

Committee: United Nations Commission on Science and Technology for Development

Issue: Establishing International Guidelines for the Advancement of Space Colonization

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Introduction

This agenda seeks to establish comprehensive international guidelines for space colonization, addressing a domain of human activity that current legal frameworks were never designed to accommodate. The Outer Space Treaty of 1967 and subsequent agreements were drafted in an era when permanent human settlement beyond Earth remained purely theoretical, leaving fundamental questions about long-term habitation largely unaddressed. As technological advances bring sustained space settlement within reach, the absence of clear international consensus threatens to produce fragmented, inconsistent, or unilateral approaches that could generate conflict rather than cooperation.

Four critical gaps demand particular attention within this framework. First, jurisdiction over settlements remains ambiguous, as existing law prohibits national appropriation of celestial bodies without clarifying how legal authority would function within an actual colony. Second, governance of space resources requires urgent clarification, particularly regarding extraction rights, ownership claims, and equitable distribution of benefits derived from asteroid mining or lunar resource utilization. Third, human rights protections for settlers must be established proactively, addressing questions of citizenship, due process, and fundamental freedoms in environments where traditional state structures may not readily apply. Fourth, prevention of militarization remains essential to ensuring that space settlement proceeds as a peaceful endeavor rather than an extension of terrestrial geopolitical rivalries.

As humanity moves toward permanent habitation beyond Earth, the international community faces a narrow window in which to establish governance structures before facts on the ground outpace deliberate policy-making. This committee is tasked with crafting guidelines that

balance the interests of spacefaring nations, private enterprises, and the broader international community, ensuring that the expansion of human presence into space unfolds in a manner that is orderly, equitable, and consistent with shared principle of international law.

Definition of Key Terms

Space colonization

The establishment of permanent or long-term human settlements in outer space, supported by the infrastructure and systems necessary for sustainable habitation

International space law

The international legal regime composed of treaties, principles, and norms governing activities in outer space

Non-appropriation principle

The rule that outer space and celestial bodies cannot be claimed as the sovereign property of any state

Peaceful use of outer space

The principle that outer space shall be used for peaceful, cooperative, and non-aggressive purposes

Space resources

Natural materials found in outer space that may be extracted or used under the evolving international legal framework

In-situ resource utilization (ISRU)

The use of local materials (e.g., lunar water, metals, atmospheric gases) to support life, fuel, and infrastructure in space colonies.

Sustainable space exploration

It emphasizes long-term environmental and operational sustainability, connecting space colonization to broader UN goals on sustainable development and responsible technology use

International cooperation in space

The coordinated effort among states, international organizations, and private actors to share knowledge, technology, and resources for space activities, ensuring that space colonization benefits all countries and supports equitable development

History

Origins of International Space Law (1950s)

The launch of Sputnik 1 by the Soviet Union in 1957 inaugurated human activity in outer space and simultaneously raised the question of how such activities should be governed, given that no legal framework for space yet existed. In response, the United Nations General Assembly adopted Resolution 1348 in 1958, establishing the Committee on the Peaceful Uses of Outer Space (COPUOS) on a temporary basis, and Resolution 1472 in 1959, which made it a permanent body. Because space activity at this time was conducted almost entirely by the two superpowers, the early legal framework did not yet address the role of private actors or the possibility of permanent human settlement.

The Outer Space Treaty and Foundational Principles (1960s)

In 1963, COPUOS adopted the Declaration of Legal Principles Governing Space Activities, which served as the basis for the Outer Space Treaty, opened for signature on 27 January 1967 and entered into force on 10 October 1967. Its core provisions prohibit the placement of nuclear weapons in orbit or on celestial bodies, reserve the Moon and other

celestial bodies exclusively for peaceful purposes, and establish that outer space is not subject to national appropriation by claim of sovereignty. The treaty further affirms that states bear responsibility for all national space activities, whether conducted by governmental or non-governmental entities, and it remains the foundational instrument of contemporary space law. This non-appropriation principle was later reinforced by the 1979 Moon Agreement, which declared lunar resources the common heritage of mankind, though no major spacefaring state ratified it and it remains limited in practical effect.

Multilateral Cooperation and the International Space Station (1980s–1990s)

In 1984, the United States announced the development of a permanent space station, designated "Freedom," initiating the first multilateral framework for sustained human presence in orbit. This effort culminated in the International Space Station (ISS), whose foundational Intergovernmental Agreement (IGA) was signed on 29 January 1998 by the United States, Russia, Japan, Canada, and eleven ESA member states, formally integrating the Russian Federation into the partnership. The agreement established a hybrid jurisdictional regime under which each partner state retains jurisdiction and control over its own station elements and personnel, creating a precedent for multiple national legal systems operating within a single space facility. With the launch of the first module in November 1998 and the arrival of the first resident crew on 2 November 2000, continuous human presence in low Earth orbit began.

The Emergence of Commercial Space Actors (2000s)

The founding of Blue Origin in 2000 and SpaceX in 2002 signaled the emergence of a commercial space industry that would progressively challenge the state-centered model upon which existing space law had been built. The development of reusable launch vehicle technology substantially reduced the cost of access to space and facilitated the rise of space tourism and commercial orbital infrastructure. Concurrently, the continuous occupation of the ISS from November 2000 onward provided empirical evidence of the technical feasibility of long-duration human habitation in space.

Space Resource Rights and Legal Tensions (2010s)

On 25 November 2015, the United States enacted the Commercial Space Launch Competitiveness Act (CSLCA), which grants U.S. citizens the right to possess, own, transport, use, and sell asteroid and space resources that they commercially recover. This created tension with Article II of the Outer Space Treaty, which prohibits national appropriation of celestial bodies, although the United States maintained that recognizing resource ownership is separate from claiming territorial sovereignty and therefore consistent with its treaty obligations. The enactment accordingly marked an important turning point in the international debate over private-sector participation in space resource utilization.

Contemporary Settlement Initiatives and Regulatory Deficits (2020s–Present)

On 13 October 2020, the United States and seven partner nations established the Artemis Accords, a set of non-binding principles intended to guide civil space exploration, with the number of signatory states subsequently expanding. In parallel, the People's Republic of China and the Russian Federation announced the International Lunar Research Station (ILRS) project, with the objective of constructing a permanently inhabited base at the lunar south pole by 2036. Despite these advances, no comprehensive international legal framework presently exists to govern permanent human settlements, large-scale resource extraction, or the risks of militarization; while COPUOS has begun discussions on updated guidelines, progress remains slow due to differing national interests among the principal spacefaring states.

Key issues

Lack of Comprehensive International Guidelines for Space Colonization

No unified international framework presently exists to govern space colonization, despite rapid technological advances and concrete lunar and Mars settlement plans announced by both national programs and private companies. Existing instruments, including the Outer Space Treaty and the Moon Agreement, were designed for state-led exploration and do not adequately address permanent human settlements, jurisdiction over colonists, or the operations of private entities in extraterrestrial environments. As a result, fundamental

questions of governance, accountability, and international oversight remain unanswered even as permanent settlements become technically feasible within the coming decades.

Unclear Governance of Space Resources

Space resource extraction is now technologically possible, yet the international legal status of extracted resources remains ambiguous. While the Outer Space Treaty prohibits national appropriation of celestial bodies, it does not clearly state whether privately extracted resources can be owned, creating an interpretive gap that states have begun to fill unilaterally. In 2015, the United States enacted the Commercial Space Launch Competitiveness Act, granting American companies the right to own and sell resources extracted from asteroids, a move that some states regard as consistent with the treaty and others view as a violation of the common heritage principle. This uncertainty risks unregulated competition for strategically valuable resources such as lunar water ice and water-rich asteroids, and it leaves unresolved the questions of who owns extracted materials, who regulates extraction, and how benefits should be shared among nations.

Legal Gaps in Jurisdiction and Human Rights on Colonies

Existing legal frameworks provide no clear guidance on which state's laws apply within a space settlement or how the rights of its inhabitants will be protected. In a multinational colony, it remains uncertain whether crimes, labor disputes, or civil matters should be governed by the law of the launching state, the host nation of the settlement, or an entirely new extraterrestrial legal regime. Furthermore, human rights protections for space colonists have not been defined, leaving questions of labor rights, safety standards, medical care, and democratic participation unanswered in the closed and isolated environment of a settlement, where traditional terrestrial legal remedies may be inaccessible. Without a framework for autonomous governance, colonists risk living under arbitrary or exploitative conditions with no recourse to established human rights mechanisms.

Risks of Militarization and Conflict in Space

The technologies and strategic locations central to colonization also carry significant security risks. Launch systems, satellites, and robotics developed for civilian settlement can be readily

adapted for military purposes, while sites such as lunar bases and orbital habitats could become militarized nodes. The peaceful-use principles of the Outer Space Treaty are too general to address the security challenges of a colonization era, and no clear international mechanism exists to prevent weaponization or to enforce peaceful use in the context of permanent settlements. Without updated guidelines addressing these security dimensions, human settlements beyond Earth could become a new arena for great-power competition and military confrontation, undermining the foundational principle that space should be used exclusively for peaceful purposes.

Major Parties Involved and Their Views

United States of America

The United States maintains that the recognition of private ownership over recovered space resources is compatible with Article II of the Outer Space Treaty, on the reasoning that owning an extracted resource is distinct from asserting sovereignty over the celestial body from which it came. It advances the Artemis Accords as the preferred vehicle for norm-setting, favouring non-binding principles agreed among like-minded states over binding instruments negotiated at COPUOS, where it regards progress as too slow to keep pace with commercial activity. Washington also defends the safety zone concept as a deconfliction measure rather than a territorial claim, and prioritises regulatory predictability for its domestic commercial sector.

SpaceX

SpaceX prioritizes rapid technological developments, minimal regulatory barriers, and clear property rights for extracted space resources to facilitate commercial space development and long-term settlement. The company favors international guidelines that protect innovation and commercial flexibility while supporting its ambitions for large-scale space infrastructure and Mars exploration.

Blue Origin

Blue Origin supports clear, predictable regulations governing space resource utilization, arguing that regulatory certainty is essential to encourage private investment in lunar infrastructure and orbital habitats. While favoring international cooperation and dialogue among spacefaring nations, the company advocates for a lightweight regulatory framework rather than heavy-handed oversight, believing that minimizing bureaucratic barriers will accelerate commercial participation and innovation in space settlement development.

China

China advocates for multilateral rule-making through UN institutions such as COPUOS, favoring binding international rules over voluntary arrangements for resource extraction and settlement governance. Through its International Lunar Research Station (ILRS), developed with international partners, China positions itself as an alternative to U.S.-led governance models. It opposes the Artemis Accords' safety zones as a form of territorial appropriation, while emphasizing equitable benefit-sharing and ensuring major spacefaring nations retain meaningful participation in future governance structures.

Russia

Russia supports negotiating new, legally binding international agreements through COPUOS, arguing that existing instruments require updating to address lunar and planetary settlement. It emphasizes state jurisdiction over registered space objects and personnel, consistent with the Outer Space Treaty's framework of national responsibility. Russia opposes U.S.-led safety zone proposals under the Artemis Accords, viewing them as exclusive spheres of influence, and instead advocates for a multipolar governance framework for lunar resource utilization and settlement.

European Union

The European Union prioritizes multilateral cooperation, sustainable exploration, environmental protection, and equitable access to space resources. While supporting the Artemis Accords and engaging closely with U.S.-led initiatives, it favors gradually building

on existing international frameworks rather than pursuing entirely new binding instruments. The EU emphasizes clearer rules that balance commercial activity with scientific cooperation, environmental safeguards, and planetary protection, positioning itself as a bridge between competing governance approaches.

Japan

Japan emphasizes international cooperation, transparency, peaceful use, and sustainable resource utilization within the framework of existing space law. It favors clear, inclusive international guidelines for resource extraction developed through broad consultation rather than unilateral action. Japan places particular emphasis on scientific cooperation, technology sharing among partner nations, and conflict prevention mechanisms, seeking to ensure that space colonization proceeds in a manner that maintains stability and mutual trust among spacefaring states.

India

India calls for equitable access to space resources and benefit-sharing, particularly for developing nations that currently lack independent space capabilities. It supports UN-led multilateral processes as the preferred venue for governance while pragmatically participating in voluntary frameworks such as the Artemis Accords. India consistently emphasizes that space colonization should generate benefits for all nations rather than create advantages exclusively for a small number of wealthy, technologically advanced space powers.

Republic of Korea

The Republic of Korea promotes international cooperation, transparency, peaceful use, and clear guidelines for resource utilization and settlement governance. While generally supporting the principles underlying the Artemis Accords, South Korea places equal emphasis on UN engagement through COPUOS, arguing that broader multilateral participation strengthens legitimacy. It also stresses the importance of technology transfer, capacity-building for emerging space nations, and sustainable, long-term space exploration practices.

International Organizations and UN Bodies

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

The Committee on the Peaceful Uses of Outer Space (COPUOS) serves as the primary UN forum for discussions on space law, resource utilization, and space settlement governance. It facilitates the development of international guidelines addressing emerging challenges while preserving the principles of peaceful use and non-appropriation.

UNOOSA (UN Office for Outer Space Affairs)

The United Nations Office for Outer Space Affairs (UNOOSA) promotes international cooperation and implementation of existing space law. It emphasizes inclusive participation, equitable benefits, and capacity-building while addressing the growing role of private actors and permanent space settlements.

Scientific and Academic Communities

Scientific and academic communities advocate for evidence-based international guidelines prioritizing safety, sustainability, and scientific integrity over commercial speed. They stress rigorous planetary protection protocols to prevent contamination of celestial bodies and Earth's biosphere. The COSPAR Panel on Planetary Protection, though not legally binding, reflects this view, calling for sterilization, waste disposal, and sample handling standards that preserve extraterrestrial environments for future research.

Emerging Stakeholders

Future space colonists, labor organizations, and environmental advocates form emerging stakeholder groups with distinct priorities. Space labor unions, including those representing NASA workers and industry employees in the UK and India, push to extend terrestrial labor protections—collective bargaining, occupational safety—to extraterrestrial settings. Environmental advocates, aligned with COSPAR and UNESCO's space ethics initiatives, call for strict protection protocols, oppose exclusion zones resembling territorial claims, and insist resource extraction not compromise research or environmental integrity.

Timeline of Relevant Resolutions, Treaties and Events

1959 — Establishment of UN COPUOS. General Assembly Resolution 1472 (XIV) made the Committee on the Peaceful Uses of Outer Space a permanent body, creating the central UN forum for international space law and peaceful space cooperation.

1967 — Outer Space Treaty. Opened for signature on 27 January and entered into force on 10 October, the foundational treaty establishing non-appropriation, peaceful use, and state responsibility for national space activities, whether governmental or non-governmental.

1979 — Moon Agreement. Declared the Moon and its natural resources the common heritage of mankind, but attracted only limited adoption and was ratified by no major spacefaring state.

1998 — ISS Intergovernmental Agreement. Signed on 29 January by fifteen partner states, the first major multinational framework for permanent human presence in space, establishing a hybrid jurisdictional regime that serves as the closest existing precedent for settlement governance.

2015 — U.S. Commercial Space Launch Competitiveness Act. Enacted on 25 November, granting U.S. citizens the right to own and sell commercially recovered space resources and placing the non-appropriation principle under direct interpretive strain.

2020 — Artemis Accords. Signed on 13 October by the United States and seven partner states, a non-binding framework for civil lunar exploration that introduced the contested concept of safety zones.

2021 — International Lunar Research Station (ILRS). Announced by China and Russia as a parallel lunar programme, with the objective of a permanently inhabited south-polar base by 2036, formalising the division into two competing governance blocs.

2021–2026 — COPUOS Working Group on Legal Aspects of Space Resource Activities.
Ongoing UN deliberations that have produced draft recommended principles while confirming that existing treaties are insufficient for permanent settlement.

Evaluation of Previous Attempts to Resolve the Issue

Previous attempts to address space colonization have relied on the Outer Space Treaty and related UN agreements, which were designed for state-led exploration and do not adequately govern permanent human settlements, private entities, or resource extraction. The five UN space treaties, administered by UNOOSA, establish foundational principles but lack specific provisions for commercial operations, multinational settlements, or the legal status of extracted resources, creating regulatory gaps as technological capabilities advance faster than international law.

Initiatives like the Moon Agreement and Artemis Accords have advanced international cooperation but remain limited in scope: the Moon Agreement lacks participation from major space powers, with only 18 signatories and none of the major spacefaring states having ratified it, while the Artemis Accords are a U.S.-led framework rather than a universally binding treaty. As of June 2026, the Artemis Accords have 68 signatories but remain non-binding political commitments that do not require parliamentary ratification, carry no enforcement mechanism, and exclude major space powers including China and Russia, who are pursuing the separate International Lunar Research Station initiative.

Consequently, there is still no comprehensive international framework specifically for space colonization, leaving critical gaps in resource governance, jurisdiction over colonists, human rights protections, and mechanisms to prevent militarization or conflict in space. COPUOS Working Group discussions from 2021-2026 have produced draft recommended principles on space resource activities, but these remain non-binding and lack the enforcement mechanisms necessary to address the competing interests of Artemis Accords signatories, ILRS partners, and non-aligned spacefaring nations, perpetuating legal uncertainty as multiple actors prepare for permanent lunar presence.

Possible Solutions

- Establish a new UN-led international treaty specifically for space colonization that comprehensively addresses the legal gaps left by the Outer Space Treaty and related agreements. This treaty should define jurisdiction over multinational settlements by clarifying which state's laws govern different aspects of colony governance, establish clear rules for space resource extraction that balance commercial interests with the common heritage principle, and ensure equitable benefit-sharing among all nations regardless of their current space capabilities. It should further incorporate dispute resolution mechanisms, liability frameworks for accidents or environmental damage, and periodic review processes to keep pace with technological advances. By creating a binding international instrument rather than relying on voluntary guidelines, the global community can prevent a patchwork of conflicting national laws and ensure that space colonization proceeds under unified, predictable legal standards.
- Create an international regulatory body under COPUOS/UNOOSA with the authority to monitor compliance, approve private space activities, and enforce peaceful-use and sustainability standards for space colonies. Modeled on the International Atomic Energy Agency (IAEA) in the nuclear domain, this body would provide licensing, inspection, and certification services for space settlement operators while maintaining a registry of all permanent space installations and their personnel. It would be empowered to investigate violations, impose sanctions on non-compliant actors, and mediate disputes between states or private entities operating in space. Funding could be drawn from member-state contributions and licensing fees proportional to the scale of commercial operations, ensuring the regulatory framework remains financially sustainable and independent. Such centralized oversight would address the current fragmentation of space governance and establish a single point of accountability for compliance with international space law.
- Develop detailed technical and legal guidelines for ISRU, habitat safety, labor rights, and human rights protections in space settlements, underpinned by mandatory international cooperation and transparency mechanisms. These guidelines should specify minimum standards for life-support system redundancy, radiation shielding, emergency evacuation protocols, and medical care capacity to safeguard colonists in isolated, high-risk environments. Labor provisions should address working hours,

compensation, occupational health standards, and the right to organize, in recognition that conventional terrestrial labor laws may not adequately protect workers within closed extraterrestrial habitats. Human rights protections must guarantee freedom of expression, due process, access to communication with Earth, and democratic participation in settlement governance, thereby preventing authoritarian control over isolated communities.

- Establish interoperability mechanisms between the Artemis Accords and ILRS frameworks. The Artemis Accords (68 signatories as of 2026) and the China- and Russia-led International Lunar Research Station (ILRS) represent competing governance models: the former establishes safety zones and deconfliction measures, while the latter operates through bilateral memoranda of understanding without a publicly available, comprehensive regulatory structure. Rather than compelling states to align exclusively with one framework, the international community should develop technical and legal interoperability protocols enabling coordination between Artemis and ILRS operations—including shared safety zone notification systems, mutual consultation procedures to prevent harmful interference, and joint emergency response mechanisms. Such interoperability would reduce the risk of operational conflicts, forestall the emergence of incompatible lunar infrastructure standards, and create pathways toward eventual convergence around unified international guidelines under UN leadership.

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