SOMUN 2025

United Nations Office for Outer Space Affairs (UNOOSA)

Agenda for the year 2025 - Promoting Equitable Access to Space Technologies and Strengthening the role of Emerging Space Nations

The Executive Board :

Chair: Arnav Singh Rawat

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1. Letter from the Executive Board

Distinguished Delegates,

It is with great honor that the Executive Board welcomes you to the United Nations Office for Outer Space Affairs (UNOOSA).

In your capacity as diplomats and policymakers, you are entrusted with a mandate of celestial importance: to guide the future of humanity's engagement with the cosmos. This committee is intended not merely as a forum for debate, but as a crucible for the ideas that will define a new, more inclusive era of space exploration and utilization. The determinations reached within this committee are poised to have generational repercussions, deciding whether outer space becomes an arena of shared progress or a new frontier of division and conflict.

Outer space is no longer a distant frontier; it constitutes an integral part of modern global infrastructure, critical for communication, navigation, climate monitoring, disaster management, and sustainable development. The data derived from satellites in orbit facilitates food security through precision agriculture, enables the provision of remote medicine in underserved communities, permits the tracking of our planet’s vital ecosystems, and provides life-saving early warnings for natural disasters such as hurricanes and wildfires.

Nevertheless, the benefits of this revolutionary technology are not yet distributed equitably. Significant technological and financial barriers to entry, compounded by restrictive policies on technology transfer, threaten to create a new and profound dimension of global inequality, relegating developing nations to the role of passive consumers rather than active participants and innovators. This creates a dependency that not only stifles local innovation but also raises questions of data sovereignty and national security.

The primary task of this committee is to bridge this divide. It is imperative to explore tangible mechanisms that foster genuine international cooperation, facilitate the transfer of technology and knowledge, and build sustainable, long-term capacity in nations initiating their space activities. Deliberations must focus on how to ensure outer space remains a true global commons—an arena for shared scientific discovery and mutual progress, in full alignment with the foundational principles of the Outer Space Treaty. This objective requires a transition from rhetoric toward concrete, actionable policies that recognize the unique role of multilateralism in managing a domain that belongs to all humankind.

Delegates are expected to engage in rigorous research, thoughtful debate, and collaborative diplomacy. It is essential that you come prepared to represent your respective national interests while demonstrating the vision to work towards a global consensus. The solutions formulated herein possess the potential to democratize space, prevent conflict in this critical domain, and ensure that its boundless benefits uplift all of humanity for generations to come.

The Executive Board anticipates a productive and inspiring committee session.

Sincerely,

The Executive Board
United Nations Office for Outer Space Affairs (UNOOSA)

2. About the Committee

The United Nations Office for Outer Space Affairs (UNOOSA) is the primary body charged with fostering international cooperation in the peaceful uses of outer space. Its core mandate is to ensure that the benefits of space technology are accessible to all countries, particularly developing nations. This guide is a comprehensive resource designed to equip delegates with the knowledge necessary to navigate the complex issues surrounding equitable access to space technologies and the empowerment of emerging space nations. We will explore the historical context, the current legal and economic frameworks, the specific challenges faced by new space actors, and the critical role of international collaboration.

This committee is tasked with a monumental challenge: to bridge the "space divide" and create a future where all nations, regardless of their economic or technological capabilities, can fully participate in and benefit from the space enterprise. Delegates must consider how to transform abstract principles into tangible, actionable, and sustainable solutions that can be implemented on a global scale.

3. Overview of the Agenda

The agenda before this committee, "Promoting Equitable Access to Space Technologies and Strengthening the Role of Emerging Space Nations," addresses one of the most pressing challenges and profound opportunities of the 21st century. For decades, the domain of outer space was the exclusive preserve of a limited number of states, a distant frontier accessible only to those with immense economic and technological resources. Today, that landscape is undergoing a transformation at an unprecedented rate. The rise of new national space programs and the burgeoning private space industry—a phenomenon often termed "NewSpace"—have created remarkable opportunities. Concurrently, they have highlighted stark disparities and raised complex new questions concerning governance, sustainability, and equity that the original architects of space law could scarcely have foreseen. The very definition of a "space-faring nation" is being rewritten, and with it, the rules that govern this global commons.

Outer space, once the ultimate arena for Cold War competition, now constitutes a critical enabler of modern life and a key driver for achieving the 2030 Agenda for Sustainable Development. The linkage between space technology and the Sustainable Development Goals (SDGs) is not abstract; it is concrete, quantifiable, and indispensable across the entire spectrum of global development challenges.

The Symbiotic Relationship between Space and Sustainable Development

The utility of space-based assets in meeting the SDGs is vast and multifaceted. Earth observation (EO), satellite communications (SATCOM), and Global Navigation Satellite Systems (GNSS) form a technological trinity that provides invaluable data and services for evidence-based policymaking.

- **SDG 2 (Zero Hunger):** EO satellites provide critical data on soil moisture, crop health, and weather patterns, enabling precision agriculture that optimizes irrigation and fertilizer use. In India, a national program utilizing satellite data has helped farmers achieve water savings of up to 30% while increasing crop yields. This model is being replicated globally, but significant challenges remain. In regions dominated by smallholder farms, such as northern Mozambique, fields are often smaller than the resolution of freely available satellite imagery, making accurate monitoring difficult without access to very-high-resolution (VHR) commercial data. Recognizing these gaps, UNOOSA's *Space for All* initiative seeks to democratize access to space technology for developing countries, ensuring that even the most resource-constrained nations can benefit from satellite data for agriculture and food security. Beyond agriculture, space assets are crucial for humanitarian response. The Famine Early Warning System Network (FEWS NET) uses satellite-derived data on rainfall and vegetation to provide decision-makers in food-insecure nations like Ethiopia with unbiased estimates of domestic food production, allowing for the pre-positioning of aid to prevent famine.
- **SDG 3 (Good Health and Well-being):** SATCOM is a lifeline for telemedicine, connecting remote rural clinics with urban specialists and enabling remote diagnostics in underserved communities. EO data is also used to map the spread of vector-borne diseases like malaria by monitoring environmental factors such as water bodies and vegetation, which serve as breeding grounds for mosquitos.
- **SDG 6 (Clean Water and Sanitation):** Space-based sensors can monitor water quality in lakes and rivers, track groundwater levels, and map areas vulnerable to drought. The joint U.S.-German

Gravity Recovery and Climate Experiment (GRACE) mission has provided unparalleled data on the depletion of the world's major aquifers, informing national water management policies from California to the Middle East.

- **SDG 13 (Climate Action) & SDG 14 (Life Below Water):** Satellites are the primary tool for monitoring key climate variables on a global scale, from atmospheric greenhouse gas concentrations to the recession of glaciers and the rise in global sea levels. The data from programs like the European Union's Copernicus is indispensable for the reports of the Intergovernmental Panel on Climate Change (IPCC). For low-lying island nations, this data is an existential necessity. In Tuvalu, a partnership between NASA and the United Nations leverages high-precision satellite altimetry to project future sea-level rise, providing the scientific foundation for national adaptation strategies and strengthening proposals for accessing international climate finance. Additionally, satellite-based monitoring supports Pacific Island nations in protecting their vast Exclusive Economic Zones (EEZs) from illegal, unreported, and unregulated (IUU) fishing, which threatens both their economies and marine biodiversity. While such operational systems are primarily managed by national and regional space agencies, UNOOSA plays a complementary role by promoting equitable access to this data for vulnerable states.
- **Other Key Contributions:** Space technology also provides essential support for **SDG 7 (Affordable and Clean Energy)** by identifying optimal locations for solar and wind farms; **SDG 9 (Industry, Innovation and Infrastructure)** through satellite communications that bridge the digital divide; and **SDG 11 (Sustainable Cities and Communities)** by using high-resolution imagery for urban planning and disaster impact assessment in densely populated areas.

Defining the "Space Divide"

Despite these universal benefits, the capability to develop, launch, and operate space assets remains heavily concentrated among a few nations and corporations. This asymmetry creates equitable access or capacity-building gaps, an inequality that perpetuates existing economic disparities. Initially, this divide was defined by the gap between nations that could launch satellites and those that could not. Today, as the cost of hardware decreases, the divide has evolved and is more accurately characterized by the gap between nations that can independently generate and utilize space-derived intelligence and those that remain dependent on external providers.

- **The Data-to-Intelligence Gap:** A primary manifestation of the modern space divide is the gap between raw data availability and its conversion into actionable intelligence. While public programs like Copernicus and Landsat provide petabytes of free EO data, many developing countries lack the high-speed connectivity, computational infrastructure, and trained analysts necessary to transform that data into an actionable map for first responders during a flood or a crop yield forecast for a ministry of agriculture. This bottleneck prevents the realization of space technology's full potential, as data without the capacity for analysis is inert.
- **From Consumers to Producers:** The space divide risks creating a permanent dependency, relegating many nations to the role of passive consumers of space data and services—often at considerable cost and with limited control over data policies—rather than empowering them as sovereign producers and co-developers of space capabilities. "Equitable access," therefore, is a multifaceted concept that extends beyond possessing a satellite. It encompasses the fair and

affordable access to space-derived data; the opportunity to develop and deploy national space technologies; the ability to cultivate a skilled domestic workforce; and the right to participate meaningfully in the international governance of outer space.

Strengthening the role of emerging space nations is consequently not an act of charity, but ultimately for the benefit of all humankind for a sustainable and stable global space environment. Their participation introduces diverse perspectives and crucial local knowledge to global challenges. A more inclusive space ecosystem is also a more resilient and innovative one, helping to discourage the monopolization of strategic orbital locations or resources and enhancing global capacity to address shared challenges. Through its mandate, UNOOSA facilitates dialogue, builds capacity, and promotes international cooperation to ensure that access to outer space remains equitable and sustainable. This agenda, therefore, calls upon the international community to forge a truly cooperative framework for the peaceful uses of outer space for all.

4. Historical Aspects

The history of space exploration commenced as a bilateral competition, a potent symbol of the ideological and technological rivalry of the Cold War. The launch of Sputnik 1 by the Soviet Union in 1957, Yuri Gagarin's first human spaceflight in 1961 and the subsequent landing of Apollo 11 on the Moon by the United States in 1969 defined the early space age. During this period of heightened tension, the United Nations assumed a crucial and forward-thinking role in establishing a legal foundation to prevent terrestrial conflict from extending into the heavens.

- **1959: The Birth of Multilateral Space Governance:** Recognizing the dual potential of the space age for both conflict and cooperation, the United Nations General Assembly established the Committee on the Peaceful Uses of Outer Space (COPUOS) which serves as a forum for international cooperation and norm development. The United Nations Office for Outer Space Affairs (UNOOSA) was subsequently created to serve as the secretariat for COPUOS and to implement its mandates.
- **1967: The Outer Space Treaty:** This foundational treaty, formally titled the "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies," serves as the cornerstone of international space law. Its most important tenet, Article I, establishes space as the "province of all mankind," free for exploration and use by all states on a basis of equality and for the "benefit and in the interests of all countries." It also explicitly forbids claims of national sovereignty, the placement of nuclear weapons in orbit, and the establishment of military fortifications on celestial bodies. This treaty, along with four others negotiated in the subsequent decade, represents the "treaty era" of space law, characterized by the creation of legally binding international instruments.
- **1970s-1990s: From Bipolarity to Multipolarity:** This era was characterized by a gradual shift from bipolar competition to multipolar participation. The emergence of other major space powers, including the European Space Agency (ESA)—a powerful model of pooled resources and sovereignty—as well as Japan (JAXA) and China, diversified the landscape. Cooperation began to supplement competition, most notably with the symbolic Apollo-Soyuz Test Project in 1975 and later the monumental International Space Station (ISS), a symbol of post-Cold War detente and the largest international scientific project in history.
- **2000s-Present: Commercialization, Democratization, and the Rise of "Soft Law":** The 21st century is defined by two paradigm-shifting trends. First, the **commercialization** of space, led by private companies such as SpaceX have revolutionized launch services, drastically reducing costs and increasing launch frequency. Second, the **democratization** of space has been driven by the miniaturization of technology, particularly the development of standardized small satellites known as CubeSats, which has radically lowered the barrier to entry. This has enabled universities, smaller countries, and research institutions to build and launch their own satellites for the first time. The success of missions such as Kenya's 1KUNS-PF (2018), Colombia's FACSAT-1 (2018), and Vietnam's NanoDragon (2021) exemplifies this trend. At present, over 80 countries have at least one satellite in orbit, a dramatic increase from just a few decades ago. This new era is also marked by a shift in governance. As the negotiation of new, universally binding treaties has become more difficult, the international community has increasingly turned to non-binding "soft law" instruments,

such as guidelines and bilateral accords, to regulate new activities. This transition from the treaty era to the soft law era presents both opportunities for flexible governance and challenges for maintaining a universal legal framework.

5. Current Situation

The contemporary space domain is characterized by increased participation and activity and escalating challenges to its long-term sustainability. The sheer scale and pace of change are testing the limits of existing governance structures and demand urgent international attention.

The Global Space Economy: A Trillion-Dollar Frontier

The global space economy has become a major engine of global economic growth, deeply integrated with terrestrial industries from telecommunications to agriculture. In 2023, according to the World Economic Forum, the value of the global space economy reached a record **$630 billion**, with the commercial sector accounting for a dominant 78% of this total. Projections indicate that the space economy is on a trajectory to exceed **$1.8 trillion by 2035**, growing at an average annual rate of 9%, well above the projected growth of global GDP. This growth is propelled by decreasing launch costs, technological innovation, and an insatiable demand for satellite-based services. This rapid expansion underscores the immense economic stakes involved in ensuring the space environment remains safe, stable, and accessible to all.

Metric	Value / Projection
Total Value (2024)	$613 Billion
Commercial Sector Share (2024)	78%
Government Sector Share (2024)	22%
Projected Value (2035)	$1.8 Trillion
Projected Annual Growth Rate	9%

Table 1: The Global Space Economy in 2024

The New Launch Paradigm and Orbital Congestion

The landscape of space access has been fundamentally reshaped, moving from a domain dominated by a few state-led programs to one where commercial providers and a small number of major launch powers play a central role. In 2024, a total of 259 orbital launches were conducted globally. The United States led with 154 launches, followed by China with 68. Russia carried out 17 launches, while Europe conducted 3, reflecting an evolving geopolitical balance in launch capabilities.

This high launch cadence is driven primarily by the deployment of mega-constellations—thousands of satellites in Low Earth Orbit (LEO) designed to provide global high-speed internet. Commercial entities

such as SpaceX (Starlink), and Amazon (Project Kuiper) are at the forefront of this trend. SpaceX's Starlink constellation alone now comprises over 5,000 active satellites. China is also advancing its own large-scale constellation, Guowang, which envisions several thousand satellites to provide global coverage. Meanwhile, India, through its Bharti Group's major stake in OneWeb and the Indian Space Research Organisation's (ISRO) launch support, has positioned itself as a significant contributor to this emerging ecosystem. While this development promises to bridge the digital divide, it also creates unprecedented challenges. The proliferation of these constellations is the primary cause of orbital congestion, exponentially increasing the risk of collisions. It also creates significant radio frequency interference for other services, including meteorological satellites, and poses a major challenge for ground-based astronomy by creating streaks in long-exposure images, which threatens to obscure scientific discovery. The International Telecommunication Union (ITU) faces immense pressure in allocating spectrum for these constellations without disadvantaging future operators from emerging nations.

Country/Entity	**Number of Orbital Launches (2024)**
United States	154
↳ *of which, SpaceX*	*134*
China	68
Russia	17
Japan	7
India	5
Europe (Arianespace)	3
Global Total	**259**
Table 2: 2024 Orbital Launch Statistics by Major Actors	

The Escalating Threat of Space Debris

The orbital environment is becoming increasingly polluted, posing a direct threat to the safety and sustainability of all space activities. As of today, more than **36,500 pieces of debris larger than 10 centimeters** are being actively tracked, with millions of smaller, untrackable pieces also in orbit. At

orbital velocities, even a small paint fleck can cause catastrophic damage to an operational satellite.

Catastrophic events, such as the deliberate 2007 Chinese anti-satellite weapon test and the accidental 2009 collision between the Iridium 33 and Kosmos-2251 satellites, created massive debris clouds that will persist for centuries. The Kessler Syndrome, a theoretical scenario wherein orbital debris density becomes so high that collisions create a cascading chain reaction of new debris, is no longer a distant concept but a growing concern for space operators. There is a clear international consensus that simply mitigating the creation of new debris is no longer sufficient. To stabilize the orbital environment, **Active Debris Removal (ADR)**—the process of actively capturing and de-orbiting large, defunct objects—is now considered an essential and urgent requirement. However, the legal, financial, and political frameworks to enable and govern ADR are still in their infancy.

6. Stakeholder Analysis: Detailed Profiles

The contemporary space arena is a complex ecosystem of established powers, rising nations, international bodies, and influential private companies. Understanding their capabilities, motivations, and strategic postures is essential for navigating the agenda.

A. Established Space Powers: Programs and Statistics

These nations possess comprehensive space capabilities, from launch and satellite manufacturing to deep space exploration, and their policies significantly shape the global governance landscape.

United States

- **Budget and Scale:** The U.S. possesses the world's largest space budget. In FY2024, total investment exceeded **$55 billion**, comprising **NASA's civil budget of $24.9 billion** and the **U.S. Space Force's defense budget of $30 billion**. The U.S. leads the world in launch activity, with 154 orbital launches in 2024, the majority conducted by commercial provider SpaceX.
- **Key Programs:** The Artemis Program is the centerpiece of U.S. civil space efforts, aiming to return humans to the Moon and establish a sustainable lunar presence as a stepping stone to Mars. While framed as an international effort, it is primarily a U.S.-led initiative underpinned by the Artemis Accords—a set of non-binding principles for lunar exploration that over 30 countries have signed. However, many states view the Accords as reflecting U.S. priorities rather than a multilateral framework developed through the United Nations. In parallel, the U.S. government has fostered a vibrant commercial space industry through programs like NASA's Commercial Crew & Cargo, which contract with companies such as SpaceX and Boeing to service the ISS, driving down costs and spurring innovation.
- **Strategic Posture:** The U.S. frames its space policy around leadership, international cooperation through alliances, and ensuring the "peaceful use" of space. Simultaneously, it is preparing to deter and defend against hostile acts in space through the Space Force. Its export control regime, the International Traffic in Arms Regulations (ITAR), remains a significant barrier to technology transfer for many international partners.

People's Republic of China (CNSA)

- **Budget and Scale:** China's official space budget is not public, but credible estimates place it second globally, between **$12 billion and $14 billion annually**. China has rapidly increased its launch cadence, conducting 68 launches in 2024, and now possesses the second-largest number of active satellites.
- **Key Programs:** The **Tiangong Space Station**, a multi-module station in LEO, is a symbol of China's technological prowess. China has actively invited international partners to conduct experiments aboard Tiangong, positioning it as an alternative to the aging ISS. The **Chang'e lunar program** has achieved landmark successes, including the first soft landing on the far side of the Moon and a successful lunar sample return mission. The **BeiDou Navigation System** is a global competitor to GPS, providing strategic autonomy.
- **Strategic Posture:** China's space program is deeply integrated with its national development and

geopolitical goals. Through its **"Space Silk Road"** initiative, an extension of the Belt and Road Initiative (BRI), China offers space capabilities (launch services, satellite construction, data sharing) to partner nations, particularly in Asia, Africa, and Latin America, thereby expanding its influence and creating technological dependencies.

Russian Federation (Roscosmos)

- **Budget and Scale:** Russia's space budget has faced significant constraints, estimated to be between **$1.5 billion and $3 billion**, a figure that is under increasing pressure due to the economic impacts of the war in Ukraine. Its launch rate has declined to 17 in 2024, though it maintains key capabilities with its Soyuz and Proton rockets.
- **Key Programs:** Roscosmos's primary focus remains human spaceflight, having provided the sole crew transportation to the ISS for nearly a decade via its reliable Soyuz spacecraft. It remains a key partner in the ISS but has announced plans to develop its own Russian Orbital Service Station (ROSS) and is pursuing a joint lunar base with China.
- **Strategic Posture:** Russia seeks to maintain its status as a major space power despite economic challenges. Geopolitical tensions have severely strained its long-standing partnerships with NASA and ESA, pushing it towards a strategic pivot and deeper cooperation with China. This is most clearly demonstrated by their joint **International Lunar Research Station (ILRS)** project, which stands as a direct geopolitical counterpoint to the U.S.-led Artemis Accords.

European Space Agency (ESA)

- **Budget and Scale:** ESA's 2024 budget is **€7.8 billion ($8.5 billion)**, funded by its 22 member states along with one associate(Latvia) and several cooperating states. Germany (€1.17B), France (€1.05B), and Italy (€881M) are the largest contributors.
- **Key Programs:** ESA operates the world-leading **Copernicus** Earth observation program, which provides free and open data crucial for climate monitoring, and the **Galileo** global navigation system. It is also developing its next generation of launchers, the Ariane 6 and Vega-C.
- **Strategic Posture:** ESA is a powerful model of pooled sovereignty, enabling European nations to achieve collective autonomy in space access and applications. However, it is currently facing a "launch crisis" due to significant delays with the Ariane 6 rocket and the grounding of the Vega-C, leaving Europe temporarily without independent launch capability.

Japan (JAXA)

- **Budget and Scale:** The Japanese government has established a **¥1 trillion (approx. $6.7 billion) Space Strategy Fund** to be disbursed over 10 years, with the goal of doubling the size of its domestic space market. The national space budget, including the annualized portion of this fund,ranges from ¥150 - ¥250 billion.
- **Key Programs:** JAXA launched its H3 flight in 2024, with the successful test flight (TF2) occurring on February 17, 2024. This second attempt to launch the H3 rocket was a success after the initial flight failed the previous year. Following which, the landmark **Smart Lander for Investigating Moon (SLIM)** mission, made Japan the fifth country to achieve a soft landing on the Moon. Japan is also a key partner in the Artemis Program, contributing a pressurized lunar rover for future crewed

missions.

- **Strategic Posture:** As a technologically advanced nation, Japan is leveraging its expertise for scientific exploration, commercial development, and international cooperation, closely aligning its space policy with the United States through its participation in the Artemis Accords.

Country/Entity	FY2024 Budget (USD Billions)
United States	**$54.9B** (NASA: $24.9B; USSF: $30.0B)
China (est.)	$12.0B - $14.0B
European Space Agency (ESA)	$8.5B
Japan (JAXA + Fund)	~$2.4B
Russian Federation (Roscosmos, est.)	$1.5B - $3.0B
India (ISRO)	$1.7B

Table 3: Comparative Analysis of Major National Space Budgets (FY2024)

B. Emerging Space Nations: Case Studies

These nations represent a diverse group of actors who are actively developing their space capabilities, driven by national development goals, economic diversification, and strategic ambition.

India (ISRO)

- **Philosophy and Budget:** The Indian Space Research Organisation (ISRO) is renowned for its "frugal innovation" model, achieving remarkable feats with an approximate budget of around ₹12,543 crore (~$1.9–2.0 billion).
- **Case Study: Chandrayaan-3 (2023):** This mission successfully landed a rover near the lunar south pole, a previously unexplored region believed to contain water ice. The entire mission cost only about $75 million, less than the budget of many Hollywood films, showcasing ISRO's cost-effective engineering. This success made India the fourth country to soft-land on the Moon and the first to do so at the south pole, cementing its status as a major space power.
- **Commercial Arm:** Through its commercial entity, NewSpace India Limited (NSIL), ISRO has become a competitive launch provider for small satellites, having launched over 400 foreign satellites for dozens of countries. This generates revenue and strengthens diplomatic ties.

United Arab Emirates (UAESA)

- **Philosophy and Budget:** The UAE's space program, with a budget of over $500 million, is a strategic investment in a post-oil, knowledge-based economy. The focus is on inspiring youth, developing high-tech human capital, and using a collaborative international model.
- **Case Study: Emirates Mars Mission (Hope Probe):** Launched in 2020, the Hope Probe was the Arab world's first interplanetary mission. Developed in partnership with U.S. universities, it successfully entered Mars orbit in 2021 to study the Martian atmosphere. The project was explicitly designed to develop a new generation of Emirati scientists and engineers, demonstrating a model of capacity building through ambitious, collaborative projects.

South Korea (KASA)

- **Philosophy and Ambition:** South Korea established the new **Korea AeroSpace Administration (KASA)** in May 2024 to consolidate its space efforts and foster a private-led space industry. The nation has set ambitious goals to become a top-five global space power, aiming to land on the Moon by 2032 and on Mars by 2045.
- **Budget and Programs:** KASA's proposed 2025 budget is **KRW 964.9 billion (approx. $700 million)**, a 27% increase from 2024. Key investments include the development of a next-generation launch vehicle, a lunar lander, and a national satellite navigation system (KPS).

The African Continent

- **Statistics and Trends:** As of 2024, 15 African nations have successfully launched satellites, with over 50 satellites launched continent-wide. However, most of these were built and launched by foreign partners, highlighting the ongoing need for indigenous capacity building.
- **Case Study: South Africa (SANSA):** The South African National Space Agency (SANSA) is one of Africa’s most advanced space agencies, focusing on Earth observation (e.g., SumbandilaSat, ZACube), space science, and telemetry, tracking and control (TT&C) services. Its Hartebeesthoek facility in Gauteng provides support for international satellite operations, while a major new development is SANSA’s partnership with NASA to establish a Lunar Exploration Ground Sites (LEGS) antenna at Matjiesfontein in the Western Cape, which will play a key role in global Artemis-related communications infrastructure. Looking ahead, SANSA’s 2024/25 Annual Performance Plan includes expanding into lunar and space exploration programmes and generating approximately R263 million from national and international space contracts, reflecting South Africa’s growing integration into the global space sector.
- **Case Study: Nigeria (NASRDA):** The National Space Research and Development Agency (NASRDA) has launched five satellites, focusing on remote sensing for agriculture, disaster management, and environmental monitoring. In 2024, NASRDA signed a Memorandum of Understanding with the U.S.-based Space Exploration and Research Alliance (SERA) to send the first Nigerian citizen to space, demonstrating a dual focus on practical applications and inspirational, high-profile missions.
- **Pan-African Efforts:** The African Space Agency, headquartered in Cairo, was officially launched in 2023. Its primary mandate is not to build rockets but to coordinate national space activities, harmonize data policies, and leverage collective resources to address African challenges like desertification and food security, based on the principles of the African Union's Agenda 2063.

Brazil (AEB/INPE)

- **Challenges of Inconsistent Funding:** Brazil's space program illustrates the difficulties faced by emerging nations with significant potential but inconsistent investment. Its 2024 budget is a modest **R$102 million (approx. $20 million)**, which is insufficient to maintain and expand its infrastructure, such as the Alcântara launch center. This has forced Brazil into a dependency model, relying on international partners like India for the launch of its Amazonia-1 satellite and China for the long-standing China-Brazil Earth Resources Satellite (CBERS) program. This situation highlights the critical need for sustainable domestic funding to achieve true technological sovereignty.

C. International Organizations and The Private Sector

United Nations Office for Outer Space Affairs (UNOOSA)

- UNOOSA's **"Access to Space for All"** initiative is a critical mechanism for capacity building. A key program within this is the **KiboCUBE**, a partnership with JAXA that offers developing countries the opportunity to deploy 1U CubeSats from the Japanese Kibo module on the ISS. Kenya's first satellite, 1KUNS-PF, was deployed through this program in 2018, providing a direct pathway to orbit for nations without launch capabilities. Other opportunities include access to microgravity research platforms like the Dream Chaser spaceplane which is planned for the future.

The Private Sector

- **SpaceX:** The company has fundamentally altered the economics of space access. The cost to launch a kilogram to LEO on the Space Shuttle was over $50,000. With the reusable Falcon 9, that cost has dropped to **below $2,000**. Its Starlink constellation now provides internet to over 6 million customers but also creates significant challenges for orbital sustainability.
- **Planet Labs:** This company operates the largest fleet of Earth observation satellites (over 200 "Doves"), imaging the entire landmass of the Earth every single day. This provides unprecedented data for agriculture, forestry, and disaster response, but also raises complex questions about data privacy and sovereignty for nations being imaged.

7. Past Actions/Legal Frameworks

The governance of outer space is predicated on a series of international treaties and principles developed under the auspices of the United Nations, primarily during the 1960s and 1970s. This foundational legal framework, known as the “corpus juris spatialis”, established space as a global commons but is now being tested by new technologies and actors. In addition to the core treaties, the UN General Assembly has adopted a set of “soft-law” principles to guide specific activities, including the Remote Sensing Principles, the Principles Relevant to the Use of Nuclear Power Sources in Outer Space, and the Principles on Direct Broadcasting Satellite Services. These instruments provide further guidance on responsible state conduct, the protection of Earth observation data, and the safe use of emerging space technologies, helping to fill gaps not explicitly covered by binding treaties.

The "Corpus Juris Spatialis": A Foundation Under Stress

The core of international space law consists of five treaties:

- **The Outer Space Treaty (1967):** The foundational legal framework establishing outer space as a global commons for the benefit of all countries, not subject to appropriation, and designated for peaceful purposes. It also establishes state responsibility for all national space activities, whether governmental or private.
- **The Rescue Agreement (1968):** Requires states to provide all possible assistance to astronauts in distress and to return them, as well as any recovered space objects, to the launching state.
- **The Liability Convention (1972):** Elaborates on the Outer Space Treaty by establishing that launching states are absolutely liable for any damage caused by their space objects on the surface of the Earth or to aircraft.
- **The Registration Convention (1975):** Requires launching states to register their space objects with the UN by providing basic orbital parameters and general function. Its effectiveness is limited, as the information provided is often minimal and not timely enough for effective space traffic management.
- **The Moon Agreement (1979):** Aims to establish an international regime for the exploitation of lunar resources, based on the principle of the common heritage of humankind. It has been ratified by only a limited number of nations and has not yet achieved the status of customary international law, leaving ongoing debates and uncertainties regarding the governance of space resource utilization.

Critical Analysis of the Liability Convention (1972)

While a landmark achievement, the Liability Convention was drafted for a state-centric era and is now ill-equipped to address the complexities of the modern space environment. Several critical gaps have emerged:

- **The "Fault" Gap for Debris Collisions:** For damage occurring in space (e.g., a satellite-on-satellite collision), the Convention requires proof of fault—a standard that is extremely difficult to meet in the high-velocity, often anonymous orbital environment, particularly for collisions involving untrackable or legacy debris. This leaves a significant legal vacuum for operators, especially new ones from emerging nations who may lose an asset with no clear path to recourse.
- **The Private Actor Dilemma:** The state-centric regime is poorly suited for disputes between private commercial operators. The treaty requires a state to sponsor a claim on behalf of its private entity against the state of the other entity, a cumbersome and politicized process that is inefficient for

commercial dispute resolution.

- **The Cyber Threat Loophole:** The Convention assigns absolute liability to the "launching state." It fails to account for a scenario where a satellite is hijacked through cyber means by a third party and caused to de-orbit or collide. Under a strict reading of the treaty, the original launching state would be held liable for damage it did not cause, creating a dangerous loophole that could be exploited by malicious actors.

The Rise of "Soft Law" and Parallel Governance

In the absence of new treaties, the international community has turned to non-binding instruments to govern new activities. This has led to a bifurcation in space governance, with competing frameworks emerging outside the UN system.

- **The COPUOS Long-term Sustainability (LTS) Guidelines (2019):** These 21 guidelines represent the primary multilateral achievement in space governance in recent years. They are, however, **voluntary and not legally binding**. They provide best practices on topics ranging from space debris mitigation to data sharing and international cooperation. The current international effort is focused on encouraging states to voluntarily implement these guidelines into their national policies and practices, thereby elevating them to the status of a global norm.
- **The Artemis Accords:** This is a significant U.S.-led initiative to create norms of behavior through a series of bilateral, non-binding agreements between NASA and the space agencies of partner nations. The Accords are framed as a means to "operationalize" the principles of the Outer Space Treaty for the Artemis lunar exploration program. However, they also advance a specific U.S. interpretation of the treaty, particularly regarding the legality of space resource extraction, which remains a contentious issue in international law.
- **Geopolitical Bifurcation:** The emergence of the Artemis Accords, signed by over 30 U.S. allies and partners, alongside the competing Sino-Russian International Lunar Research Station (ILRS) project, risks creating parallel and potentially incompatible "rules of the road" for crucial future activities like lunar mining. This fragmentation of governance could undermine the universalist spirit of the Outer Space Treaty and lead to future conflicts over resources and operational zones on the Moon and other celestial bodies.

Principle	**Outer Space Treaty (1967)**	**Artemis Accords (2020)**	**ILRS Project (China-Russia) (2022)**
Appropriation of Space	Article II: Outer space is "not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other	Section 10: Affirms that "the extraction of space resources does not inherently constitute national appropriation under Article II," and that contracts related to	Article II: Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or

	means."	resources should be consistent with the Treaty.	occupation, or by any other means.
Peaceful Purposes	Article IV: The Moon and other celestial bodies shall be used "exclusively for peaceful purposes." Military bases and weapons tests are forbidden.	Section 3: Reaffirms that all activities under the Artemis Program must be for peaceful purposes and in accordance with international law.	Article IV: The Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications shall be forbidden.
Responsibility & Registration	Article VI: States bear international responsibility for national activities, whether governmental or private.	Section 4 & 7: Emphasizes transparency in policies and plans and calls on partners to ratify and adhere to the Registration Convention.	Article VI & Article VIII: States are responsible for all national space activities and must ensure they follow international law. They retain jurisdiction over and must register all objects they launch into space.
Interference & Safety	Article IX: States shall conduct activities with "due regard to the corresponding interests of all other States Parties" and avoid "harmful interference."	Section 11: Proposes the creation of "safety zones" to prevent harmful interference and deconflict activities, a concept not explicitly defined in the Outer Space Treaty.	Articles IX & XII: States must avoid harmful interference and consult in advance if risks arise. Space facilities should be open for reciprocal inspection with prior notice to ensure safety and transparency.

Table 4: Core Principles of the Outer Space Treaty vs. the Artemis Accords	

8. Challenges and Gaps

Despite the rapid democratization of space, significant barriers and systemic gaps continue to hinder equitable access and threaten the long-term sustainability of the space environment. Addressing these challenges is the central task of this committee.

High Cost and Technological Barriers

While the cost of accessing space has decreased dramatically, the development and launch of even a modest space asset remains prohibitively expensive for many states. This financial barrier is compounded by technological hurdles, most notably restrictive export control regimes designed to prevent the proliferation of missile technology.

- **The ITAR Dilemma:** The U.S. International Traffic in Arms Regulations (ITAR) is a primary example of this challenge. By classifying many standard satellite components and related technical data as "munitions," ITAR imposes a complex, costly, and time-consuming licensing process for any project involving international collaboration. This can stifle legitimate scientific and educational partnerships, such as a university project involving foreign graduate students or a joint scientific satellite with an allied nation. In response to these hurdles, many international partners and commercial manufacturers have actively pursued the development of "ITAR-free" satellites and components, creating a competitive challenge for U.S. industry and fragmenting the global supply chain. While recent reforms aim to ease restrictions for civil and commercial space activities, the underlying challenge of balancing non-proliferation with international cooperation remains.

Capacity Building (Human, Institutional, Infrastructural)

A sustainable space program requires far more than hardware. A significant global gap exists across three pillars of capacity:

- **Human Capacity:** There is a global shortage of trained space professionals, including the engineers needed to build and operate satellites, the data scientists required to analyze their output, and the policy experts and lawyers needed to develop national space legislation.
- **Institutional Capacity:** Many emerging nations lack a dedicated national space agency or a clear regulatory framework to authorize and supervise space activities, which is a requirement under Article VI of the Outer Space Treaty.
- **Infrastructural Capacity:** This includes the physical infrastructure needed to support a space program, such as reliable ground stations for satellite communication, and the digital infrastructure, including high-performance computing centers and robust internet connectivity, for data processing and dissemination.

The Space Data Divide: From Availability to Usability

A critical impediment to equitable access is the gap between the availability of raw satellite data and its conversion into actionable intelligence. For instance, a disaster management agency in a developing country might receive raw satellite imagery of a flood in near-real-time, but it may lack the high-speed connectivity to download the large files, the computational power to process them, and the trained analysts to transform the data into an actionable map for first responders in a timely manner. This gap

between data availability and actionable intelligence remains a fundamental barrier, preventing many nations from translating the promise of space technology into tangible benefits for their citizens.

Sustainability and the "Tragedy of the Commons"

The orbital environment is a classic example of the tragedy of the commons. As a shared resource, there is little individual incentive for operators to incur the additional costs required for robust debris mitigation or timely de-orbiting maneuvers, leading to collective overuse and pollution of this finite resource.

- **Space Debris Proliferation:** The existing voluntary guidelines for debris mitigation, such as those from the IADC and COPUOS, lack enforcement mechanisms. Compliance is inconsistent, and the continued proliferation of satellites without a binding global consensus on debris mitigation and removal poses an existential risk to the space environment.
- **Lack of a Global Space Traffic Management (STM) System:** As orbits become more congested, the risk of collision grows daily. There is currently no authoritative international system for space traffic coordination or management. While several national and regional efforts are underway—such as the U.S. initiative to establish a civil STM capability under the Department of Commerce with its Traffic Coordination System for Space (TraCSS) and the European Union's STM approach—these are not yet globally integrated solutions. The absence of a common, trusted operational picture for all space actors increases the risk of miscalculation and collision.

9. Possible Areas of Action

Delegates are encouraged to focus on **collaborative, forward-looking, and politically realistic approaches** that can attract broad international support. The following themes highlight key gaps, competing perspectives, and areas where new cooperation could emerge.

A. Enhancing International Cooperation and Funding

Access to space remains highly uneven, with developing nations facing major financial and infrastructural barriers. While initiatives such as UNOOSA's *Access to Space for All* and various bilateral partnerships have improved inclusivity, there is still no dedicated multilateral mechanism to finance space-related projects linked to sustainable development.

- **Supporters of new funding mechanisms** argue they could reduce inequality and accelerate SDG-driven innovation.

- **Skeptics** highlight the geopolitical and economic realities that make spacefaring nations cautious about financing projects that could strengthen potential competitors.
  Debate may center on how to expand access—whether through voluntary contributions, public-private partnerships, or regional programs.

B. Promoting Capacity Building and Technology Transfer

Building long-term national capacity involves more than access to technology—it requires policy expertise, data literacy, and institutional readiness. UNOOSA's existing programs provide a foundation, but many states still face barriers due to restrictive export controls and limited training opportunities.

- Some delegates may emphasize **open-access models** and standardized technical assistance for peaceful uses.

- Others may stress the need to **preserve national security and non-proliferation norms**, calling for gradual, case-by-case cooperation.
  Key questions include how to balance transparency with protection of sensitive technologies, and how to empower developing nations to become independent space actors.

C. Ensuring the Long-Term Sustainability of Space

The rapid growth of satellites in orbit has intensified concerns over debris, collision risks, and the long-term safety of the orbital environment. While the *COPUOS Long-Term Sustainability (LTS) Guidelines* and the *IADC Space Debris Mitigation Guidelines* represent major progress, their voluntary

nature limits enforcement.

- Proponents of stronger global standards argue for integrating these guidelines into national laws and licensing systems.

- Others caution that binding obligations could overburden emerging operators and commercial actors.
  Debate may focus on practical ways to improve data sharing, debris mitigation, and space situational awareness without stifling innovation.

D. Evolving Governance Frameworks

Existing treaties—such as the *Outer Space Treaty* and *Moon Agreement*—form the foundation of space law but were crafted for a state-centric era. Today's landscape includes powerful private actors, new technologies, and commercial resource utilization efforts.

- Some states advocate updating or supplementing current treaties to address these developments.

- Others support a **"polycentric" approach**, strengthening existing norms while creating flexible, issue-specific arrangements for funding, sustainability, and data exchange.
  The challenge lies in balancing legal clarity with political feasibility, ensuring that governance evolves without fragmenting international consensus.

10. Questions to Consider

1. What is the most significant barrier preventing your nation, or nations with similar circumstances, from benefiting fully from space technologies? Do these barriers pertain primarily to cost, access to technology, human expertise, or the absence of national policy?
2. By what means can the international community balance the powerful commercial interests of private space companies with the principle of outer space as a global commons for the benefit of all?
3. What specific and practical role should UNOOSA and the ITU play in managing the challenges posed by mega-constellations, including orbital congestion and radio frequency interference?
4. Given the rise of parallel governance structures like the Artemis Accords and the ILRS, what role can COPUOS play to ensure a single, universal set of principles for space activities is maintained?
5. How can the international community promote equitable technology transfer for peaceful uses in emerging nations while maintaining safeguards against proliferation and misuse under regimes like ITAR?
6. Who should bear the responsibility for remediating existing space debris—the original polluting entities or the international community as a whole? What legal and financial mechanisms are needed to create a viable market for Active Debris Removal (ADR), and how can the costs be equitably distributed?
7. What specific mechanisms can ensure that data from Earth observation satellites is not merely available, but genuinely accessible, understandable, and usable for local and national policymakers in developing countries?
8. Should emerging nations prioritize the development of niche capabilities (e.g., ground-based infrastructure, satellite data analysis, application development) over comprehensive, independent space programs? What are the advantages and disadvantages of such an approach for national sovereignty and long-term development?
9. What mechanisms could be employed to establish a binding international framework for space traffic management to which all nations, and the private companies under their jurisdiction, would adhere?
10. How can a "Space for SDGs Fund," modeled on the Green Climate Fund, ensure that its projects build genuine, long-term national capacity rather than creating dependencies on external technology providers?

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