ownership.

Space Exploration: Using technology to explore space for science, business, or security.

Space Debris: Non-functional objects in orbit that threaten active missions.

Space Law: International rules for peaceful and responsible space use.

Spacefaring Nations: Countries capable of launching and operating space missions.

UNOOSA / COPUOS: UN bodies supporting cooperation and space law development.

3.2 Importance of the Topic:

Space is no longer just for a few—it plays a vital role in communication, navigation, disaster response, and science (UNOOSA, 2023a). As more nations and companies explore space, the number of satellites and rockets in orbit has grown rapidly, increasing the risk of space debris (ESA, 2023).

Even small fragments can cause serious damage, and a major collision could trigger a chain reaction known as the Kessler Syndrome, making some orbits unusable. Yet current legal frameworks lack enforcement power and struggle to keep up with modern challenges (UNIDIR, 2022).

This topic matters because:

- ★ Many countries lack space access or protection.
- ★ Private space activity is rising.
- ★ Global cooperation is crucial to ensure space stays safe, peaceful, and accessible for all.

4. Background of the Issue

4.1 History of Space Exploration

The era of space exploration began in 1957 with the launch of *Sputnik 1*, the first artificial satellite, by the Soviet Union. This milestone marked the start of the Space Age and highlighted the need for international cooperation in outer space activities.

Recognizing this, the United Nations established the Committee on the Peaceful Uses of Outer Space (COPUOS) in 1959 to promote peaceful exploration and use of space for the benefit of all humanity .

In 1967, the Outer Space Treaty was enacted, forming the foundation of international space law. It set principles such as the non-appropriation of outer space by any one country and the use of the Moon and other celestial bodies for peaceful purposes .

Over the years, the focus of space exploration has expanded from initial satellite launches to include human spaceflight, lunar missions, and interplanetary probes. Today, space exploration encompasses a wide range of activities, including scientific research, satellite communications, and Earth observation, involving both governmental and private entities .

4.2 Rise of Private and Emerging Space Actors

In recent years, the landscape of space exploration has expanded beyond traditional government-led initiatives. Private companies and emerging nations are increasingly participating in space activities, contributing to innovation and diversification in the sector.

★ Private Sector Involvement

Private enterprises, such as SpaceX and Blue Origin, have become significant players in space exploration. Their involvement has led to advancements in launch capabilities, satellite deployment, and space tourism. The United Nations recognizes the pivotal role of the private sector in the expanding space industry, marking a shift from the previously government-dominated era

★ Emerging Space Nations

Countries like Kenya, Ethiopia, and the Philippines are developing their space programs, focusing on satellite technology and capacity building. The United Nations Office for Outer Space Affairs (UNOOSA) supports these efforts through initiatives like "Access to Space for All," which aims to bridge the gap between established and emerging space actors.

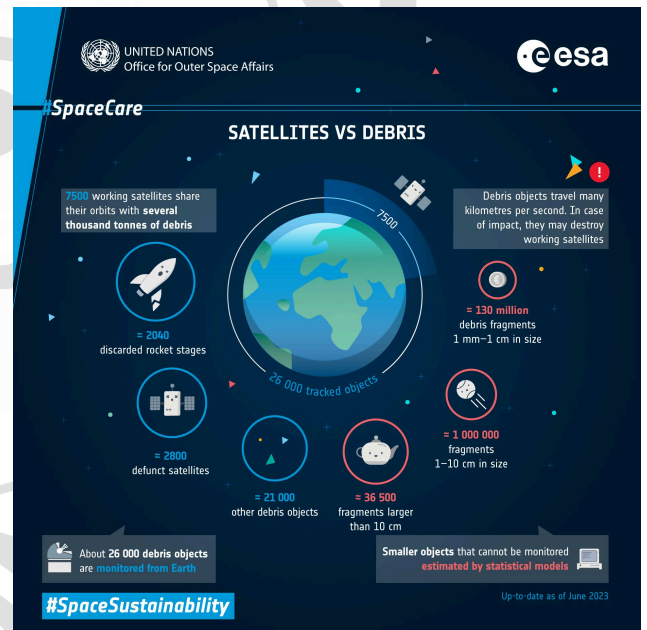
This democratization of space activities presents opportunities for global collaboration but also introduces challenges in terms of regulation and sustainability. As more actors enter the space domain, there is a growing need for comprehensive policies to ensure the peaceful and responsible use of outer space.

4.3 Evolution of Space Debris: Causes and Consequences

Since the launch of *Sputnik 1* in 1957, human activity in outer space has steadily increased—and so has the amount of debris left behind. Space debris refers to non-functional objects orbiting Earth, including old satellites, rocket parts, and fragments from past collisions or explosions.

Main Causes of Space Debris

- ★ **Collisions:**
Accidental satellite crashes, like the 2009 collision between Iridium 33 and Cosmos 2251, created thousands of debris fragments.
- ★ **Anti-Satellite (ASAT) Tests:**
Countries destroying satellites on purpose—such as China's 2007 test—release large debris fields into orbit.
- ★ **Explosions in Orbit:**
Fuel tanks or batteries left on old spacecraft can explode, scattering dangerous fragments.

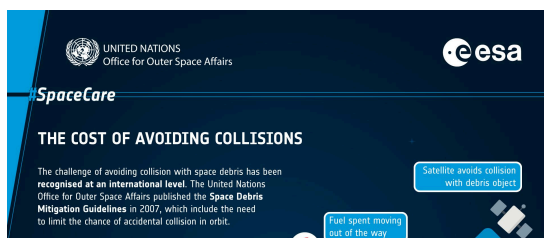


Consequences of Space Debris:

- ★ **High-Speed Collision Risks:**
Even tiny debris can damage spacecraft due to their incredible speed—up to 28,000 km/h. This threatens satellites, the International Space Station (ISS), and future missions.

★ Kessler Syndrome:

A potential chain reaction where debris causes more



collisions, creating an orbit so crowded it becomes unusable.

★ **Operational Challenges:**

More debris means higher launch costs, more tracking, and limited access to safe orbital paths.

If not addressed, space debris could severely limit humanity's ability to use space safely and sustainably. That's why international cooperation and long-term solutions are urgently needed.

5. Legal Frameworks and Previous International Efforts

5.1 Outer Space Treaty, Liability Convention, Registration Convention

These treaties, briefly introduced in Section 2.3, form the foundation of international space law. This section explains their content in more detail and explores how they apply to the current challenges of space exploration and debris management:

Outer Space Treaty (1967)

The Outer Space Treaty is considered the "constitution of space law." Signed at the height of the Cold War, it laid the groundwork for peaceful international cooperation in space.

Key principles include:

- ★ Outer space is the province of all humankind, and cannot be claimed by any one country, including the Moon or other celestial bodies.
- ★ Activities in space must be conducted for peaceful purposes.
- ★ States are internationally responsible for both governmental and non-governmental (private) space activities.
- ★ Prohibits the placement of nuclear weapons or WMDs in orbit or on celestial bodies.

Liability Convention (1972)

The Convention on International Liability for Damage Caused by Space Objects clarifies who is responsible when things go wrong in space.

Key provisions:

- ★ States are absolutely liable for damage their space objects cause on Earth or to aircraft.
- ★ In outer space, liability is based on fault—the injured party must prove negligence or error.
- ★ Countries are encouraged to settle disputes peacefully through diplomatic channels, or submit cases to a Claims Commission if needed.

Registration Convention (1976)

This treaty promotes transparency and accountability in space activities by requiring states to register all space objects launched into orbit with the United Nations.

- ★ States must provide details such as the launch date, location, orbital parameters, and general function of each object.
- ★ The UN Office for Outer Space Affairs maintains the UN Register of Objects Launched into Outer Space, which is publicly accessible.
- ★ Relevance: In the context of space debris management, the Registration Convention helps:
 - ★ Identify the origin of debris, especially after collisions.
 - ★ Assign responsibility for damage or risk mitigation.
 - ★ Support international cooperation by ensuring that all actors are aware of what's in orbit.

While it improves situational awareness, the convention relies on voluntary and accurate reporting, which can limit its effectiveness in a rapidly growing space sector.

5.2 UN Resolutions and COPUOS Guidelines

Beyond formal treaties, the United Nations has adopted resolutions and guidelines to promote responsible behavior in outer space. These tools are not legally binding but carry important political weight and help establish global norms for space sustainability.

United Nations General Assembly Resolutions:

The UN General Assembly has adopted numerous space-related resolutions, often based on recommendations from COPUOS (the Committee on the Peaceful Uses of Outer Space). These resolutions:

- ★ Emphasize the peaceful use of outer space.
- ★ Encourage international cooperation, especially for capacity-building in developing countries.
- ★ Promote transparency, information-sharing, and responsible behavior in orbit.

COPUOS Guidelines on the Long-Term Sustainability of Outer Space Activities (LTS Guidelines)

Adopted in 2019, these voluntary guidelines provide practical measures for:

- ★ Avoiding collisions and limiting space debris.
- ★ Enhancing the safety and sustainability of future missions.
- ★ Encouraging coordination between nations, agencies, and private actors.

The LTS Guidelines are grouped under key themes like:

- ★ Policy and regulatory frameworks
- ★ Safety of space operations
- ★ International cooperation and capacity-building

While not binding like treaties, these resolutions and guidelines are essential for shaping modern space governance, especially in the face of growing private and international activity in orbit.

5.3 National and Regional Space Policies

While the United Nations sets the global framework, space governance is also shaped at national and regional levels. Different countries and regions adopt their own space strategies, laws, and agencies to guide exploration, satellite use, and debris management.

National Policies

Many countries have developed independent space agencies and laws to regulate space activities:

★ **United States (NASA & FAA)**

The U.S. has a long-standing space program and a detailed licensing system for private launches. It supports commercial innovation but has faced criticism for regulatory gaps around space debris.

★ **China (CNSA)**

China's rapidly expanding program includes Moon and Mars missions. It operates under state control and has recently emphasized sustainability and space traffic management.

★ **India (ISRO)**

Known for cost-effective missions, India's space policy includes international collaboration and growing interest in space debris mitigation and reusable launch tech.

★ **Russia (Roscosmos)**

Russia maintains a strong space heritage and focuses on national security, cooperation with partners like China, and maintaining its orbital infrastructure.

★ **United Arab Emirates (UAESA)**

A rising space power, the UAE has launched Mars and lunar missions and emphasizes international cooperation and peaceful exploration.

Regional Approaches

★ **European Union (ESA & EU Space Policy):**

The European Space Agency (ESA) unites over 20 European countries for joint missions. The EU also pushes for space sustainability, funding clean space initiatives and advocating for stronger debris guidelines.

★ **African Union (African Space Policy & Strategy):**

Aims to boost regional cooperation, capacity-building, and satellite development for climate, agriculture, and disaster monitoring.

★ **Asia-Pacific Space Cooperation Organization (APSCO):**

Promotes regional collaboration in space science and technology among countries like Pakistan, Iran, and Thailand.



6. Stakeholders and Challenges

6.1 Spacefaring vs. Non-Spacefaring Nations

The divide between spacefaring and non-spacefaring nations continues to raise concerns about equity in space access. Countries like the United States (NASA), China (CNSA), India (ISRO), and members of the European Space Agency (ESA) regularly launch satellites and deep space missions, shaping space policy and controlling orbital infrastructure. Meanwhile, many nations—especially in Africa, Southeast Asia, and Latin America—are only beginning to develop national space programs. For instance, Kenya launched its first nanosatellite in 2018, and the Philippines' Maya satellites are recent steps toward building sovereign space capabilities. To support emerging actors, UNOOSA has created initiatives like Access to Space for All, helping countries launch their first satellites and build institutional knowledge.

6.2 Private Sector Involvement

Private companies have revolutionized space access, but not without controversy. SpaceX, for example, has launched over 6,000 Starlink satellites, dominating low Earth orbit and raising concerns about orbital congestion and monopolization. Similarly, Blue Origin and Virgin Galactic have shifted space travel toward commercial suborbital tourism, while Amazon's Project Kuiper aims to deploy thousands of satellites to provide global internet. These actors have dramatically reduced launch costs and increased global connectivity—but they also create regulatory challenges. Since international law places liability on states, not companies, the responsibility for private-sector behavior still lies with national governments. In many cases, laws have not caught up with the speed and scale of commercial expansion, leaving questions around debris mitigation, frequency allocation, and equitable use of orbits unresolved.

6.3 Major Challenges: Debris, Militarization, Fair Access

Space debris is one of the most urgent technical and political problems in orbit. As of 2024, ESA estimates over 36,000 pieces of debris larger than 10 cm are being tracked, including remnants from the 2009 Iridium-Cosmos collision and China's 2007 ASAT test, which alone created over 3,000 fragments. Meanwhile, fears of space militarization have grown, especially after the establishment of the United States Space Force in 2019 and increased ASAT testing by nations like India (Mission Shakti). Dual-use satellites that provide both military and civilian data make intentions harder to interpret, increasing geopolitical tension. On the issue of fair access, concerns are mounting that emerging space nations will be crowded out of valuable orbital slots and frequencies. The International Telecommunication Union (ITU) allocates these resources, but the growing demand from mega-constellations risks sidelining smaller countries unless coordinated governance is prioritized.

7. Guiding Questions and Further Reading

7.1 Questions to Be Answered

- ★ How can we ensure peaceful and fair access to space for both spacefaring and non-spacefaring nations?
- ★ What global strategies can reduce or remove existing space debris?
- ★ Are current space treaties still effective, or do we need new agreements for today's challenges?
- ★ How should UNOOSA and member states regulate private space actors and commercial launches?
- ★ What can be done to help developing countries benefit from space technologies and participate in space governance?
- ★ Should the international community create binding rules for debris management and orbital traffic control?

7.2 Further Reading and Research Links

Here are useful sources to deepen your understanding of space law, exploration, and debris management:

Key UN Resources

- ★ [UNOOSA Website](#) – Official site with treaties, programs, and data
- ★ [Access to Space for All](#) – Support for emerging space nations
- ★ [UN Register of Space Objects](#) – Database of registered launches

Major Treaties

- ★ [Outer Space Treaty](#)
- ★ [Liability Convention](#)
- ★ [Registration Convention](#)

Additional Info

- ★ [ESA – Space Debris](#)
- ★ [NASA Orbital Debris Office](#)
- ★ [SpaceNews](#) – News on space policy and tech

