

Space Governance and the Political Race for Orbital and Lunar Resources

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ABSTRACT

The twenty-first century has witnessed a fundamental transformation in humanity's relationship with outer space, moving from an era defined largely by superpower prestige competition to one characterized by resource-driven strategic rivalry. This paper critically examines the evolving architecture of space governance against the backdrop of an intensifying political race for orbital slots, radio-frequency spectrum, and lunar resources such as water ice and rare minerals. Employing a doctrinal-analytical methodology grounded in international space law, political economy, and comparative policy analysis, the paper traces the historical foundations of space governance from the 1967 Outer Space Treaty through to contemporary frameworks such as the Artemis Accords and the Sino-Russian International Lunar Research Station. Particular attention is devoted to India's emergence as a consequential actor in this contest, examined through the lenses of the Indian Space Policy 2023, the Indian National Space Promotion and Authorisation Centre (IN-SPACe), the Chandrayaan-3 mission, and India's accession to the Artemis Accords. The paper argues that the existing legal regime—anchored in the principle of non-appropriation and the "common heritage of mankind" doctrine—is increasingly incongruent with the operational realities of a commercialized and multipolar space economy. It concludes by proposing a set of governance reforms aimed at reconciling equitable access with the legitimate commercial and strategic interests of both established and emerging spacefaring nations, with India positioned as a potential bridge-builder between competing blocs.

Keywords: *space governance, Outer Space Treaty, Artemis Accords, lunar resources, orbital slots, space law, India, ISRO, geopolitics of space*

1. Introduction

Outer space, once romanticized as the "final frontier" of scientific curiosity and peaceful cooperation, has been steadily reconstituted as a domain of strategic contestation. The years following the successful landing of India's Chandrayaan-3 mission near the lunar south pole in August 2023, the proliferation of low-earth-orbit (LEO) mega-constellations, and the acceleration of both the United States-led Artemis Accords and the China-Russia International Lunar Research Station (ILRS) initiative have collectively signalled the arrival of what several scholars and policymakers now term a "new space race" (Anantamias, 2026). Unlike the bipolar Cold War competition

between the United States and the Soviet Union, this contemporary race is multipolar, commercially inflected, and resource-driven, involving state agencies, private corporations, and a widening circle of middle powers.

At the heart of this contest lies a foundational tension. The bedrock instrument of international space law, the 1967 Outer Space Treaty (OST), enshrines outer space—including the Moon and other celestial bodies—as the "province of all mankind," explicitly prohibiting national appropriation "by claim of sovereignty, by means of use or occupation, or by any other means" (United Nations, 1967, Article II). Yet the treaty was drafted in an era when the extraction and

commercial exploitation of extraterrestrial resources was speculative fiction rather than imminent policy. Today, with private firms and national space agencies actively developing capabilities for lunar water-ice extraction, helium-3 mining, and asteroid resource utilization, the gap between the treaty's aspirational universalism and the operational logic of resource capture has become a central fault line in global space governance.

This paper interrogates that fault line. It asks three interrelated questions. First, how has the international legal and institutional architecture governing outer space evolved to address—or fail to address—the emerging competition over orbital and lunar resources? Second, what are the principal geopolitical dynamics driving this competition, and how are they manifesting in the strategies of major and middle powers, including the United States, China, Russia, the European Union, and India? Third, what governance reforms might reconcile the twin imperatives of equitable, rules-based access to space resources with the legitimate developmental and security interests of an expanding community of spacefaring nations?

The paper situates India as a particularly instructive case study. As a nation that has simultaneously pursued indigenous lunar exploration capability (through the Indian Space Research Organisation, ISRO), liberalized its domestic space economy (through the Indian Space Policy 2023 and IN-SPACe), and formally aligned itself with the United States-led Artemis framework (via its 2023 accession to the Artemis Accords), India occupies a distinctive strategic position—neither wholly within the Western bloc nor aligned with the Sino-Russian axis, and increasingly capable of shaping the normative contours of the emerging lunar governance regime.

2. Methodology and Theoretical Framework

This paper adopts a qualitative, doctrinal-analytical research design combining three complementary approaches: (a) legal-textual analysis of the corpus of international space law instruments, including the Outer Space Treaty (1967), the Rescue Agreement (1968), the Liability Convention (1972), the Registration

Convention (1975), and the Moon Agreement (1979); (b) comparative policy analysis of national and multilateral space governance frameworks, including the Artemis Accords, the ILRS initiative, and India's domestic space policy architecture; and (c) a political economy framework drawing on regime theory and the concept of "forum shopping" in international institutions to explain why states increasingly pursue plurilateral, soft-law arrangements (such as the Artemis Accords) in preference to renegotiating binding multilateral treaties through the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS).

The analysis is further informed by the "tragedy of the commons" heuristic as applied to orbital resources, particularly geostationary orbital slots and increasingly congested low-earth orbit, where the absence of enforceable property rights and the presence of open access create incentives for overuse and strategic pre-emption (Hardin, 1968, as commonly applied in space policy scholarship). Data for this paper were drawn from primary legal instruments, government policy documents (including the Indian Space Policy 2023 and IN-SPACe guidelines), official statements from national space agencies (NASA, ISRO, CNSA, Roscosmos), and secondary analytical literature from space law and international relations scholarship.

3. The Foundational Architecture of International Space Law

3.1 The Outer Space Treaty of 1967

The Outer Space Treaty, formally the "Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies," remains the constitutional bedrock of space law. Opened for signature in January 1967 amid the Cold War space race, the treaty establishes several principles of enduring relevance to the contemporary resource contest. Article I declares that the exploration and use of outer space "shall be carried out for the benefit and in the interests of all countries" and shall be "the province of all mankind," with freedom of scientific investigation guaranteed to all states (United Nations, 1967). Article II, the non-appropriation principle, prohibits national appropriation of outer space, the Moon, and other celestial bodies

by any means. Article IX requires states to conduct activities with "due regard" to the corresponding interests of other states and mandates international consultation where activities might cause "potentially harmful interference."

Crucially, the OST does not explicitly address the extraction and commercial use of space resources—a silence that has generated decades of legal ambiguity. A significant interpretive divide has emerged between states that read Article II as prohibiting only territorial sovereignty claims (thereby permitting resource extraction, akin to the freedom-of-the-high-seas fishing analogy) and states or commentators who argue that large-scale extraction constitutes a de facto form of appropriation inconsistent with the treaty's spirit.

3.2 The Moon Agreement of 1979 and Its Limited Ratification

The 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the "Moon Agreement") attempted to resolve this ambiguity by explicitly designating the Moon and its natural resources as the "common heritage of mankind" and calling for the establishment of an international regime to govern resource exploitation once such activity became feasible (United Nations, 1979). However, the Moon Agreement has been ratified by only a small number of states—none of which are major spacefaring powers such as the United States, Russia, China, or India—rendering it, in practical terms, a marginal instrument in contemporary space governance. This ratification failure is frequently cited by scholars as the definitive illustration of the limits of the "common heritage" doctrine when it conflicts with the commercial and strategic interests of technologically capable states (Anantamias, 2026).

3.3 The Rise of Unilateral and Plurilateral Resource Frameworks

In the absence of a binding multilateral consensus, several states have moved unilaterally to legislate domestic frameworks authorizing their nationals to extract and own space resources. The United States enacted the

Commercial Space Launch Competitiveness Act in 2015, explicitly granting U.S. citizens rights to possess, own, transport, and sell resources obtained from asteroids and other celestial bodies. Luxembourg followed with its own space resources law in 2017, positioning itself as a hub for space mining enterprises. These domestic legislative moves, while consistent with the "non-appropriation of territory, not resources" interpretation of the OST, have been criticized by other states—including Russia—as unilateral attempts to pre-empt a multilateral resource-governance regime that has yet to be negotiated (Anantamias, 2026).

3.4 The Artemis Accords: A Plurilateral Workaround

The Artemis Accords, announced in October 2020 under NASA and U.S. State Department stewardship, represent the most consequential recent development in this domain. Structured as a set of bilateral, non-binding political commitments rather than a treaty requiring ratification, the Accords articulate ten principles for lunar and deep-space cooperation, including peaceful purposes, transparency, interoperability, emergency assistance, registration of space objects, release of scientific data, preservation of outer space heritage, space resources, deconfliction of activities, and orbital debris mitigation (Room Space Journal, n.d.). Of these, the "space resources" principle is the most consequential for this paper's inquiry: it explicitly affirms that "the extraction and utilization of space resources... does not inherently constitute national appropriation," effectively operationalizing the permissive interpretation of Article II of the OST among signatory states.

The Accords have grown rapidly from eight founding signatories in 2020—Australia, Canada, Italy, Japan, Luxembourg, the United Arab Emirates, the United Kingdom, and the United States—to over fifty signatories by 2025, including Bangladesh, which became the fifty-fourth signatory in April 2025 (Bangladesh inks Artemis Accords, 2025). India signed the Accords on 21 June 2023, becoming the twenty-seventh nation to do so, in a ceremony at the Intercontinental Willard Hotel in Washington, D.C., with Indian Ambassador Taranjit Sandhu

signing on behalf of the Government of India (U.S. Department of State, 2023).

A second, and arguably more contentious, provision of the Accords is the concept of "safety zones"—areas around lunar operations within which signatory states may coordinate to avoid "harmful interference." Critics, particularly from Russia and China, have characterized safety zones as a soft mechanism for de facto territorial exclusion inconsistent with the OST's non-appropriation principle, even though the Accords themselves frame such zones as temporary, activity-specific, and non-sovereign (Anantamias, 2026).

3.5 The Sino-Russian International Lunar Research Station

In direct counterpoint to the Artemis framework, China and Russia announced the International Lunar Research Station (ILRS) initiative in 2021, envisioning a permanently crewed or roboticized research base at the lunar south pole. The China National Space Administration (CNSA) and Roscosmos signed a memorandum of understanding in March 2021 and subsequently released a roadmap envisioning a reconnaissance phase (2021–2025), a construction phase (2026–2035), and an operational utilization phase from 2036 onward (International Lunar Research Station, n.d.). China's Chang'e-8 mission, planned for approximately 2028, is intended to test in-situ resource utilization technologies that would underpin the ILRS's long-term resource strategy, including preliminary studies into a lunar-surface nuclear reactor to provide sustained power for the base by the mid-2030s (Baptista, 2025).

By 2025, the ILRS coalition had expanded to include Belarus, Pakistan, Azerbaijan, Venezuela, South Africa, Egypt, Nicaragua, Thailand, Serbia, and Kazakhstan, with China articulating an ambitious "555 Project" goal of engaging fifty countries, five hundred research institutions, and five thousand international researchers by 2035 (China's International Lunar Research Station, n.d.). Notably, China's outreach strategy for the ILRS has concentrated heavily on Global South states, mirroring Beijing's broader diplomatic posture and creating a visible ideological and geopolitical bifurcation

between the Artemis coalition (anchored in liberal-democratic, market-economy partners) and the ILRS coalition (anchored in states more closely aligned with, or dependent upon, Chinese and Russian strategic patronage).

This bifurcation is the defining structural feature of contemporary lunar governance: rather than a single, universally accepted multilateral framework, the international community is witnessing the crystallization of two competing plurilateral blocs, each articulating its own normative vision of permissible resource activity, safety protocols, and scientific data-sharing obligations. India's position within this bifurcated landscape—having joined Artemis while historically maintaining strategic autonomy and functional cooperation with Russia in other domains—renders its case especially significant for understanding how middle powers navigate bloc competition in the space domain.

4. The Political Economy of Orbital Resources

4.1 Geostationary Orbital Slots and Spectrum Scarcity

Before turning to the Moon, it is essential to examine the underexplored but equally consequential competition over Earth-orbital resources—principally geostationary orbit (GEO) slots and the associated radio-frequency spectrum allocated by the International Telecommunication Union (ITU). Geostationary orbit, located approximately 35,786 kilometers above the equator, is a physically finite resource: only a limited number of satellites can occupy specific orbital positions without causing harmful radio-frequency interference or physical collision risk. The ITU allocates orbital slots and spectrum through a "first-come, first-served" registration process (subject to coordination requirements), which has historically advantaged early-mover spacefaring nations, predominantly in the Global North, while later-developing nations—including India through much of the twentieth century—faced constrained access to prime orbital real estate.

This asymmetry prompted the 1976 Bogotá Declaration, in which several equatorial states asserted sovereign claims over the segment of geostationary orbit lying directly above their

territory, a claim never recognized by the broader international community but reflective of enduring resentment over the inequitable allocation of orbital resources (a foundational grievance that continues to animate Global South advocacy within COPUOS).

4.2 The Proliferation of Mega-Constellations and LEO Congestion

The twenty-first century has additionally witnessed an explosive proliferation of low-earth-orbit mega-constellations, led by private operators such as SpaceX's Starlink, alongside emerging competitors including Amazon's Kuiper constellation, China's Guowang/SatNet constellation, and a growing number of national and commercial LEO initiatives. This proliferation has generated two distinct governance concerns. First, orbital congestion and collision risk have escalated dramatically, reviving longstanding concerns about the "Kessler Syndrome"—the theoretical cascade of collisions that could render certain orbital shells unusable for generations, first modelled by Kessler and Cour-Palais (1978) in their foundational study on collision frequency among artificial satellites. Second, the scale of mega-constellation deployment by a small number of dominant commercial actors, predominantly American and Chinese, has raised concerns among other spacefaring nations, including India, about de facto market foreclosure in LEO despite the formal absence of any legal barrier to entry.

4.3 Debris, Sustainability, and the Governance Gap

Neither the OST nor subsequent liability and registration conventions were designed to address orbital debris mitigation at the scale now required. While the UN Space Debris Mitigation Guidelines (2007) and subsequent Long-Term Sustainability Guidelines adopted by COPUOS in 2019 represent important soft-law progress, they remain voluntary and non-binding. The Artemis Accords incorporate a debris-mitigation principle, while the ILRS framework has articulated comparable, though less detailed, sustainability commitments. The absence of a binding, universally applicable orbital traffic management regime constitutes one of the most acute governance deficits in contemporary space

law—one with direct implications for equitable future access, since unmitigated debris accumulation disproportionately threatens the ability of newly emerging spacefaring nations to establish orbital infrastructure relative to incumbents who have already secured favourable orbital positions.

5. Lunar Resources: The New Frontier of Strategic Competition

5.1 Why the Moon, and Why Now

Renewed interest in the Moon is driven by a confluence of scientific, economic, and strategic factors. Scientifically, the discovery of substantial water-ice deposits in permanently shadowed craters near the lunar poles—confirmed through missions including India's own Chandrayaan-1 in 2008–2009, which contributed critical data to this discovery—transformed the Moon from a barren scientific curiosity into a potential resource base and staging ground for deeper space exploration. Water ice can, in principle, be processed into drinking water, breathable oxygen, and, through electrolysis, hydrogen-oxygen rocket propellant, dramatically reducing the cost of sustained lunar and cislunar operations by obviating the need to transport all consumables from Earth.

Economically, proponents point to the potential for lunar regolith processing to yield valuable materials, including rare earth elements and, more speculatively, helium-3—a fusion fuel isotope rare on Earth but theorized to be present in greater quantities in the lunar regolith due to billions of years of solar wind deposition, though its commercial extraction remains technologically and economically unproven at present. Strategically, control of key lunar locations—particularly the south polar region, believed to contain the most accessible water-ice deposits and near-permanent solar illumination at certain peaks—has taken on an almost territorial character, notwithstanding the OST's non-appropriation principle, as both the Artemis coalition and the ILRS coalition have identified the lunar south pole as their primary target landing and base-construction zone.

5.2 The South Pole as Contested Strategic Terrain

The convergence of both major coalitions on the lunar south pole is not coincidental; it reflects the genuine scarcity of resource-rich, operationally favourable terrain on the Moon. This convergence has generated a distinctive governance problem sometimes termed "first-mover advantage without formal sovereignty"—the practical reality that the state or coalition that establishes physical infrastructure first at a favourable site may enjoy *de facto* exclusivity over that location, even absent any recognized legal claim, simply by virtue of operational presence, safety-zone coordination requirements, and the physical impracticality of co-locating rival infrastructure in close proximity. India's Chandrayaan-3 mission, which achieved a successful soft landing near the lunar south pole on 23 August 2023—making India the fourth nation to achieve a soft lunar landing and the first to do so specifically near the south pole—must be understood in this context: it was not merely a scientific and technological achievement but a strategic assertion of Indian presence in the most contested and resource-relevant region of the Moon (Market Intelligence, n.d.).

5.3 Legal Ambiguity Over Resource Extraction and Property Rights

The central unresolved legal question is whether, and under what conditions, a state or private entity may claim ownership over lunar resources once extracted, even while the celestial body itself remains formally non-appropriable. The Artemis Accords' resource-extraction principle answers this question affirmatively for its signatories, but this remains a plurilateral rather than universal position. Neither Russia nor China are Artemis signatories, and both have publicly criticized the Accords—and particularly the "safety zones" concept—as inconsistent with, or at minimum in tension with, the OST's foundational principles. The result is a fragmented and potentially conflicting normative landscape in which the legality of a given resource-extraction activity may depend entirely on which coalition's framework one applies—a situation with few close analogues in other domains of international law and one that raises serious questions about future dispute resolution should extraction activities by rival coalition members physically converge at the lunar south pole.

6. Major Power Strategies: A Comparative Analysis

6.1 The United States

U.S. lunar and space-resource strategy is organized principally around the Artemis Program, NASA's flagship initiative to return American astronauts to the Moon and establish a sustained cislunar and lunar-surface presence, including the planned Gateway lunar space station and Artemis Base Camp concept. The Artemis Accords function as the diplomatic and normative complement to this technical program, designed explicitly to build a broad coalition of like-minded partners around U.S.-preferred principles for resource utilization, transparency, and interoperability. American strategy blends genuine multilateral outreach with clear strategic self-interest: expanding the Accords' signatory base serves to normalize the U.S. interpretation of permissible resource extraction, to secure diplomatic and logistical partners for the Artemis architecture, and to counterbalance the competing Sino-Russian ILRS coalition, particularly in the Indo-Pacific and Global South, where India's participation has been characterized by American commentators as "the biggest outstanding prize for the Accords" prior to its 2023 accession (National Interest, 2026).

6.2 China

China's approach reflects a deliberate strategy of technological self-reliance combined with expansive coalition-building targeted principally at the Global South. The Chang'e lunar exploration program has achieved a steady cadence of increasingly ambitious missions, including sample-return missions and plans for crewed lunar landings by 2030, while the ILRS initiative—jointly pursued with Russia—represents Beijing's answer to the Artemis Accords: a parallel, non-Western-led normative and technical framework for lunar cooperation. China's explicit "555 Project" ambition to recruit fifty countries into the ILRS by 2035 signals an intent to construct an alternative sphere of space-governance influence, particularly among states with limited independent space capability but significant interest in participation, data access, and technology transfer (China's International Lunar Research Station, n.d.).

6.3 Russia

Russia's independent space capacity has diminished considerably relative to the Soviet era and relative to its Cold War-era primacy, a decline exacerbated by the economic and technological isolation following its 2022 invasion of Ukraine. Consequently, Russia's lunar ambitions have become increasingly dependent on its partnership with China within the ILRS framework, with the two states jointly exploring shared launch infrastructure, propulsion technology (including the Russian Yenisei super-heavy launch vehicle under development), and lunar nuclear power generation. Analysts note that incentives for Sino-Russian space cooperation have intensified since 2022, as Western sanctions have narrowed Russia's alternative partnership options (Russia, China to Continue Developing, 2024).

6.4 The European Union and European Space Agency

The European Space Agency (ESA) and its member states occupy a more ambiguous position, with certain ESA member states (including France, Italy, and Luxembourg) signing the Artemis Accords individually while ESA as an institution has pursued a more balanced posture, engaging in exploratory dialogue with both the Artemis and, historically, prospective ILRS frameworks, reflecting European ambivalence about full alignment with either U.S. or Sino-Russian blocs. Luxembourg's early and aggressive legislative embrace of space-resource property rights (2017) situates it as a distinctive European node in the commercial space-resource ecosystem, disproportionate to its size, functioning as a regulatory and financial hub for space-mining ventures.

6.5 Middle Powers and the Widening Coalition

Beyond the three principal poles, an expanding cohort of middle powers—including Japan, South Korea, the United Arab Emirates, Australia, and, significantly, India—has emerged as consequential actors whose alignment choices carry substantial normative weight precisely because they are not predetermined by superpower rivalry. The UAE's rapid space-sector development, including its own lunar rover

program and Artemis Accords membership, exemplifies how resource-poor but capital-rich states can leverage strategic space investment for diplomatic and economic diversification. Japan, as both an Artemis Accords founding-adjacent signatory and a partner in NASA's Gateway program, has positioned itself as a core Western-aligned technical contributor. It is against this comparative backdrop that India's trajectory—examined in depth below—assumes particular analytical significance, since India's choices are not merely of regional interest but function as a bellwether for how other rising and middle-power spacefaring nations may navigate the bifurcated governance landscape.

7. India's Emergence in the Political Race for Space Resources

7.1 From Frugal Engineering to Strategic Ambition

India's space program, historically associated with the ethos of "frugal engineering"—exemplified by the low-cost, high-efficiency Mars Orbiter Mission of 2013—has undergone a marked strategic reorientation over the past decade, shifting from a primarily developmental and scientific orientation toward one that explicitly incorporates commercial, strategic, and diplomatic objectives. This reorientation crystallized around three interlocking developments: the liberalization of India's domestic space sector, the technological demonstration represented by Chandrayaan-3, and India's formal accession to the U.S.-led Artemis Accords.

7.2 The Indian Space Policy 2023 and IN-SPACe

In April 2023, the Union Cabinet approved the Indian Space Policy 2023, a landmark document intended to provide "regulatory certainty" to India's private space sector and to formally delineate the respective roles of ISRO, the newly established Indian National Space Promotion and Authorisation Centre (IN-SPACe), and NewSpace India Limited (NSIL), ISRO's commercial arm (TechCrunch, n.d.; Deccan Herald, n.d.). The policy's central objectives include streamlining sectoral governance, enabling greater private-sector participation across the value chain—from satellite manufacturing to launch services and

downstream applications—and enhancing India's competitiveness within the global commercial space economy (Learning This Week, n.d.).

IN-SPACe, inaugurated in June 2022 with its headquarters in Ahmedabad, Gujarat, functions as a single-window authorization and promotion body for non-governmental entities (NGEs) seeking to undertake space activities, effectively decoupling regulatory and promotional functions from ISRO's traditional operational role and freeing the agency to concentrate on research, development, and exploration (Hightechir, n.d.). By early 2024, IN-SPACe had approved more than 250 applications from space-sector participants, including private-sector entities, reflecting the rapid expansion of India's commercial space ecosystem under the new policy framework (KPMG, 2024).

The scale of this expansion is notable: India's space economy, valued at approximately USD 8 billion, is projected by industry estimates (EY) to grow to approximately USD 40 billion by 2040, with the domestic startup ecosystem—comprising over 150 space-technology startups as of 2023–2024—expected to be a principal driver of this growth (Learning This Week, n.d.). The Union Government's interim budget for 2024 allocated approximately INR 13,043 crore (roughly USD 1.57 billion) to the space sector, alongside a relaxation of foreign direct investment (FDI) norms intended to attract global capital into India's capital-intensive space manufacturing and launch-services industries (KPMG, 2024). State-level initiatives have complemented this national push: Gujarat became the first Indian state to announce a dedicated spacetechnology policy, offering fiscal incentives for launch costs, patent filing, and the establishment of a space manufacturing park in coordination with IN-SPACe and the Department of Space (Deccan Herald, n.d.).

Operationally, IN-SPACe's 2024 integrated launch manifesto outlined approximately thirty planned launches over fifteen months from the Satish Dhawan Space Centre, involving ISRO, NSIL, and a growing roster of non-governmental entities, including Agnikul Cosmos and Skyroot Aerospace—India's leading private orbital launch-vehicle developers—alongside satellite manufacturers such as Digantara Research and

Technology and Dhruva Space, and academic contributors including IIT-Madras and the Manipal Institute of Technology (Deccan Herald, n.d.). This manifesto, described by IN-SPACe as reflecting a "milestone year" for the sector, illustrates the tangible operationalization of the 2023 policy framework and signals India's ambition to position itself as a global hub for satellite manufacturing and cost-competitive launch services.

7.3 Chandrayaan-3 and the Assertion of Lunar Presence

Chandrayaan-3's successful soft landing on 23 August 2023 constituted a watershed moment in India's space trajectory, both technologically and geopolitically. The mission's landing site, in the lunar south polar region, positioned India—alongside the United States, the former Soviet Union, and China—as one of only four nations to have achieved a controlled lunar soft landing, and the first to do so in the immediate vicinity of the Moon's resource-rich south pole (Market Intelligence, n.d.). This achievement carries significance well beyond scientific prestige: it demonstrates India's independent capacity to deliver, operate, and extract scientific data from surface assets in precisely the contested region where both the Artemis and ILRS coalitions have concentrated their long-term resource and infrastructure ambitions.

The mission's timing—launching in July 2023, mere days after India's accession to the Artemis Accords, and achieving its landing weeks later—was widely interpreted as reinforcing India's dual strategy of pursuing genuine indigenous capability while simultaneously integrating into the U.S.-led multilateral framework, rather than positioning itself as dependent on either coalition for access to lunar operations (ROOM Space Journal, n.d.).

7.4 India's Accession to the Artemis Accords: Strategic Rationale

India's decision to sign the Artemis Accords on 21 June 2023, announced jointly by Prime Minister Narendra Modi and U.S. President Joe Biden during Modi's state visit to Washington, D.C., reflected a calculated strategic and diplomatic choice rather than a purely technical

or scientific decision (Geospatial World, 2023). Several converging rationales have been identified in the literature and policy commentary. First, accession aligned India more closely with its Quad partners—the United States, Japan, and Australia—reinforcing India's broader Indo-Pacific strategic posture and demonstrating a shared commitment to establishing global norms for space governance in coordination with like-minded democracies (The Geopolitics, 2023). Second, the Accords opened pathways for enhanced U.S.-India space cooperation, including a strategic framework for human spaceflight collaboration and the prospect of an Indian astronaut's visit to the International Space Station, developments that promised to narrow India's technological gap in human spaceflight capability relative to the established spacefaring powers (The Geopolitics, 2023). Third, India's accession functioned as a signal of soft-power alignment, reinforcing New Delhi's identity as a responsible, rules-abiding, and technologically credible partner within the emerging Artemis-led normative order, distinct from the more opaque and less transparent ILRS coalition (The Geopolitics, 2023).

Importantly, however, India's Artemis accession has not been interpreted—either by Indian policymakers or by independent analysts—as a wholesale abandonment of India's traditional strategic autonomy or non-alignment posture. India has continued to maintain functional space cooperation with Russia in select domains, including human spaceflight training support for its indigenous Gaganyaan program, illustrating that India's engagement with the Artemis framework is best understood as an additive, interest-based alignment rather than a categorical bloc commitment (Geospatial World, 2023).

7.5 Unresolved Domestic Legal Gaps

Notwithstanding these advances, Indian legal and policy commentators have identified significant gaps in India's domestic framework governing space-resource rights. Analysts note that India's path within the Artemis Accords requires, at minimum, a domestic legal regime clarifying the rights of Indian private space companies to extract and utilize space resources, consistent with both the Indian Space Policy 2023 and an anticipated Space Activities Bill that remains, as

of the present writing, still under legislative development rather than enacted law (Anantamias, 2026). The absence of a finalized Space Activities Act—a piece of framework legislation that has been anticipated since the 2020 opening of the sector to private participation but has yet to be passed by Parliament—represents a notable lacuna, leaving India's private space-resource ambitions dependent on policy guidance rather than statutory certainty, a gap that stands in contrast to the more codified legislative frameworks already in force in the United States and Luxembourg.

7.6 India as a Potential Bridging Actor

India's distinctive positioning—an Artemis Accords signatory with continuing functional linkages to Russia, a vocal advocate for Global South interests within COPUOS and other multilateral forums, and a nation with firsthand experience of the historical inequities embedded in orbital-slot allocation (as a long-standing critic, alongside other developing nations, of the disproportionate advantages enjoyed by early-mover spacefaring states)—suggests a potential role for India as a bridging actor in future space-governance negotiations. India's dual credibility, as both a technologically capable spacefaring power and a longstanding voice for equitable Global South access to space resources, may position it to advocate for governance reforms that neither the Artemis coalition nor the ILRS coalition, each anchored in the interests of its principal sponsors, is naturally inclined to prioritize.

8. Governance Challenges and Structural Tensions

8.1 The Bifurcation of Normative Regimes

The central structural challenge confronting contemporary space governance is the emergence of two parallel, only partially compatible normative regimes—the Artemis Accords framework and the ILRS framework—each purporting to operate consistently with the Outer Space Treaty while embodying materially different interpretations of permissible resource activity, safety-zone coordination, and data-transparency obligations. This bifurcation risks generating a fragmented body of customary practice that could, over time, harden into

genuinely divergent legal regimes, undermining the universalist aspiration originally embedded in the 1967 treaty and the "common heritage of mankind" principle articulated in the 1979 Moon Agreement.

8.2 Private Sector Actors and the Erosion of State-Centric Governance

Traditional space law was drafted almost entirely with reference to state actors, reflecting the Cold War-era reality that only national governments possessed the capability to conduct space activities. The contemporary landscape, however, is dominated by an increasingly consequential private sector—exemplified by SpaceX's dominance in launch services and satellite constellation deployment, Japan's ispace and its lunar lander missions, and India's own emerging cohort of private launch and satellite firms such as Skyroot Aerospace and Agnikul Cosmos. While the OST's Article VI requires states to bear international responsibility for national activities in space, including those conducted by non-governmental entities, and to ensure such activities are subject to authorization and continuing supervision, the practical enforcement of this state-responsibility model becomes increasingly strained as the scale, diversity, and geographic distribution of private space actors expands. India's IN-SPACe framework represents one attempt to formalize this state-supervision obligation for a rapidly growing NGE sector, but comparable regulatory maturity is not uniformly present across all spacefaring jurisdictions, creating uneven global compliance with Article VI obligations.

8.3 The Absence of a Binding Resource-Governance Regime

Perhaps the most consequential governance gap is the continued absence of any binding, universally accepted international regime specifically governing the extraction, ownership, and equitable benefit-sharing of space resources. The Moon Agreement's vision of an international regime to govern resource exploitation once "such exploitation is about to become feasible" (United Nations, 1979, Article 11) has never been operationalized, in substantial part because the treaty's low ratification rate has deprived it of the universal legitimacy necessary to serve as the

basis for such a regime. In its place, the field has been left to a patchwork of unilateral domestic legislation (the United States, Luxembourg) and plurilateral political commitments (the Artemis Accords), neither of which commands universal acceptance nor provides a mechanism for equitable benefit-sharing with non-spacefaring states—a concern of particular relevance to the majority of UN member states that possess no independent space-launch capability whatsoever.

8.4 Dispute Resolution and the Risk of Physical Convergence

A further underexamined governance gap concerns dispute resolution mechanisms applicable to physical convergence scenarios—for instance, the prospect that Artemis-coalition and ILRS-coalition lunar assets, both drawn toward the resource-rich south polar region, could eventually operate in close physical proximity. Neither the OST's Article IX "due regard" obligation nor the Artemis Accords' safety-zone provisions establish a binding, judicially enforceable mechanism for resolving such conflicts, leaving states dependent on diplomatic negotiation, bilateral consultation, or, in the worst case, unilateral assertion of operational priority—an outcome the drafters of the 1967 treaty explicitly sought to avoid through the non-appropriation principle, but one that current soft-law arrangements are ill-equipped to prevent.

9. Toward Reform: Policy Recommendations

Drawing on the preceding analysis, this paper advances the following policy recommendations, directed at both the international community and, where relevant, Indian policymakers specifically.

First, the international community should pursue the negotiation of a narrowly scoped, technically focused multilateral instrument addressing orbital traffic management and debris mitigation, distinct from the broader and more politically fraught question of resource-ownership rights. Because debris mitigation and collision-avoidance coordination represent a genuine common interest shared by all spacefaring actors regardless of bloc alignment, this domain offers the most tractable pathway toward renewed

multilateral consensus, potentially serving as a confidence-building precedent for subsequently addressing more contentious resource-governance questions.

Second, India should expedite the enactment of a comprehensive Space Activities Act, providing statutory—rather than merely policy-level—clarity regarding the rights and obligations of Indian private entities engaged in space-resource extraction and utilization, thereby aligning India's domestic legal architecture with the operational ambitions articulated in the Indian Space Policy 2023 and reinforcing legal certainty for both domestic and foreign investors in India's commercial space sector.

Third, given India's distinctive positioning as both an Artemis Accords signatory and a longstanding advocate for equitable Global South access to orbital and space resources, India should leverage its diplomatic credibility within COPUOS to champion a benefit-sharing mechanism—potentially modelled on elements of the deep-seabed mining regime established under the UN Convention on the Law of the Sea—that would extend at least a portion of the economic benefits of lunar and orbital resource extraction to non-spacefaring states, thereby partially rehabilitating the "common heritage" aspiration of the Moon Agreement within a more commercially realistic framework.

Fourth, spacefaring states should establish a technical, non-political coordination mechanism—potentially administered jointly by interested Artemis and ILRS coalition members, or through a COPUOS-facilitated technical working group—specifically to manage potential physical convergence and safety-zone conflicts at the lunar south pole, given the shared strategic interest of all parties in avoiding a collision or interference incident that could trigger broader diplomatic escalation.

Fifth, reform of ITU orbital-slot and spectrum-allocation procedures should be revisited to better accommodate the interests of newly emerging spacefaring nations, moving incrementally away from a pure first-come, first-served model toward mechanisms that better reflect the equitable access principles articulated,

if imperfectly, in Article I of the Outer Space Treaty.

10. Conclusion

The governance of outer space stands at an inflection point. The Outer Space Treaty of 1967, drafted for a bipolar Cold War world of exclusively state-run space programs, has proven remarkably durable as a foundational normative framework, but it was never designed to resolve the specific and increasingly urgent question of how orbital and lunar resources should be extracted, owned, and equitably shared in a multipolar, commercially driven space economy. The Moon Agreement's attempt to institutionalize a "common heritage of mankind" regime failed to achieve the ratification necessary for legitimacy, leaving a governance vacuum that has since been filled—asymmetrically and incompletely—by unilateral domestic legislation and, most consequentially, by the emergence of two competing plurilateral coalitions: the U.S.-led Artemis Accords and the Sino-Russian International Lunar Research Station.

India's trajectory through this contested landscape—marked by the technological assertion of Chandrayaan-3's south-polar landing, the liberalizing reforms of the Indian Space Policy 2023 and IN-SPACe, and the calculated diplomatic choice to accede to the Artemis Accords while preserving functional autonomy vis-à-vis Russia—offers an instructive case study in how a rising middle power can simultaneously build genuine indigenous capability, integrate into an emerging multilateral normative order, and advocate, from a position of credibility, for a more equitable global resource-governance regime. As the political race for orbital slots and lunar resources intensifies through the remainder of this decade, the choices made by India and similarly positioned middle powers—not merely by the two dominant coalitions—will likely prove decisive in determining whether humanity's expansion into space is governed by a genuinely inclusive rules-based order or by a bifurcated contest of rival blocs reminiscent of, but potentially more consequential than, the Cold War space race that first inspired the Outer Space Treaty nearly six decades ago.

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