Master of Studies in Diplomatic Studies



Space Resources and the Quest for Consensus: A Mixed-Methods Analysis of Existing Legal Frameworks and Diplomatic Discourse at UN COPUOS (2015-2025)

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Abstract

The world is entering a new era of space exploration centred on the exploitation and commercialisation of space resources. As technological advances make extraction from celestial bodies increasingly viable, international legal frameworks face mounting pressure to adapt. At the heart of the debate lies the Outer Space Treaty (OST) Article I, which affirms freedom of exploration for the benefit of all, while Article II prohibits sovereignty claims, leaving the legal status of extracted resources unsettled. States and institutions have responded with divergent interpretations, national legislations, and proposals for new governance models. This dissertation examines the evolving legal landscape by analysing forty-seven primary documents, including national submissions and responses to the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) Legal Subcommittee Working Group, the proposed Draft Principles (March and July 2025), the Artemis Accords, the Hague Building Blocks, the OST and Moon Agreement, alongside four dedicated national legislations on space resources (United States, Luxembourg, Japan, United Arab Emirates). Using a mixed-methods approach composed of qualitative thematic coding and a simplified form of quantitative keyword analysis, the research shows that procedural norms of transparency, liability, and sustainability are converging and stabilising, while redistributive principles such as common heritage and benefit-sharing remain fragmented and resisted. The findings indicate that, although economic and strategic interests largely drive domestic legislation, states are nonetheless converging on core procedural and legal principles. This suggests the gradual emergence of a hybrid governance framework for space resource governance that preserves national discretion while embedding shared expectations of responsible conduct.

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iii. List of Abbreviations

CHM	Common Heritage of Mankind
CLPS	NASA's Commercial Lunar Payload Services
COPUOS	Committee on the Peaceful Uses of Outer Space
CPR	Common Pool Resources
CSLCA	U.S. Commercial Space Launch Competitiveness Act of 2015
DSM	WTO's Dispute Settlement Mechanism
ESA	European Space Agency
ICAO	The International Civil Aviation Organisation
ISA	The International Seabed Authority
ISRU	In-Situ Resource Utilisation
KPCS	Kimberley Process Certification Scheme
NASA	The United States National Aeronautics and Space Administration
NGO	Non-Governmental Organisation
OST	Outer Space Treaty
U.S.	United States of America
UAE	United Arab Emirates
UNCLOS	United Nations Convention on the Law of the Sea
UN	United Nations
WG	Working Group
WTO	World Trade Organisation

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Chapter I: Introduction

The international community stands at the threshold of a new space age, where the exploration and commercial exploitation of extraterrestrial resources is no longer speculative but imminent (Nakamura, 2024). As technological capabilities advance and private actors enter the domain of space exploration, the legal and political frameworks governing the use of space resources face mounting pressure (Rabitz, 2023). Despite the foundational guidance offered by instruments such as the Outer Space Treaty (UNGA, 1967) and the Moon Agreement (UNGA, 1979), no binding multilateral instrument provides a clear answer to the legal status of space resources once extracted, nor to how such activities reconcile with the principle of non-appropriation. In this unsettled context, several states have enacted domestic legislation permitting the commercial use of space resources, a development that risks accelerating normative divergence and undermining the foundations of collective governance (Paladini and Castellucci, 2022).

The treaties at the core of international space law illustrate the legal controversies. Article I of the Outer Space Treaty (OST) affirms freedom of use "for the benefit of all countries," while Article II prohibits national appropriation of outer space. The Moon Agreement introduces the concept of the "common heritage of mankind" and envisages an international regime for benefit-sharing (Article XI), but has been ratified by only 18 states. More recently, the Artemis Accords (2020b) advance adaptive governance principles, including the notion of "safety zones", which, according to NASA, are temporary, geographically defined areas established by a signatory nation to prevent harmful interference with its space operations, interpreted by some scholars as a de facto appropriation right (Newman and Ralston, 2022). The non-binding Hague Building Blocks (2019) likewise seek to bridge divides by articulating principles of authorisation, benefit-sharing, and due regard, but remain politically contested. These ambiguities have given rise to competing readings

of sovereignty, ownership, and cooperation in outer space.

From a legal perspective, the proliferation of national laws operates as an interpretive act that shapes how treaty provisions (particularly Article II) are read and applied. Over time, repeated practice of this kind, coupled with *opinio juris*, may contribute to the formation or change of customary norms, meaning that unilateral domestic measures shape the future trajectory of the multilateral order (Nakamura, 2024). From a geopolitical standpoint, access to and control over space resources are increasingly framed in terms of strategic advantage and competitiveness, reflecting what Professor Schrogl (2020) describes as a growing 'securitisation' of outer space characterised by the blurring of traditional civilian-military distinctions and an intensification of strategic rivalry. The convergence of these interests within international legal forums, particularly the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS), and specifically its Legal Subcommittee's Working Group on Legal Aspects of Space Resource Activities, offers a valuable vantage point for analysing emerging governance preferences.

While much of the academic literature focuses on normative arguments about space mining and the ethical implications of resource utilisation (Butkevičienė and Rabitz, 2022; Khatwani, 2019; Deplano, 2023), comparatively little empirical research examines how states justify their positions in formal diplomatic submissions (Nakamura, 2024). Even less attention has been given to how these positions align with domestic legislation or reflect broader patterns of treaty interpretation, strategic ambition, and signalling. This dissertation addresses that gap by evaluating whether an international consensus on space resource governance is emerging from convergences across key sources. It analyses the interplay between diplomatic discourse in national submissions to the UN COPUOS Working Group (2022–2025), responses to the Initial Draft Set of Recommended Principles (UNCOPUOS, 2025) and the Chair and Vice-Chair's questionnaire, and

relevant international instruments (including the OST, the Moon Agreement, the Artemis Accords, and the Hague Building Blocks). These are examined alongside national space resource legislation adopted by the United States, Luxembourg, Japan, and the United Arab Emirates. By systematically comparing these legal texts with states' diplomatic positions, the study seeks to identify both the drivers of national preferences and the signals they provide for the prospective development of a global governance framework.

The central research question is as follows:

Is international consensus on space resource governance emerging from convergences in national submissions at UN COPUOS and in national legislation?

To operationalise this inquiry, the study addresses several sub-questions: Where do states converge and diverge substantively and procedurally in their COPUOS submissions? How do domestic space resource laws align with or diverge from states' diplomatic positions in multilateral fora? Which governance models (sovereignty-leaning, cooperative, redistributive, hybrid) can be identified in state practice, and what do they signal for the future development of international space law?

Methodologically, this analysis combines qualitative thematic coding with a complementary quantitative keyword frequency study. The examined positions are legally significant because they constitute state practice under the Vienna Convention on the Law of Treaties (1969) for the interpretation of existing treaty obligations. Data are structured across five tables to evaluate legal reasoning, strategic narratives, and governance preferences. The study draws on distinct but complementary theoretical lenses: Realism (Waltz, 1979) is primarily applied

to domestic legislative motivations; Legal Positivism (Hart, 1961) to treaty interpretation practices; and Liberal Institutionalism (Keohane and Nye, 1977) to multilateral negotiation dynamics. The analysis is also enriched by insights from constructivist and norm-theoretic approaches, enabling a layered assessment of how economic interests, legal commitments, and cooperative norms interact.

The working hypothesis is that multilaterally, states converge on legal–procedural substantive terms such as transparency, consultation, liability, and sustainability that sustains legitimacy at low sovereignty cost; domestically, legislation exhibit a stronger rhetorical emphasis on economic and strategic motivations than on multilateral legal obligations. This emphasis correlates with observed patterns of normative divergence. However, consistent references to shared procedural principles suggest an incremental shift toward a hybrid governance framework that balances national sovereignty with collective stewardship.

This dissertation makes four key contributions. First, it identifies recurring procedural clusters (practice, transparency, consultation, liability, and sustainability) that co-move across submissions, while distributive obligations remain blocked. Second, it traces how states adjust their positions depending on the forum, with some altering their approach between questionnaire responses and later contributions, while others remain consistent. Third, the research analyses domestic-multilateral coupling, showing that divergent national statutes nonetheless converge structurally on appropriation-enabling, redistribution-resistant design, and a legalist idiom for legitimacy. Also, it highlights participation asymmetry, observing that contributions to the Draft Principles are concentrated in the Global North, thereby shaping who sets the practical agenda. This study contributes by offering tools to develop a framework that moves beyond existing typologies, capturing how states combine selective norm adoption with conditional cooperation.

The dissertation proceeds as follows. Chapter II reviews the legal and theoretical literatures (non-appropriation, global commons/common heritage debates, norm diffusion, and epistemic communities). Chapter III details the dataset and methods. Chapter IV analyses the COPUOS submissions; Chapter V examines national statutes and their coupling with multilateral rhetoric and Chapter VI develops policy recommendations before concluding, and sets out avenues for further research.

Chapter II: Literature Review

This chapter reviews the key scholarship relevant to space resource governance and situates the dissertation within it. Section 2.1 outlines the development of international space law, focusing on the main treaties and the growing influence of customary law. Section 2.2 examines the competing governance models advanced in the literature, ranging from global commons and common heritage to common-pool resources, alongside more recent emphases on adaptive and informal governance. Section 2.3 synthesises these discussions to identify the gaps in the literature and state the problem addressed in this study.

2.1 The evolution of international space law and resource governance

The evolution of international space law, particularly in relation to benefit-sharing under Article I of the OST, reflects a persistent tension between collective ideals and national self-interest (Deplano, 2023). The 1967 OST is often described as the "constitution of outer space", however its adequacy for resource governance is contested (Deplano, 2023). Article I has been widely characterised as programmatic in nature, as the requirement to act 'for the benefit and in the interests of all countries' leaves states broad discretion without prescribing concrete obligations. Su (2017), focusing on Article II, interprets the non-appropriation principle

functionally as excluding sovereignty over celestial bodies, but does not prevent ownership of resources once extracted. These readings underscore different facets of the Treaty's interpretation, whether through broad, indeterminate obligations or silences that invite permissive interpretations. What is missing in both is an account of how states mobilise such ambiguity in multilateral diplomatic settings. The present study, therefore, moves from doctrinal interpretation to an analysis of state behaviour within institutional forums.

Efforts to clarify the OST through treaty-making have faltered. The 1979 Moon Agreement enshrined the "Common Heritage of Mankind" (CHM) and envisaged an international regime for exploitation (UNGA, 1979), but its normative ambitions proved politically unacceptable, as it has only 18 signatories and 17 states parties, with no participation from major spacefaring powers (Deplano, 2023).

With treaty regulation stalled, states have legislated unilaterally. Since 2015, the United States, Luxembourg, the United Arab Emirates, and Japan have adopted statutes authorising resource extraction. Scholars such as American Professor P.J. Blount and Professor Mahulena Hofmann (2018) praise such frameworks as providing legal certainty for investment, whereas von der Dunk and Tronchetti (2015) and Kostenko (2020) warn that they fragment the international legal order and undermine the cooperative spirit of the OST. While important, these debates often overlook the broader context of legislation. This study instead explores how such laws are justified or downplayed in multilateral diplomacy, showing that they function not only as domestic regulation but also as rhetorical tools for shaping global legitimacy.

Critical perspectives push beyond doctrinal debate to political economy. Holen and Shammas (2019) contend that the rise of "NewSpace" represents not a collective human endeavour but the projection of capitalist accumulation into outer space. The economic stakes

reinforce their argument: the global space economy, valued at $630 billion in 2023, is projected to reach $1.8 trillion by 2035 (World Economic Forum, 2024). Cocca y Esquivel (2024), in Froehlich's edited volume on Space Fostering Latin American Societies, warns that large-scale space mining could destabilise terrestrial commodity markets, disproportionately harming resource-dependent states in the Global South.

Taken together, these strands of scholarship illuminate doctrinal ambiguity, political resistance, and structural economic critique. What remains underexplored, however, is how states operationalise these legal interpretations within multilateral institutions. This study, therefore, distinguishes between doctrinal interpretation of treaty provisions and the strategic and discursive deployment of those interpretations in diplomatic practice.

2.2 Competing models of governance in the literature

Scholarship on space resource governance can broadly be organised around three main models: Global Commons, Common Heritage of Mankind, and Common-Pool of Resources, supplemented by more recent emphasis on adaptive and informal governance (Deplano, 2023; Garcia, 2021). Each model captures important aspects of the debate and differ in their theoretical orientation: some emphasise discursive and normative constructions of space as a commons, while others draw on evolutionary or institutional logics to explain cooperation; but all suffer from gaps as they often assume consensus where none exists, generalise from terrestrial analogies without testing their relevance, or neglect how states articulate positions in diplomatic practice.

A significant strand of scholarship frames outer space as a Global Commons. Cross (2021) highlights that cooperation has been a persistent feature even during the Cold War,

sustained by transnational imaginaries of space as a peaceful domain. In this view, the commons framing reflects humanity's ultrasocial capacity for cooperation (Nowak et al., 2014). Garcia (2021) and Froehlich (2024), however, warn that without equity mechanisms, open access risks replicating terrestrial inequalities, allowing advanced states and corporations to dominate. The European Union (2023) has echoed the commons framing in its policy discourse, underscoring its political traction. In practice, COPUOS submissions show that states invoke the term in divergent ways. Some as an argument for open access (Hofmann and Blount, 2018), others as a claim for distributive obligations (Garcia, 2021). By neglecting these contestations, commons scholarship risks overstating consensus.

Debates over the Common Heritage of Mankind (CHM) generate the most polarised scholarship in space law. Khatwani (2019) regards CHM as the only principle capable of ensuring solidarity and benefit-sharing, while Morgera (2016) develops a cross-regime concept of "fair and equitable benefit-sharing" that could enjoy broader international acceptance. Tronchetti (2009), by contrast, criticises CHM as politically unworkable and economically stifling, while Rabitz (2023) argues that regime-formation conditions make a CHM-style authority for space "implausible" (p.251). In much of this scholarship, states are analytically positioned as either embracing or rejecting CHM. However, as the analysis in §4.2 shows, COPUOS submissions instead reveal a more nuanced reality.

A third body of work draws on Elinor Ostrom's Common-Pool Resource (CPR) framework, emphasising sustainability and operational management. Su (2017) argues that non-appropriation is compatible with exclusive operational use, while Deplano (2023) stresses that CPR models prioritise coordination but not redistribution. The Artemis Accords' "safety zones" embody this logic, creating mechanisms to prevent harmful interference (NASA, 2020b). Critics,

however, such as Newman and Ralston (2022), caution that safety zones may evolve into de facto territorial claims, contravening Article II of the OST. CPR scholarship often focuses on coordination problems, giving less attention to distributive conflict. COPUOS practice suggests otherwise; even rules of conduct are contested when they imply exclusion. This highlights a recurring weakness in CPR literature, mainly its underestimation of distributive politics.

A further body of scholarship highlights informal frameworks and adaptive governance as alternatives to formal treaty-making. Deplano (2023) interprets the Artemis Accords as a model of adaptive governance, favouring staged, context-specific cooperation over anticipatory treaty-making. Abbott and Faude (2021) explain this preference through their theory of "low-cost institutions" (LCIs), which preserve sovereignty while embedding basic norms. By contrast, Boley and Byers (2020) warn that the Accords entrench a unilateral U.S. interpretation of the OST, precipitating a "race to the bottom". While these debates capture the dual nature of informal institutions (pragmatic but contested), they often assume that states internalise their principles in similar ways. Acharya's (2004) theory of norm localisation complicates this picture by explaining how norms do not diffuse uniformly but are adapted to local contexts. This is visible in COPUOS, where states adopt procedural norms like transparency or sustainability but reframe them to protect sovereignty. The result is not wholesale convergence but selective localisation.

Further insights come from evolutionary game theory. Nowak et al. (2014) show that unconditional cooperation is unstable. Reciprocity alone oscillates between cooperation and defection, and cooperation stabilises only when reinforced by conditionality, memory, or alliances. Applied to space governance, this suggests that procedural norms such as consultation, notification, and non-interference are best understood as conditional cooperation (Nowak *et al.*, 2014). They are credible precisely because they are contingent, with states

promising transparency only if others reciprocate.

Reciprocity works here because these commitments are low-cost, observable, and reversible (Abbott and Faude, 2021). By contrast, redistributive norms such as benefit-sharing are asymmetric and long-term, making direct reciprocity structurally impossible and enforcement difficult (Morgera, 2016). Hence, reciprocity sustains procedural norms but cannot by itself stabilise non-procedural ones.

These models operate at different analytical levels. Commons and CHM scholarship primarily engage normative and distributive questions; CPR and adaptive governance approaches focus on operational coordination; evolutionary game theory models examine conditions for cooperation stability. This dissertation does not collapse these perspectives into a single framework but instead uses them selectively to interpret patterns observed in state practice.

2.3 Synthesis and research gap

The existing models highlight recurring themes but do not resolve them. A significant strand of the literature treats the OST as the unavoidable baseline and assumes that procedural norms such as transparency and sustainability are widely accepted (Deplano, 2023). Informal frameworks such as the Artemis Accords or Hague Building Blocks are discussed as context-sensitive or politically feasible alternatives to comprehensive treaty-making (Deplano, 2023; Rabitz, 2023). However, the most divisive issues (allocation, distributive justice, and benefit-sharing) remain unsettled under existing law, with scholars sharply divided on their feasibility and legitimacy (von der Dunk and Tronchetti, 2015; Hofmann, 2019). What the literature rarely examines, however, is how states themselves use multilateral forums to affirm, adapt, or contest these themes in practice. This study addresses that gap by systematically analysing

COPUOS submissions, moving beyond assumptions to evidence.

Some scholarship associates fragmentation primarily with the proliferation of national legislation or reduces governance debates to a legal binary of compliance or violation, while overlooking the justificatory narratives advanced in multilateral arenas (Kostenko, 2020). Critical perspectives on capitalism, inequality, or securitisation enrich the analysis of structural forces but rarely connect these dynamics to the language states actually deploy in COPUOS (Holen and Shammas, 2019). In short, the literature tends either to assume consensus where practice shows contestation, or to diagnose structural inequalities without tracing how they materialise in diplomatic discourse. While structural and normative dynamics shape the broader environment, it is states, through practice and *opinio juris*, that generate custom and shape treaty interpretation in legally consequential ways.

This dissertation addresses these omissions by analysing the full corpus of forty-seven primary documents submitted to the COPUOS Working Group on Legal Aspects of Space Resource Activities between 2022 and 2025 (UNOOSA, 2025a). Using thematic coding and keyword frequency analysis, it examines how states frame governance models, how procedural norms diffuse or localise, and how divergences persist around allocation. In doing so, it situates scholarly debates within their diplomatic context and demonstrates the emergence of hybrid governance patterns: procedural convergence alongside allocational divergence. This study contributes by moving beyond existing typologies, capturing how states combine selective norm adoption with conditional cooperation.

In analytical terms, this study distinguishes between doctrinal interpretation of legal principles, strategic state behaviour within multilateral institutions, and the discursive framing of governance models. By separating these levels of analysis, it avoids conflating normative

theory with behavioural explanation, and instead examines how they interact within diplomatic practice.

Chapter III: Research design and methodology

This chapter presents the methodological framework employed to address the central research question and its corresponding hypotheses. It explains the rationale for adopting a mixed-methods approach, describes the design of the five data matrices used for the analysis, and discusses limitations and the strategies applied to mitigate them. The aim is to provide a clear and replicable account of the research, balancing thorough methods with flexible interpretation.

3.1 Research approach: mixed-methods (Qualitative and Quantitative)

The dissertation adopts a mixed-methods approach, combining qualitative thematic analysis with a simplified quantitative content mapping to explore the normative and diplomatic positions advanced by States in relation to the governance of space resource activities within UN COPUOS. This dual method was adopted for its ability to accommodate both the interpretive demands of international legal analysis and the need to identify patterns and trends across a substantial dataset comprised in the diplomatic submissions and legislative instruments. The mixed methods design also allows the study to move beyond purely doctrinal interpretation by systematically comparing patterns of state practice across submissions.

The choice of a mixed-methods approach is theoretically grounded in the interdisciplinary nature of the research problem, which spans both international law and international relations. While international law analysis traditionally rests on doctrinal and hermeneutic methodologies (Ammann, 2020), this dissertation is concerned not only with what the law "is" but also with how it is negotiated, interpreted, and politically positioned within the

institutional setting of the UN. On the one hand, the study seeks to uncover the legal and conceptual preferences articulated by States. On the other hand, it aims to identify patterns of convergence or divergence in national discourse, especially as expressed in formal submissions to the Legal Subcommittee's Working Group.

The primary qualitative component consists of thematic coding that assigns values to a set of analytically defined variables, reflecting five key normative dimensions. Themes were developed deductively from the theoretical framework and iteratively refined through close reading of the corpus. The method is employed to capture the substance, tone, and emphasis of legal and policy arguments articulated in national submissions and legislation (Miles, 2020). These themes are later interpreted through distinct theoretical lenses: Legal Positivism on law and treaty interpretation (Hart, 1961), Realism with its focus on strategic and economic interests (Waltz, 1979), and Liberal Institutionalism with its promotion of cooperation and sustainability narratives (Keohane and Nye, 1977).

These insights are complemented by a simplified quantitative keyword frequency analysis that offers a secondary layer of pattern recognition and supports visual comparison across states. It is important to note that the frequency of keywords serves as an indicator of substantial engagement, but not necessarily endorsement of the key terms. The two methods are therefore interdependent; the qualitative analysis offers depth, whereas the quantitative analysis provides breadth (Neuman, 2012). Keyword frequency patterns informed subsequent qualitative re-reading of high-emphasis themes, while thematic coding contextualised quantitative salience.

Additionally, this analysis incorporates a complementary comparative study of the national space resource legislation enacted by the United States, Luxembourg, Japan, and the

United Arab Emirates. These jurisdictions were selected due to their pioneering legislative status within contemporary space resource governance, as they constitute the only States to have enacted dedicated national frameworks explicitly regulating space resource activities at the time of writing. Subjected to the same qualitative and keyword frequency analysis, these statutes illuminate distinct regulatory logics. By encoding the legislative texts and interpreting the strategies embedded within them, the analysis moves beyond a mere description of provisions to explore the underlying governance models they embody.

This research does not attempt to apply statistical generalisation (Neuman, 2012). Rather, the simplified use of quantitative metrics functions empirically to visualise degrees of emphasis and normative weight across multiple submissions, without displacing the interpretive core of the project. This methodological balance ensures that the study remains faithful to the nature of legal- diplomatic discourse while simultaneously responding to the need for comparative structure.

3.2 Data infrastructure and collection methods

3.2.1 Document selection and justification

The corpus of analysed materials consists of a carefully delimited set of primary documents directly addressing the governance of space resources. These include: twenty national responses to the Chair and Vice-Chair's questionnaire of the Working Group on Legal Aspects of Space Resource Activities; seventeen formal national contributions on the Initial Draft Set of Recommended Principles; the national space resource legislation of four States with dedicated domestic frameworks (United States, Luxembourg, Japan, and the United Arab Emirates); the Initial Draft Set of Recommended Principles for Space Resource Activities

prepared by the Vice- Chair (March 2025), together with its updated version (July 2025); and three foundational international instruments (the OST, the Moon Agreement, and the Artemis Accords), alongside the Hague Building Blocks (a set of non-binding guidelines developed through a multi-stakeholder group). In total, the core analytical corpus comprises forty-seven documents. The corpus includes the entirety of national submissions available within the 2022–2025 Working Group cycle addressing the Draft Principles and questionnaire.

The OST, the Moon Agreement, the Artemis Accords, and the Hague Building Blocks were analysed as normative reference points in order to establish a comparison of national positions' alignment with these instruments, revealing variable State interpretations and uses of foundational international frameworks, especially concerning emerging paradigms for space resource utilisation.

The Perspective of the Islamic Republic of Iran on the Initial Draft was not included within the core corpus, nor analysed using the established coding methods, as the submission was produced and reported to UNCOPUOS (2025) after the issuance of the first of Principles and constitutes primarily a reaction to positions expressed within the Legal Subcommittee rather than a standalone diplomatic contribution. For this reason, it is referenced only as a complementary stance and does not form part of the forty-seven coded documents.

Documents were selected on the basis of their direct relevance to the legal positioning of States vis-à-vis the regulation of space resource activities. As such, contributions from organisations holding permanent observer status were not considered, in order to focus on sovereign state practice relevant to treaty interpretation and customary development. Similarly, submissions addressing tangential or procedural matters, such as those concerning the "mandate and purpose of the Working Group" or general "procedural reports of the Legal

Subcommittee", were excluded. The guiding principle was to capture the most explicit expressions of national intent and preference concerning the establishment of a general international framework to govern the exploration, exploitation, and commercial use of space resources. The study, therefore, prioritises documents containing substantive legal argumentation rather than procedural commentary.

This targeted corpus was chosen to enhance analytical specificity. While procedural reports provide important institutional context, they do not systematically articulate governance preferences and were therefore excluded from coding. By privileging statements that explicitly address legal models, interpretive principles, or preferred governance regimes for space resources, the analysis remains focused on substantive rather than procedural contributions.

3.2.2 Data infrastructure: The five analytical matrices

To operationalise the mixed-methods approach, five interlinked matrices were created in Microsoft Excel, which are sequentially structured, with outputs from one informing the next. Each matrix was tailored to serve a specific function in the analytical process. The first table, the Metadata Register (Appendix A), records essential document information (e.g., actor, title, year, type, and reference) to ensure full traceability and transparency.

The second table, the Thematic Coding Matrix (Appendix B), constitutes the core of the qualitative analysis. It captures the presence and narrative framing of five carefully selected thematic variables, including economic, strategic, legal, cooperation, and environmental indicators. These indicators are not keywords but clusters of meaning or signals in the document that point to the document's engagement with a particular type of rationale or normative framing. In other words, each indicator refers to a type of discourse or argument

used to justify or explain the state's position on space resources. These variables were chosen based on their direct relevance to the research questions and the theoretical framework outlined in Chapter II, interpreted through distinct lenses of Legal Positivism, Realism, and Liberal Institutionalism (Cf. Chapter II, §2.3). Coding decisions were guided by a pre-defined protocol specifying inclusion thresholds for each indicator.

The thematic coding matrix also assigns an intensity score (0–5) to each indicator, interpreted as follows: 0 for completely absent (not even implied), 1 for barely present (one vague or passing mention), 2 for moderately implicit (limited articulation, not sustained), 3 for evident but limited (moderate emphasis or elaboration), 4 for prominent and consistent (strong theme throughout), and 5 for dominant and sustained (central pillar of the submission). Each intensity score is accompanied by a brief qualitative justification in the matrix's comments column, capturing quotations, tone, and narrative strategy. This method enables comparative analysis while preserving the rich detail of individual documents. By employing a numeric scale, the matrix helps to identify recurring legal justifications, governance narratives, and strategic motives while also comparing how states frame their legal positions, providing the basis for subsequent categorisation.

The third table, the Keyword Frequency Table, supports a simplified quantitative analysis by counting the appearances of 33 selected governance-related terms grouped in four different categories: Sovereignty-Leaning (suggest national primacy or decentralised regulation); Benefit- Sharing-Leaning (suggest solidarity, equity, or collective gain); Hybrid Governance (principles bridging or pluralistic structures); and Neutral or Contextual (ambiguous without context). To ensure comparability across documents of varying length, keyword counts were normalised per 1,000 words. This decision was made to avoid over-

representing longer submissions and to enable fair cross-country comparisons. The frequency-per-1,000-words ratio offers a proportional indicator of discursive emphasis, allowing for the identification of rhetorical patterns and terminological preferences that may not be evident through thematic coding.

As highlighted in §3.1, the appearance of these terms does not in itself imply endorsement or rejection but serves to identify linguistic convergence or divergence and correlates rhetorical density with legal positioning, without engaging in complex statistical modelling. It thus complements the thematic matrix by revealing how often, and not just how deeply, certain governance concepts were invoked. For instance, the term "sovereignty" appears frequently in some submissions, not as an endorsement of sovereign appropriation, but rather to explicitly reject sovereignty-based claims over space resources, illustrating why frequency must be interpreted in context.

The analysis of the Initial Draft Set of Recommended Principles (March 2025) (UNCOPUOS, 2025) was undertaken using the same coding framework and keyword frequency method applied to all national submissions. This allowed it to be treated as a "collective submission", providing a baseline crystallisation of areas of commonality across the dataset. However, the Updated Draft Principles (July 2025) (UNCOPUOS, 2025) required a different methodological treatment. This is no longer just "a submission", it is a negotiated, colour-coded, evolving text. If re-run through the exact same keyword coding, the brackets and alternatives would artificially inflate certain terms (e.g., "benefit-sharing," "developing countries," or "capacity building"), which appear multiple times but are not yet agreed upon.

To address this, the Updated Draft Principles (July 2025) were analysed using a fourth tool: the Overlay Matrix, which compares the March and July versions of the Draft Principles

on a principle-by-principle basis. This method respects the internal structure of the texts and highlights textual evolution, capturing three dynamics that coding or frequency counts alone cannot: continuity (provisions that remain stable), innovation (new or reformulated language, including bracketed proposals), and contestation (unresolved alternatives or colour-coded text signalling ongoing negotiation). This comparative reading enables a more nuanced understanding of how positions shift during the drafting process, balancing methodological rigour with qualitative sensitivity to negotiation dynamics.

Finally, the fifth matrix**,** the Summative Matrix**,** serves as an integrative platform that consolidates the main outputs from both the qualitative (Matrix 2) and quantitative (Matrix 3) analyses. It brings together thematic intensity scores and normalised keyword frequencies for each State, offering a cohesive overview of how national submissions articulate positions across legal, economic, strategic, environmental, and cooperative dimensions. The matrix functions not as a standalone typology, but as the analytical bridge between disaggregated data and interpretive synthesis, thereby enabling the identification of meaningful patterns, normative alignments, and conceptual outliers. Importantly, this matrix also incorporates each State's formal status regarding key legal instruments, both binding (e.g., the OST, the Moon Agreement) and non-binding (e.g., the Artemis Accords, the Hague Building Blocks), thus providing a final layer of contrast between discursive positioning and formal legal commitments.

This summative structure allows for detailed cross-country comparisons and high-level trend visualisation, supporting the construction of two choropleth maps (placed in §4.1), for the dominant thematic orientation in questionnaire responses (Figure 1) and contributions (Figure 2) (Cf. Appendix B). A single, fixed colour palette is used across for comparability.

Ties between top-scoring indicators are resolved by document-level keyword frequencies (Cf. Appendix C).

A third visual, Figure 3 (placed in §4.1), illustrates the distribution of state participation in the Working Group's processes, disaggregated by UN regional group (Cf. Appendix A). Finally, Figure 4 (placed in §4.2), presents the corpus-level distribution of governance preferences among the analysed actors (sovereignty-leaning, hybrid, benefit-sharing, neutral/contextual) derived from the Summative Matrix (Cf. Appendix E).

Figures 1–2 present the dominant thematic orientation by state, while Figure 3 highlights the concentration of contributions within the Western European and Other States Group (WEOG) and the Asia–Pacific Group (APG) and, Figure 4 aggregates those signals into governance preferences at the corpus level, providing the empirical bridge between micro-level coding and the macro-level claims evaluated in Chapter IV.

The overarching objective of this data infrastructure is to assess whether legal, economic, and strategic considerations, as explicitly expressed in official submissions and legislation, shape national preferences and influence the emergence (or absence) of international consensus on space-resource governance within the contemporary period spanning early national legislation (2015) and the 2022–2025 Working Group cycle.

3.3 Methodological limitations and mitigation strategies

Every methodological design entails trade-offs (Neuman, 2012). In this section, the limitations of the chosen approach are acknowledged and mitigation strategies explained. The primary limitation stems from the selective scope of the analysed documents. While the study captures all national submissions to the relevant Working Group processes between 2022 and 2025, it excludes broader UN documents that may also contain relevant legal reasoning (e.g.,

general statements made during LSC sessions). This decision was made deliberately to retain analytic focus and to privilege content that reflects explicit normative positioning on the legal governance of space resources. Although not globally exhaustive, the dataset includes submissions from a range of geopolitical and legal traditions and includes both spacefaring and non-spacefaring nations. Moreover, countries without domestic legislation but with active diplomatic engagement are fully integrated into the analysis.

The second limitation is that qualitative coding is inherently interpretive and susceptible to subjectivity (Neuman, 2012). To mitigate this, a strict coding protocol was established, including clear scoring criteria and explanatory comment fields to justify each score. Furthermore, the decision to use a 0–5 intensity scale was designed to accommodate partial or ambiguous references without forcing binary judgements. This scale allows for gradation and reflects the complex nature of legal-diplomatic discourse.

A further limitation is the simplicity of the quantitative approach. The quantitative component (keyword frequency) does not employ advanced computational methods or statistical modelling. It is intentionally simple, serving as a supplementary tool rather than a primary analytical method. While this limits the precision of its findings, it prevents over-reliance on numerical proxies for legal meaning.

The study is limited to national legislations enacted and documents submitted between 2015 and 2025. While this decade represents arguably the most intensive period of normative discussion on space resources to date, it excludes earlier positions that may still influence national legal thinking. However, given the unprecedented consolidation of COPUOS efforts through the Working Group, the temporal scope remains appropriate for this study's objectives.

In conclusion, this chapter has outlined the methodological architecture of the study,

demonstrating how qualitative and quantitative tools were integrated to systematically analyse State positions on the governance of space resource activities. Through five interrelated matrices, the study operationalises a theoretically grounded mixed-methods design tailored to the specificities of international legal discourse. Despite inherent limitations, the methodological strategy offers a robust and transparent framework for interpreting this dynamic and contested area of international space law: the governance of space resources.

Chapter IV: Global analysis and theoretical discussion

This chapter presents an integrated analysis of state submissions, international instruments, and the Draft Principles (March and July 2025) (UNCOPUOS, 2025). The results are not presented as a mere listing of scores or frequencies; instead, they are interpreted through the distinct but complementary theoretical lenses of Realism, Liberal Institutionalism, and Legal Positivism, enriched by insights from Constructivist and norm-theoretic approaches, as well as cooperative dynamics. This dual structure ensures that observations are not only descriptive but also critically engaged with broader theoretical debates in international law and diplomacy.

4.1 Key Global trends and findings

Read across both corpora, three patterns stand out. First, transparency, consultation, liability, and sustainability travel together across fora and time, supplying a low-sovereignty-cost grammar of legitimacy. Secondly, distributive questions are bracketed, with only isolated endorsements of benefit-sharing or redistribution and little traction for stronger allocation mechanisms. Thirdly, environmental language functions multilaterally as rhetorical alignment (a common reference to sustainability) but remains operationally narrow domestically (debris

and traffic management rather than environmental management of extraction). The quantitative analysis confirms these patterns. References to legality and cooperation align closely with the associated indicators, and while some states such as Germany and Canada display venue-sensitivity (shifting emphasis between responses and contributions), others maintain consistent profiles. Together, these dynamics explain how convergence arises without agreement on allocation, consolidating low-cost norm clusters and deferring distributional commitments.

A subtle strategic tone characterises the diplomatic submissions. The lack of overt international strategic signalling is not explained by a lack of interests; rather, it appears as a deliberate restraint to avoid contestation and preserve diplomatic room for manoeuvre. This strategic restraint contrasts with domestic contexts, in which strategic and leadership narratives surface more readily. The pattern is thus venue-sensitive. In COPUOS, states prefer to speak in legal and cooperative terms; while at home, they are more willing to speak capacity, competitiveness, and leadership. The keyword matrix mirrors this asymmetry, showing that strategy-adjacent terms (e.g., national interest, property rights) are almost muted in contributions and responses, but appear in national legislation. Read together, the data suggest strategic restraint as a technique, not an omission.

One might question whether the absence of strategic discourse in multilateral fora reflects limited national space capabilities, which could constrain states' ability to articulate strategy, rather than deliberate restraint. If this were the case, space-developing actors would be expected to contribute less extensively or in less formal terms. However, the evidence shows the opposite. Legal framing is consistent across both high- and low-capability states, while strategic and economic language resurfaces in domestic contexts (Cf. Appendix B). This suggests that multilateral restraint is a deliberate choice shaped by venue, not a symptom of

incapacity.

Economic enablement is present selectively, and primarily in domestic instruments. In the multilateral record, economic vocabulary clusters around enabling conditions (legal certainty, licensing, investment) rather than distributional commitments. Where economics does surface internationally, it does so in legitimising terms (e.g., innovation, safety, sustainability of operations) rather than in allocational ones. This is consistent with a broader logic in which states are comfortable endorsing measures that lower transaction costs and reduce regulatory uncertainty, but resist language that would imply transfer, redistribution, or shared control. The keywords reflect this division: 'legal certainty', 'licensing', and 'private sector' are common in sovereignty-leaning materials; 'redistribution' and 'Global Commons' are virtually absent.

Cooperation emerges as a widespread but shallow commitment, expressed through references to 'consultation', 'notification', 'information-sharing', 'registration', and 'non-interference'. These commitments serve two linked functions. First, they provide a legitimacy signal, as even sovereignty-leaning actors couch their positions in cooperative terms. Secondly, they are low-cost, coordinating activities without asserting or deciding who gets what or how much. The diffusion of these procedural norms is visible across most of the instruments and is consolidated in the Draft Principles, where cooperation and transparency are elaborated into recurring duties and review mechanisms. Keyword frequencies track this trend, with 'international cooperation' among the most persistent terms in submissions, exceeding the frequency of equity- oriented language.

One might object that the frequent invocation of 'international cooperation' reflects rhetorical padding rather than meaningful normative diffusion. If that were the case, mentions

of ‘consultation’, ‘notification’, or ‘transparency’ would appear only in passing or without being institutionalised as proposed duties. Instead, the evidence shows that such terms recur consistently across both questionnaire responses and contributions, and are consolidated in the Draft Principles as recurring obligations (UNCOPUOS, 2025). This breadth and institutional uptake reinforce the interpretation that cooperative language is functioning as a shared procedural vocabulary. At the same time, its contrast with the marginalisation of redistributive terms underscores its limited ambition. Cooperation spreads widely because it signals legitimacy at minimal sovereignty cost.

Environmental commitments are present but uneven. A subset of contributions frames sustainability and precaution as principles rather than afterthoughts, and environmental safeguards increasingly appear alongside ‘transparency’ and ‘liability’ as part of a procedural package. However, when measured against domestic frameworks, environmental language tends to narrow to risk management and debris mitigation, rather than responsibilities of stewardship. The keywords again provide corroboration. ‘Sustainability’ appears frequently in contributions and in the Draft Principles, but far less so in domestic texts, where operational risk terms dominate. This indicates that environmental norms are solidifying as a common procedural guideline internationally, while remaining understated and functional in domestic law.

Putting these indicators together, a consistent pattern emerges. In multilateral fora, states converge on a legal–cooperative idiom that codifies procedural duties such as transparency, consultation, liability, sustainability, and non-interference. These are the foundations of a thin but durable consensus. They are attractive because they reduce interference risks (legal, political, and operational) without demanding sovereignty-costly

trade-offs. In domestic settings, by contrast, the dominant orientation is sovereignty-leaning economic enablement, with authorisation regimes, jurisdiction and control, ownership of extracted resources, and investor confidence. Strategic rationales are more evident here, highlighting again a contrast where actors pursue cooperation abroad while prioritising economic enablement domestically.

Figures 1 and 2 present the dominant thematic orientation by state in questionnaire responses and national contributions, providing a visual summary of the coding results. The choropleth maps display, for each state, the dominant thematic code from the five-indicator scheme. Grey indicates no national submission available. Underlying scores and the tie-break rule are set out in the methodology (§3.2.2) and the matrix in Appendix B.

Figure 1. Dominant thematic orientation in questionnaire responses (by state)

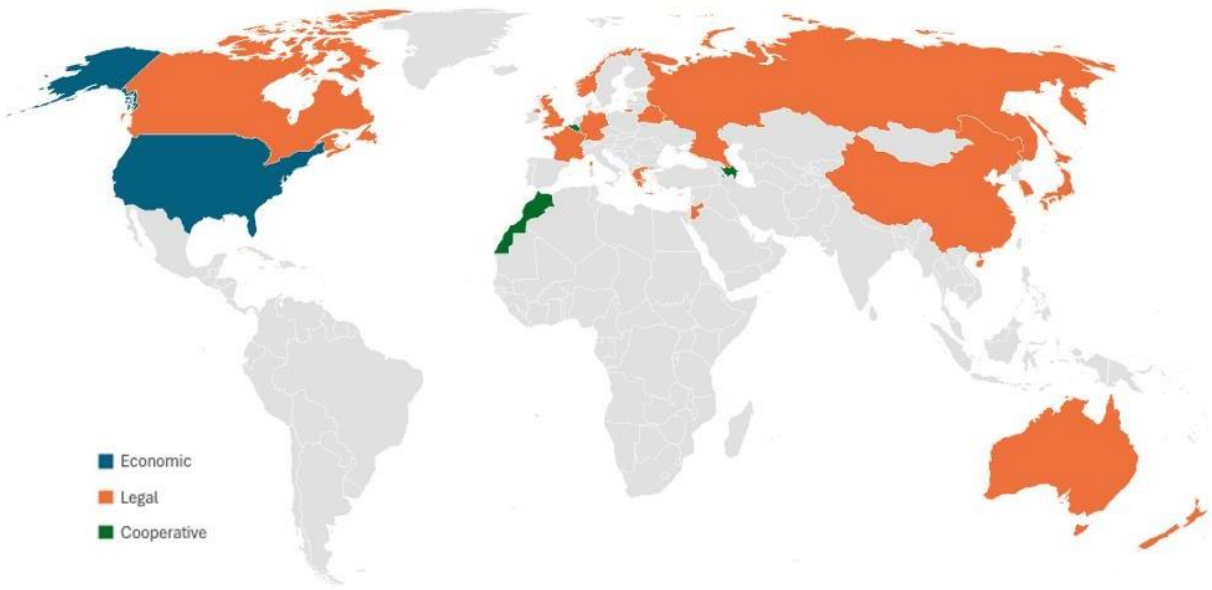


***Figure 1**. Questionnaire Responses to the Chair & Vice-Chair's Questionnaire (2022-2024), UN COPUOS LSC Working Group on Legal Aspects of Space Resource Activities. Coverage: documents posted as of 31 July 2025; n = 20. Source: UNOOSA; coding by author (Cf. §3.2.2 and Appendix B).*

Figure 1 illustrates the dominant thematic orientation in states' questionnaire responses. The classification is derived from the coding scheme developed in the qualitative analysis, where each response was scored against economic, legal, cooperative, strategic, and environmental indicators. The category with the strongest weighting determined the state's orientation; in cases of close balance, a tie-break rule privileging the most consistently emphasised theme was applied. This allows the map to capture not just the presence of themes but their relative salience across submissions.

Figure 2. Dominant thematic orientation in national contributions (by state)

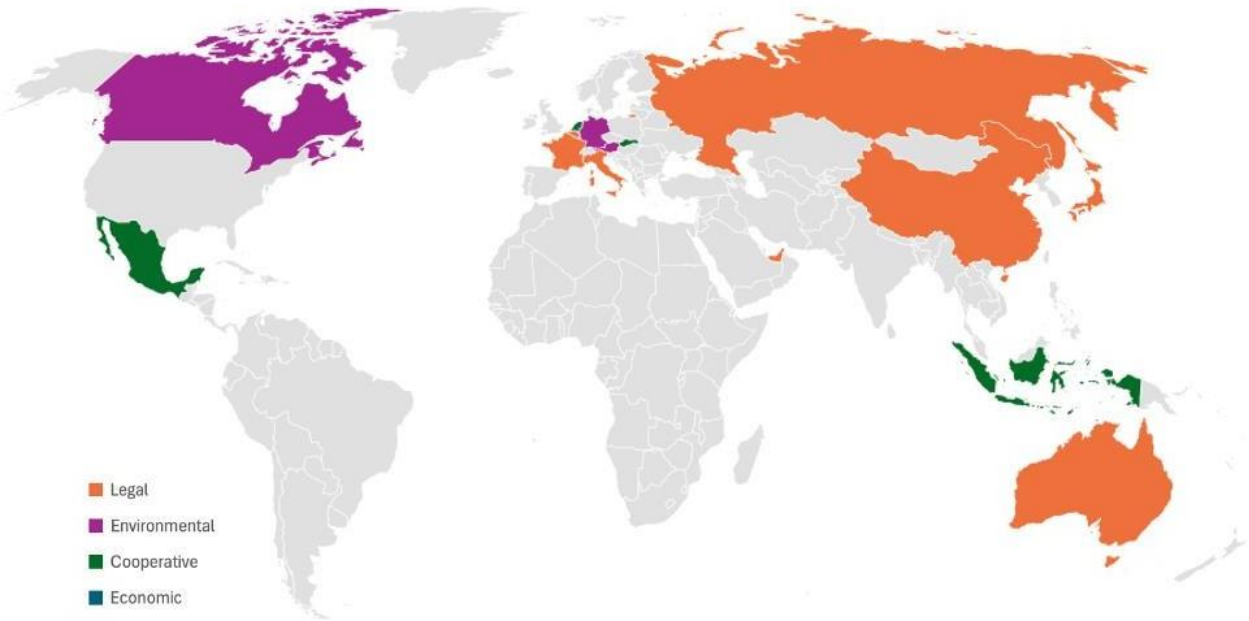


Figure 2. *National contributions to the Vice-Chair's Initial Draft Set of Recommended Principles (2025), UN COPUOS Legal Subcommittee Working Group on the Legal Aspects of Space Resource Activities. Coverage: documents posted as of 31 July 2025; n = 17. Source: UNOOSA; coding by author (Cf. §3.2.2 and Appendix B).*

In Figure 2, Legal predominates overall, with Environmental and Cooperative orientations appearing in a minority of filings; no state's contribution is dominated by the Strategic indicator. Read together, the maps show how legal signalling predominates in both corpora, while cooperative and environmental orientations appear selectively and vary by forum.

As shown above, involvement in the Working Group processes is uneven across UN regional groups. Figure 3 illustrates the distribution of state participation in the Working Group's processes, disaggregated by UN regional group, highlighting the concentration of contributions within the Western European countries.

Figure 3. Participation in COPUOS Working Group processes by UN regional group

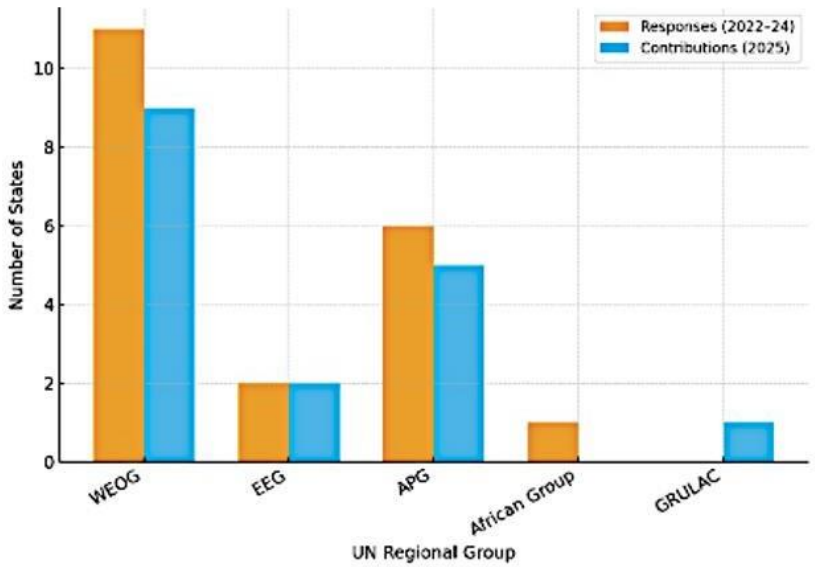


Figure 3. *Questionnaire Responses (2022–2024) and Contributions to the Draft Principles (2025), UN COPUOS LSC Working Group on Legal Aspects of Space Resource Activities. Coverage: documents posted as of 31 July 2025; n = 37 (20 responses; 17 contributions). Source: UNOOSA; coding by author (Cf. §3.2.2 and Appendix A).*

Among the 20 questionnaire responses received between 2022 and 2024, a majority came from the Western European and Other States Group (WEOG, 11). The pattern is replicated in the 17 contributions (2025), where WEOG again dominates (9). This distribution confirms that the Draft Principles are being shaped disproportionately by states in the Global North.

The trends in space governance can be interpreted through the distinct theoretical lenses adopted in this study. Liberal institutionalism offers a robust framework to understand why states formalise cooperation procedures, especially when agreement on distribution is difficult, as this approach ensures predictable and reputable activities. Legal positivism highlights the emphasis on legality within forums like COPUOS, with states framing contested actions in ways that fit plausible interpretations of existing treaties, particularly regarding the ownership of resources once extracted. Realism provides an explanation for the strengthening of national regulations that facilitate the acquisition of resources and the strategic dissemination of information concerning the development of capabilities.

The constructivist/norm-theoretic perspective explains why a small set of procedural and environmental norms appears across otherwise diverse actors. This occurs as these norms, representing emerging clusters, are spread through repeated application by expert communities and international bodies, eventually becoming the standard language for "responsible" behaviour. For example, the United States and Luxembourg, despite advancing market-oriented approaches, emphasise transparency and due regard in their submissions; Morocco highlights consultation and information-sharing as essential; and Japan and the United Arab Emirates invoke sustainability. These instances show how states with divergent economic or sovereignty-leaning positions nonetheless converge on a shared procedural–environmental

vocabulary that functions as a marker of legitimacy in multilateral settings.

The results show a clear asymmetry across the five indicators. Legal reasoning dominates across the corpus, functioning as the common grammar through which states frame their positions. Strategic discourse is muted in multilateral fora but resurfaces domestically, consistent with venue- sensitive restraint. Economic vocabulary appears selectively, primarily to enable markets rather than to envisage redistribution. Cooperative commitments are widespread but shallow, diffusing as low-cost procedural norms, while environmental references are uneven: stronger in contributions than in national laws, but increasingly clustered around precaution and sustainability.

These patterns partly confirm the hypothesis explaining why national submissions and statutes foreground economic and strategic imperatives over redistributive obligations, even as they rely on legal and cooperative language to project legitimacy. The following sections (§4.2–§4.4) build on this foundation by examining how these orientations cluster across states, how stable or fluid such profiles prove over time, and how they interact with treaty frameworks and the evolving Draft Principles (UNCOPUOS, 2025).

4.2 Normative convergence and divergence among member states

The coded dataset yields three clusters: sovereignty-leaning, cooperation–environmental, and hybrid, that validate the venue-sensitivity pattern introduced in §4.1. These alignments, and the tensions between them, provide the clearest evidence for testing the hypothesis that economic and strategic interests shape national legal positions, with redistributive justice consistently marginalised.

The sovereignty-leaning cluster is the most explicit in market facilitation and jurisdictional control. The United States typifies this orientation, enshrining property rights

and strategic leadership in its 2015 Competitiveness Act. Luxembourg follows closely with an investor-oriented law, dense in authorisation and jurisdictional provisions but silent on equity or environmental duties. Japan privileges licensing clarity and economic enablement, while the UAE, though incorporating modest liability and environmental clauses such as "Mitigate Space Debris and reduce the effects…" or "Enhance the long-term stability and sustainability…", anchors its national law in commercial activation. Canada's submission and China's emphasis on sovereign oversight fit here as well.

These actors illustrate Realist priorities articulated through Legal Positivist reasoning. They interpret the OST's silences on post-extraction ownership by enacting domestic authorisation regimes, thereby resisting redistributive duties. Some scholars, such as Hofmann and Blount (2018), however, view this not as a sovereignty drift but as a stabilising move, providing clarity under Article II and ensuring that exploitation occurs within a framework of state supervision rather than in legal uncertainty.

However, even when viewed in this more positive angle, the pattern remains telling. The adoption of only thin procedural norms (such as transparency or liability) demonstrates Acharya's norm localisation, whereby minimal cooperative gestures are offered to maintain legitimacy without surrendering substantive control (Acharya, 2004). What unites these states is a pragmatic Realism, where domestic legal infrastructures are constructed to secure economic advantage, while procedural concessions are deliberately kept narrow. The persistence of sovereignty-leaning frameworks is therefore not exceptional but a structural choice to preserve material advantage, despite rhetorical adherence to the OST's non-appropriation principle.

By contrast, a cooperation–environmental cluster grounds its discourse in institutional

stewardship. Germany, Belgium, Mexico and Austria are central, emphasising precaution, equity, transparency and multilateral oversight. Germany frames sustainability as a principle; Belgium invokes the Moon Agreement to demand equitable participation and review; Mexico embeds equity and public accountability; Austria presses for a structured international regime. States such as New Zealand, Greece, Norway, Azerbaijan and Bahrain fall within this orientation, advancing cooperative legal models of varied strength, with benefit-sharing mentioned procedurally rather than distributively.

Only Belgium (in both response and contribution) consistently argues that exploitation must be accompanied by 'redistributive' arrangements; Indonesia joins this position in its submissions. Their minority stance illustrates that while redistribution is not absent, it is politically thin and unevenly voiced. Also, it illustrates the enduring role of international law as a benchmark for legitimacy; even when proposals for wealth redistribution are improbable, nations such as Belgium, Indonesia and later Mexico, utilise them to ensure that equity remains a topic of discussion in diplomatic settings. This reflects norm entrepreneurship in action, but also the fragility of such claims when confronted with entrenched sovereignty (Acharya, 2018).

Between these poles lies a hybrid bridge. The Netherlands–Luxembourg joint submission combines domestic legal tools such as priority rights with cooperative commitments to transparency and support for developing states. Employing phrasing like: "promote the sustainable, rational, efficient and economic use of space resources", the submission advocates for a legally robust and internationally coordinated governance framework, emphasising the "incentivization of joint ventures". France similarly marries legal multilateralism with transparency and scientific prioritisation, moderating commercial ambition. The UAE's international submissions adopt procedural obligations that contrast with

the sovereignty-leaning orientation of its domestic law. At the institutional level, the Draft Principles embody this hybrid orientation, consolidating procedural common denominators without addressing redistribution (UNCOPUOS, 2025).

Figure 4. Distribution of Governance Preferences Across Actors

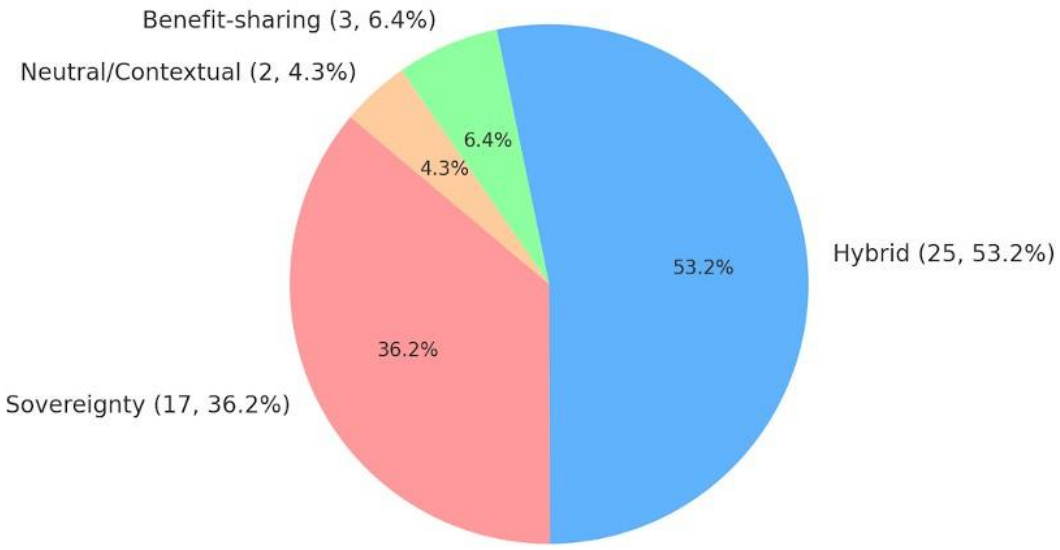


Figure 4. Full corpus of 47 documents (national submissions, statutes, and international instruments), Coverage: documents posted as of 31 July 2025. Source: (see § 3.2.1; coding by author (Cf. Appendix E).

Figure 4 shows that hybrid orientations dominate the corpus, combining cooperative duties with national discretion, followed by sovereignty claims. Only a small minority explicitly endorse benefit-sharing (6.4%) or adopt a neutral/technical stance (4.3%). This distribution confirms that procedural convergence is widespread, while redistributive commitments remain politically marginal, reinforcing the pattern of low-cost legitimacy norms and allocational bracketing.

States adopt hybrid approaches, strategically balancing competing demands by welcoming transparency and sustainability as low-cost cooperative signals while deliberately excluding redistributive commitments. From a critical perspective, one could contend that such hybridity reflects weakness rather than strength, that it amounts to little more than 'low-cost cooperation' that avoids the difficult questions of allocation. However, even low-cost norms can be transformative. Once embedded in multilateral practice, transparency, liability, and sustainability spread across fora, are repeated in domestic rhetoric, and are difficult to reverse (Abbott and Faude, 2021). What may look like institutional weakness, therefore, operates as functional convergence, anchoring norm clusters that gradually shape the contours of space governance.

Luxembourg and the United Arab Emirates exemplify how states present sovereignty-leaning frameworks domestically while adopting more cooperative language in multilateral fora. Luxembourg's 2017 law anchors investor confidence through property rights and jurisdictional control, yet in its joint submission with the Netherlands, it embraces transparency and capacity-building. Similarly, the UAE's 2019 statute privileges market activation under sovereign oversight, but its COPUOS contributions highlight databases, reporting requirements, and sustainability language. These contrasts are not contradictions but strategic adaptations. By tempering Realist imperatives at home with Institutionalist rhetoric abroad, both states reconcile domestic sovereignty with international legitimacy (Cf. Section 5.1).

Some states adopt transitional or shifting profiles, with their positions evolving over time or across venues. Australia's trajectory is particularly instructive given its dual membership in both the Moon Agreement and Artemis Accords. Whereas in 2023 Australia adopted a cooperative legalist tone, by 2024 its focus on operationalising the flagship Trailblazer

Programme ‘The Moon to Mars’ signalled a turn towards a more operational and capability-driven stance, reflecting the tension between rhetorical commitments to redistribution and pragmatic Realist investment in national capacity. Russia affirms multilateral oversight but conditions equity on state-centrism, embodying guarded Realism within legalist forms. Notably, Russia occasionally invokes the “*res communis*” custom, signalling alignment with the idea of outer space as a collective domain. These are not anomalies, but managed adaptations conditioned by capability, coalition needs, and audience; issues unpacked in §4.3 (stability/shift) and §4.4 (treaty architecture).

However, this is carefully distinguished from the Moon Agreement’s binding CHM obligations, reflecting a preference for symbolic commonality over enforceable redistribution. This selective use of “*res communis*” demonstrates how states draw on legal idioms to legitimise their positions while resisting their more demanding redistributive implications. Jordan’s minimal submission illustrates how brevity itself can serve as strategic neutrality, avoiding normative commitments. Cases such as those of Australia and Russia demonstrate that state positioning is not static but transformative, with alignments shifting depending on the venue, treaty commitment, and domestic capabilities. This fluidity underscores that ‘clusters’ should be read not as fixed blocs but as evolving alignments shaped by legal, political, and strategic pressures.

This pattern provides an answer to the research question, indicating that consensus is only partial. National positions converge procedurally around transparency, consultation, liability, and sustainability, because these norms sustain legitimacy at minimal sovereignty cost. By contrast, they diverge on substantive distributive issues, where domestic legislation foregrounds economic gain and strategic autonomy over multilateral obligations. The struggle

for agreement on benefit-sharing thus reflects, at least in part, the Realist logic of protecting material advantage.

4.3 Stable and shifting profiles among the submissions

A cross-dataset comparison reveals stable legalist/cooperativist/environmentalist profiles alongside shifting venue-dependent profiles, indicating path dependence tempered by strategic adaptation. Rather than treating each dataset in isolation, the comparative exercise demonstrates that certain states exhibit remarkable stability in their discursive orientations, while others shift their emphasis depending on venue, audience, or moment in time. This typology adds nuance to the earlier cluster analysis by showing not only what states prioritise (legalism, cooperation, economic facilitation, or environmental stewardship) but also how consistently those priorities are sustained across fora.

A first group can be described as stable legalists. France, Japan, China, Russia, Italy, the United Kingdom, the Republic of Korea, Greece and Jordan all reproduce a predominantly legal idiom across their submissions, consistently foregrounding the binding character of the OST, the importance of authorisation and supervision, and the reinforcement of procedural rules. This discursive constancy suggests the persistence of a shared legal grammar, one that sustains a minimal baseline of agreement in multilateral fora while masking deeper substantive disagreements. For these states, legalism functions both as a language of legitimacy and, in practice, limits the scope of redistributive reinterpretation.

A second group demonstrates stable cooperative orientations. Azerbaijan, Morocco, Indonesia, the Netherlands, and the Slovak Republic all maintain a strong emphasis on multilateralism, equity, and procedural solidarity. Even where such claims are unlikely to be adopted in practice, their consistent articulation reflects a form of norm entrepreneurship, an

effort to keep the vocabulary of solidarity present within multilateral debates and to project legitimacy through the invocation of collective interest (Acharya, 2024). The persistence of such rhetoric across forums suggests that cooperation has become a stable discursive marker for these states, even if its material implications remain limited.

A much smaller but particularly significant category consists of stable economic actors, represented by the United States and Luxembourg. Both articulate sovereignty-oriented approaches that consistently privilege market activation, investor confidence, and the facilitation of private ownership of extracted resources. In the U.S. case, this Realist orientation is coupled with explicit references to leadership and security, whereas Luxembourg presents its stance more quietly in the language of legal certainty. Their positions illustrate how appropriation logics have become entrenched and stabilised, in sharp contrast to the marginalised redistributive provisions associated with the Moon Agreement.

There is evidence of stable environmentalist orientations, most clearly in Austria, but also in Bahrain, Germany and Canada to a lesser extent. These states consistently highlight sustainability, liability, and precautionary governance across their submissions. These commitments reveal the gradual clustering of environmental norms around precaution and sustainability, confirming their diffusion as shared reference points in space governance.

Alongside these stable anchors, however, a number of states reveal shifting or mixed profiles, recalibrating their discursive emphasis across fora. Australia, as demonstrated in §4.2, illustrates a trajectory from cooperative in 2023 towards a more legalist stance in 2024. Belgium, similarly, moved from a cooperative register emphasising equity and benefit-sharing to a more legalist idiom in its later contribution. Bahrain shows a gradual transition from primarily legal framing to a stronger environmental emphasis, while Germany and Canada

both demonstrate a shift from legalist idioms towards more explicit environmental commitments. These transformations cannot be dismissed as mere inconsistency. Rather, they reflect deliberate code-switching between venues, a strategic form of discursive adaptation designed to balance domestic sovereignty with international legitimacy.

Theoretically, such shifts are consistent with Abbott and Faude's account of norm localisation, in which states selectively adapt international norms to reconcile them with domestic imperatives. They also confirm Abbott and Faude's argument about low-cost cooperation, where states are willing to embrace transparency, liability, or sustainability because these procedural commitments impose limited sovereignty costs, while consistently resisting high-cost redistributive obligations. What emerges, therefore, is a layered picture in which stability signals institutional lock-in and discursive path dependence, while shifting profiles evidence a strategic flexibility that allows states to manage competing imperatives across different fora.

Read together, these patterns reinforce the central findings of this chapter. Procedural norms around transparency, liability, and sustainability are not only converging but also stabilising, replicated across multiple fora by both stable legalists and stable environmentalists, and kept alive by consistent cooperativists. By contrast, redistributive claims around the CHM and benefit-sharing remain fragmented and politically fragile, appearing only sporadically or in the rhetoric of a handful of norm entrepreneurs. The interplay of stable anchors and shifting adaptations thus confirms that space resource governance is moving towards a procedural consensus.

4.4 Comparative analysis of the findings, Treaties, and the Draft Principles

A treaty-level comparison and the March–July evolution of the Draft Principles

(UNCOPUOS, 2025) show procedural durability and redistributive fragility, situating state practice within the current institutional architecture. The March 2025 Draft Principles were deliberately minimalist: they reaffirmed OST obligations, stressed peaceful purposes, and introduced procedural duties such as information-sharing, consultation, and periodic COPUOS review. Sustainability was present but generic, equity reduced to the phrase "for the benefit of all humankind" (Cf. Principle 6) and sovereignty avoided by excluding property rights or ownership frameworks.

By July 2025, the Draft Principles had evolved to reinforce procedural obligations while leaving redistributive elements bracketed. One might argue that the very act of including equity-related provisions, even in square brackets, indicates openness to their eventual incorporation and keeps redistributive justice on the negotiating table. However, the persistence of bracketed text over successive drafts suggests that equity survives, only as contested language, suggesting limited convergence and continued structural resistance (Cf. Principle 5 (a), in March and July 2025). Iran's reassertion of CHM keeps the marginalised claim visible in COPUOS debates. However, visibility should not be mistaken for traction because, without uptake by technologically capable states, CHM remains a marginalised norm (Deplano, 2023). This asymmetry reinforces the central finding of this section, in which procedural norms diffuse and cluster, but norms of redistribution are structurally impeded.

The debate over "safety zones" demonstrates most clearly how procedural measures can shade into appropriation without formally breaching treaty rules (Newman and Ralston, 2022). Presented as coordination zones under Article IX OST, safety zones provisions operationalise non-interference and risk management while risking exclusionary effects in practice. This duality illustrates the broader hybridisation trend, where obligations become more precise on procedure (coordination, notice, deconfliction) even as they approach the

boundary with appropriation, but without crossing it formally. Consequently, measures are designed to appear compliant with treaties in their structure, while their implementation can effectively establish preferential access for entities possessing the necessary capabilities.

In comparative perspective, the Draft Principles thus track closely with the OST baseline and Hague Building Blocks in procedural scope, diverge from the Moon Agreement by omitting binding redistribution, and cautiously edge toward Artemis by entertaining (but not endorsing) safety zones. Liberal Institutionalism explains this as consensus-crafting, suggesting that states prioritise codifying low-cost procedural norms while deferring allocational conflict. Legal Positivism is reinforced through repeated disclaimers that the Principles are non-binding, clarificatory, and complementary to existing treaties. From a Realist perspective, the absence of ownership frameworks, binding redistribution, and exclusive exploitation rules is explained by the strategic interests of capable states.

Keyword evidence confirms this asymmetry. Terms tied to transparency, liability, authorisation, and sustainability proliferate across submissions and are consolidated in the July draft. By contrast, equity-related terms (benefit-sharing, redistribution, developing countries) remain rare in state practice and appear only as bracketed, contested language in the updated Draft Principles. This highlights the divergence between agreement on procedures, which is progressing towards near-term operational use, and disputes over resource allocation, which are being deferred to lengthy discussions within national or limited international groups.

Iran's perspective on the Initial Draft completes the comparison by explicitly reasserting CHM and equitable sharing. Criticising unilateral national laws and the Draft Principles' procedural minimalism, Iran aligns with the redistributive ambition of the Moon Agreement while rejecting the sovereignty-oriented logic of the Artemis Accords. This

position functions simultaneously as strategic resistance to Western-led frameworks and as norm entrepreneurship, attempting to revive a marginalised redistributive model. However, its limited uptake illustrates Acharya's localisation dynamic where dominant states absorb fragments of equity rhetoric, embedding them as procedural gestures, but sideline substantive redistribution.

In comparative perspective, the Draft Principles entrench the OST/Hague procedural baseline, omit the Moon Agreement's redistributive core, and edge towards Artemis on coordination practices (including safety-zones language) without endorsing appropriation. This is low-cost institutionalism: obligation light, procedural precision rising, delegation minimal. Keyword distributions corroborate the asymmetry (transparency/liability/sustainability stable; benefit-sharing/CHM bracketed). Iran's intervention functions as norm entrepreneurship that preserves visibility rather than traction.

The result is a hybrid architecture in which procedural norms diffuse and stabilise while allocational justice remains structurally blocked. This asymmetry foreshadows the divergent regulatory logics examined in Chapter V, where national legislations operationalise these dynamics through sovereignty-leaning appropriation regimes tempered by selective procedural safeguards.

Chapter V: Comparative study of national legislations

This chapter examines domestic legislation dedicated to governing space resources, enacted by the United States, Luxembourg, Japan, and the United Arab Emirates, to test how the discursive trends identified in Chapter IV are operationalised in legal practice. These statutes constitute the only enacted national frameworks explicitly regulating space resource

activities and provide insight into how states translate national priorities into legal form while projecting legitimacy within the multilateral environment.

The analysis proceeds in two steps. Section 5.1 examines the internal design of each statute, identifying the regulatory logic embedded within it. Section 5.2 then considers governance by practice, illustrating how operational initiatives reinforce, adapt, or contest these legal models beyond formal texts.

5.1 Governance by design - Models and regulatory logics in the national legislations

These four statutes are sovereignty-leaning in that they enable post-extraction appropriation of space resources. Yet they do not embody a single template. Instead, each reflects a distinct regulatory logic shaped by domestic institutional structures and strategic positioning. Framing them as governance models allows the analysis to move beyond description of provisions toward interpretation of the legal and political strategies embedded within their design.

- United States: The hegemonic model

The Commercial Space Launch Competitiveness Act (CSLCA), which was passed by the U.S. Congress in 2015, is the earliest and most assertive of the four statutes. It grants U.S. citizens and corporations property rights over resources extracted from celestial bodies, while expressly disclaiming sovereignty claims in line with Article II of the OST. This duality of formal non- appropriation alongside functional ownership is paradoxical; it positions the U.S. as both: a guardian of the non-appropriation principle and as the first mover in institutionalising

a de facto appropriation regime through domestic recognition of ownership of extracted resources.

The strategic language in the statute is explicit. The Act mandates that the U.S. shall "facilitate commercial exploration for and commercial recovery of space resources by United States citizens" and "discourage government barriers to… economically viable… industries" (§51302 (a.1 and 2)) At the same time, it situates these activities within a national security framework, underscoring that the "Department of Defence plays a vital and unique role in protecting national security assets in space" (SEC. 109 (7.e.1)) This coupling of economic enablement and strategic leadership reveal a distinctly Realist orientation where commercial primacy is framed as both a market and security imperative.

Environmental obligations appear only in narrow form, limited to "mitigation of orbital debris" (SEC. 109 (a)). No reference is made to planetary protection or sustainability more broadly, and benefit-sharing obligations are absent. While the CSLCA encourages NASA to "maximise utilisation of… international partners in the development, assembly, and operations of the ISS" (SEC. 114 (a.1)), cooperation here is instrumental rather than solidaristic.

The analytical value of the U.S. statute lies not in its normative desirability since its entrenchment of appropriation remains highly contested, but in what it reveals about hegemonic strategy. By embedding appropriation within a national statute, the U.S. has sought to normalise a particular interpretation of the OST. Crucially, it has done so by cloaking this interpretation in Positivist legality, declaring that ownership is permissible because the treaty does not explicitly forbid it. Even the hegemon, in other words, felt compelled to justify its position in legalist terms, confirming the continued use of legal reasoning as an idiom of legitimacy.

- Luxembourg: The market model

Luxembourg's Law of 20 July 2017 on the Exploration and Use of Space Resources (Luxembourg Space Agency, 2017) represents a market model of space governance. Unlike the United States, which couples appropriation with strategic rhetoric, Luxembourg asserts sovereignty more quietly through legal and financial design. The statute declares that "space resources are capable of being owned" (Art. 1), ties licences explicitly to commercial purposes (Art. 3), and restricts eligibility to entities incorporated in Luxembourg (Art. 7). These provisions matter less for their doctrinal content than for how they normalise ownership through routine licensing, thereby exporting Luxembourg's regulatory template to the firms it hosts.

What distinguishes Luxembourg is not overt strategic ambition but the use of legal architecture as an investment vehicle. By requiring financial soundness from operators (Art. 10) and positioning itself as a regulatory haven, Luxembourg leverages its financial sector expertise to attract firms and normalise appropriation. This strategy exemplifies how smaller nations can exert considerable influence in the establishment of global norms. In this sense, Luxembourg leverages financialisation as a geopolitical resource, showing how a small state can shape global norms without military or technological power.

The statute contains no environmental safeguards and avoids equity language. Its international posture, however, is more nuanced. Luxembourg has aligned with the Artemis Accords and the Hague Building Blocks, while in its joint submission with the Netherlands, it adopted cooperative rhetoric on transparency and capacity-building (Cf. Section 4.2). This duality reflects not inconsistency but strategic calibration, offering investor confidence at home, institutional legitimacy abroad.

Analytically, the Luxembourg model demonstrates that norm entrepreneurship is not confined to large powers. By positioning financial security and regulatory certainty as global benchmarks, Luxembourg exemplifies how smaller states can punch above their weight in shaping the trajectory of international space resource governance. It also demonstrates that Realist logics of relative advantage can operate through financial and regulatory instruments rather than military capability. In doing so, Luxembourg exemplifies how financialisation itself can become a vehicle of sovereignty, cloaked in the language of regulatory certainty.

- Japan: The technocratic model

Japan's Act on the Promotion of Business Activities for the Exploration and Development of Space Resources (Ministry of Justice, Act No. 83 of 2021) exemplifies a technocratic model of governance. Unlike the overtly strategic U.S. framework or the market-oriented Luxembourg statute, Japan embeds appropriation in a dense administrative architecture. Ownership is recognised once resources are "possessed with the intention to own" (Art. 5), but this right is mediated through meticulous licensing requirements, ministerial oversight, and detailed compliance procedures. The statute's purpose is explicitly economic as Article I clearly sentence: "to promote business activities". However, its emphasis lies less on investor rhetoric than on bureaucratic precision.

This regulatory style reveals Japan's cautious diplomacy. Domestically, sovereignty is safeguarded through tightly defined authorisation regimes, while internationally the law gestures towards harmonisation by calling for "internationally harmonised systems" (Art. 7). Environmental provisions remain narrow, confined to risk management, but their inclusion underscores a logic of administrative control rather than stewardship.

Japan's model illustrates how sovereignty can be operationalised not through market attraction or strategic assertion, but through bureaucratic authority. This technocratic pathway contrasts with the U.S. drive to normalise appropriation through hegemonic leadership, and with Luxembourg's attempt to financialise sovereignty through legal certainty. It also shows how Realist imperatives can be pursued through institutional formality, with Legal Positivism providing the idiom of legitimacy.

- United Arab Emirates: The hybrid/reputational model

The UAE's Federal Law No. 12 of 2019 from the UAE Research & Development Government Policy (2019) adopts a hybrid orientation. Like its counterparts, it enables appropriation through authorisation and jurisdictional control, while anchoring space activities in national interest and prohibiting those that threaten security (Art. 47). Among the four statues, UAE's law is the only one incorporating explicit environmental and reputational provisions. Operators are required to mitigate space debris, the UAE Space Agency is mandated to represent the state internationally, and the law commits to enhancing long-term sustainability.

This model reflects the strategy of an emerging space actor. Domestically, Realist imperatives dominate with provisions seeking to "stimulate investment and encourage private and academic sector participation" (Art. 2.1) and to "work to establish investment projects… on economic bases" (Art. 7.5). It also frames space activities as instruments of national interest, mandating that they "achieve the objectives of the State's national space policy" (Art. 2) and prohibiting activities that pose a "threat to national security or interests of the State" (Art. 47.1). At the same time, the law projects international legitimacy, requiring

the UAE Space Agency to "represent the State in international forums" (Art. 7.8) and to "enhance the long-term stability and sustainability" (Art. 2.2) of activities. Environmental obligations are modest but noteworthy, with clauses requiring operators to "mitigate space debris and reduce the effects" (Art. 19) of operations.

Internationally, the UAE has ratified the OST but not the Moon Agreement. It has joined the Artemis Accords and participates in the Hague Building Blocks. The national law's mixture of sovereignty, investor facilitation, and environmental clauses presents the country as a responsible steward, even if the substantive obligations remain modest.

The UAE model is thus hybrid and reputational. It demonstrates how emerging actors can embed environmental rhetoric to bolster international standing while maintaining Realist control at home. In so doing, it shows that even sovereignty-leaning statutes can be designed to integrate elements of procedural and environmental discourse, however limited.

- Comparative Insight: Divergent logics, convergent effects

Read together, the four statutes crystallise distinct regulatory logics yet produce convergent structural effects. Each enables post-extraction appropriation while avoiding redistributive duties, thereby operationalising the OST's silence on ownership through domestic authorisation regimes. What differs is not the outcome, but the pathway through which appropriation is normalised.

Despite their divergent legal idioms and institutional designs, all four frameworks domesticate ownership within national jurisdiction while maintaining formal adherence to the non-appropriation principle. This reveals the pluralism of sovereignty-leaning regimes: appropriation is not advanced through a single template, but through varied strategies that

nonetheless generate a shared structural pattern.

Convergence is visible in their external alignments. None of the four has ratified the Moon Agreement, reflecting the political unacceptability of binding redistributive obligations. By contrast, all participate in the Hague Building Blocks and the Artemis Accords, signalling comfort with procedural cooperation and transparency. In each case, adherence to the OST is preserved formally but substantively reinterpreted: non-appropriation of celestial bodies is maintained while appropriation of resources is domesticated through national law.

A counterargument deserves consideration. Su (2017) and Hofmann and Blount (2018), suggest that by clarifying ownership and supervision, these statutes may actually reinforce compliance with Article II OST, providing legal certainty that prevents unregulated exploitation. On this view, domestic laws stabilise the treaty framework rather than erode it. However, the political effect is more complex. By normalising appropriation through domestic regulation, states shift debate from potential treaty violation to questions of national oversight (von der Dunk and Tronchetti, 2015; Kostenko, 2020). This reframing 'manages', rather than resolves the tension with non-appropriation, confirming that Realist imperatives are advanced through Positivist idioms. This approach aligns with the multilateral rhetoric observed in Chapter IV: legality for legitimacy, cooperation as low-cost signalling, and selective environmental references that stop short of allocative commitments.

The broader implication is that future governance frameworks are unlikely to be designed around redistributive ideals. Instead, they will draw selectively on the elements already stabilised across domestic regimes. These provisions are converging not because they redistribute benefits but because they lower uncertainty, reassure investors, and project reputational responsibility. In this way, national experiments are laying down the bases from

which multilateral principles are most likely to emerge.

5.2 Governance by practice - Signals of consolidation and contestation

The analysis of submissions and statutes reveals how states articulate preferences towards a hybrid governance framework in law and diplomacy. However, governance is also shaped by what actors do in practice. A brief consideration of recent developments in the sector, including operational and regulatory initiatives, provides additional context by illustrating how national positions are reinforced, adapted, or contested beyond formal texts. These examples do not serve as a separate methodological test of the hypothesis, but as interpretive evidence situating legal design within the wider dynamics of space governance.

The first and most visible dynamic is how operational capacity itself generates governance. NASA's Commercial Lunar Payload Services (CLPS) programme (NASA, 2023), through missions testing lunar landing, payload delivery, and resource-handling technologies by U.S. companies, as well as the joint experiments on in situ resource utilisation (ISRU) with the European Space Agency (ESA), already shape the contours of an emerging lunar economy (ESA, 2022). These initiatives are not merely technical demonstrations; they establish working practices, contractual templates, and operational standards that other actors must engage with, whether as partners, competitors, or regulators. In doing so, they prefigure rules of access, allocation, and responsibility on the lunar surface, effectively creating governance by precedent (see CLPS).

The Artemis Accords attempt to codify this practice through the language of "safety zones", framing them as coordination measures under Article IX of the OST. However, their normative reach remains confined to signatories, while those with operational capacity

continue to set de facto rules that others are compelled to accommodate. As technological capability advances, law and diplomacy are drawn into the orbit of what is already being done in practice, reinforcing the asymmetry between states with operational capacity and those without.

NASA's 2020 purchase of regolith, or 'lunar dust,' reinforced this dynamic (NASA, 2020a). By structuring ownership and transfer of resources through a contractual act rather than diplomatic consensus, the U.S. sought to frame such transactions as lawful. The quantities involved were symbolic, but the precedent was not. In normalising contested interpretations of the OST through practice, the purchase illustrates how operational capability and precedent-setting contracts embed new understandings of legality. These developments show how Realist imperatives of capacity and leadership shape governance outside multilateral fora, while Positivist legality is invoked through action rather than negotiation.

The second trend is regional. The European Commission's 2025 proposal for a European Union Space Act represents the first attempt at supranational regulation in this domain. Although still under consultation, it illustrates how regional bodies can drive regulatory integration where global consensus remains cautious and incremental (see the EU Space Act in European Commission).

In parallel, UNOOSA's Global Space Law Project, which has already attracted more than sixty requests from emerging spacefaring nations, diffuses procedural templates on authorisation, liability, and sustainability through advisory work. These initiatives do not directly redistribute resources, but they entrench expectations of transparency, licensing, and precautionary norms even in jurisdictions without active extraction capacity. Governance here emerges less from capability than from institutions and the diffusion of knowledge, reflecting

the explanatory power of Liberal Institutionalism and constructivist accounts of norm socialisation (see UNOOSA Law Project).

These practices demonstrate that governance is not only codified in law but also generated through practice. Operational capacity, contractual innovation, and institutional templates create facts on the ground that multilateral negotiations then formalise and diffuse. Practice often precedes law, embedding interpretations of the OST that subsequently gain legitimacy through repetition. This dynamic underscores the hybrid character of the regime, where appropriation is domesticated nationally, procedures are stabilised multilaterally, and practice accelerates their diffusion across fora. The cumulative effect of these dynamics sets the stage for Chapter VI, which considers how hybrid patterns of practice and law can inform realistic policy recommendations for the future governance of space resources.

Chapter VI: Policy recommendations and Conclusion

6.1 Towards Normative Convergence and Hybrid International Governance

The preceding analysis has shown that while states diverge substantively on distributive justice and the legal status of extracted resources, there is a discernible pattern of convergence on procedural principles. Transparency, consultation, liability, due regard, and sustainability constitute a procedural package that can be codified with minimal sovereignty costs, enabling legitimacy without redistributive commitments. The most viable governance pathway appears hybrid. An adaptive framework layering procedural norms, technical coordination, and national statutes while leaving redistributive debates unresolved.

This hybrid trajectory echoes prior incremental efforts, such as the Hague Building Blocks (2019), which encouraged agreement on core principles while allowing flexibility for future institutionalisation (Hague Building Blocks, 2019). The updated 2025 Vice-Chair's summary likewise confirms that many delegations support further guidance under COPUOS

to ensure activities are conducted in a "safe, sustainable, rational and peaceful manner" (A/AC.105/C.2/L.340). Convergence here is conditional and depends on framing contested concepts such as safety, benefit-sharing, and cooperation in terms that diffuse conflict while preserving interpretive legitimacy under the OST.

Conceptual clarity is a necessary step. Divergent state definitions of "space resources" and "space resource activities" remain a barrier to consensus. However, many submissions converge on abiotic materials in situ, especially those relevant to imminent lunar and asteroid missions. Anchoring early agreements in narrow, practice-driven categories (while committing to periodic review) offers a pragmatic compromise.

Dispute resolution, though rarely prioritised, has been highlighted by Belarus, Japan, and Russia. This convergence reflects a shared interest in predictability rather than adjudication. A voluntary mechanism combining transparency, consultation, and conciliation could provide low-cost certainty without compulsory jurisdiction, aligning with existing international practice.

The issue of "safety zones" remains contentious. The Artemis Accords' framing of zones has been criticised as implying appropriation under Art. II of the OST. Reframing safety as cooperative operational measures (notification, transparency, deconfliction) reduces political charge and transforms a divisive concept into a functional norm. This semantic precision matters because exclusionary zones risk sovereignty disputes, whereas cooperative safety measures align with Article IX, obligations of due regard and non-harmful interference.

Benefit-sharing, by contrast, illustrates the limits of consensus. The absence of redistributive language across the corpus confirms that states, developed and developing alike, resist wealth-transfer obligations. However, softer modalities enjoy broad support. For

instance, capacity-building, data exchange, training, and environmental monitoring. Indonesia's invocation of the UNGA res. 51/122 (1996) "Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States" illustrates continuity with non-monetary solidarity mechanisms. Reframing benefit-sharing in terms of proportionality and equity rather than redistribution could sustain inclusivity without overburdening technologically advanced states.

These trends suggest the possibility of conditional convergence in which, what appear as fault lines today may be reframed into consensus points tomorrow through careful diplomatic framing. Governance is likely to advance through graduated institutionalisation, codifying procedural obligations, reinforcing epistemic networks, and leaving distributive justice open for future negotiation. This hybrid model reconciles national interests with collective governance, allowing space resources to be utilised for the benefit of all humankind without collapsing under distributive deadlock.

6.2 Synthesis of Findings and Theoretical Contributions

This dissertation analysed forty-seven primary documents (including COPUOS submissions, the Draft Principles, four national statutes, and relevant treaties) to evaluate whether international consensus on space resource governance is emerging. The evidence demonstrates an asymmetry. While procedural norms stabilise rapidly, distributive claims remain blocked. Procedural convergence thus constitutes a thin but durable layer of order, whereas redistributive principles (CHM, equitable access, wealth redistribution) remain marginal.

This finding confirms the central hypothesis. Multilaterally, states converge on procedural– legal norms that sustain legitimacy at low sovereignty cost. Domestically, national

statutes foreground economic enablement and strategic positioning, with only token references to sustainability or cooperation. Strategic silence in multilateral fora should be read not as an absence of interest, but as deliberate restraint to preserve diplomatic flexibility.

The theoretical framework clarifies this duality. Realism explains resistance to redistribution as a structural function of material interest. Legal Positivism shows how states anchor divergent practices in the vocabulary of treaty interpretation, stretching Articles I and II of the OST to legitimise both unilateral appropriation and collective restraint. Liberal Institutionalism highlights how even thin procedural rules diffuse and stabilise, creating expectations of transparency and due regard that gradually shape governance.

These findings contribute to broader debates on norm dynamics. Acharya's concept of norm localisation (2004) explains why states adopt minimal cooperative gestures while rejecting redistributive obligations. Abbott and Faude's theory of low-cost institutions (2021), aligns with voluntary guidelines and bilateral accords that enable cooperation without binding commitments. The emergence of norm clusters around transparency and sustainability demonstrates how procedural standards, once consolidated, resist erosion and influence parallel domains.

6.3 Policy Recommendations

The analysis of State submissions demonstrates that, despite persistent divergences between sovereignty-leaning and benefit-sharing-oriented approaches, there are discernible points of normative convergence which could serve as integral elements for a hybrid international governance framework. The ongoing deliberations within COPUOS illustrate that consensus is unlikely to crystallise around a single, comprehensive treaty, a point already underscored by the limited traction of the Moon Agreement. Instead, the governance model

needs to prioritise a graduated coordination framework that (i) codifies the procedural package (notification, transparency, liability, due-regard deconfliction); (ii) establishes non-exclusionary operational safety measures (mission notifications, Space Traffic Management-based deconfliction, consult- first protocols) grounded in Article IX; (iii) pairs transparency with capacity-building and voluntary review/conciliation. This pathway consolidates the genuinely shared core while keeping allocation debates open, reducing legal, political, and operational collision risk at minimal sovereignty cost.

These convergences echo earlier efforts to gradually norm-setting, most notably the Hague Building Blocks, which embraced adaptive governance by encouraging States to agree on minimum principles while leaving open the possibility of further institutional development as technology and practice evolve (Hague Building Blocks, 2019). Similarly, the updated summary prepared by the Vice-Chair in 2025 highlights that many delegations support further legal guidance under COPUOS to ensure that space resource activities are conducted in a "safe, sustainable, rational and peaceful manner" (United Nations, 2025). Although differences remain concerning benefit-sharing and the legal status of extracted resources, the recurrent affirmation of cooperative principles and non-appropriation, in their literal legal sense rather than as instrumental rhetoric, reflects an underlying willingness to preserve the legitimacy of the existing space law regime.

Other key considerations for the future governance of space resources include defining "space resources" and "space resource activities". Conceptual clarity remains elusive with States offering divergent definitions ranging from narrow references to minerals and water to broader categories such as solar energy. However, overlap already exists with many submissions converging on the inclusion of abiotic materials in situ, particularly those relevant

to imminent missions. Although the Updated Draft Principles by the Working Group (July 2025) include a possible definition of both terms, it remains bracketed or "in process" (UNCOPUOS, 2025). For governance to advance, States will need to anchor early agreements in narrow, practice-driven categories and commit to periodic review as technology evolves. Establishing workable baseline definitions is essential because, without them, other principles such as benefit-sharing, due regard, or liability cannot be operationalised coherently and predictably.

Despite not being frequently prioritised, dispute resolution was explicitly noted by Belarus, Japan, and Russia. Their contributions underscore a shared acknowledgement that legal certainty requires conflict-management mechanisms. Therefore, the lack of consensus on core issues is less critical than the convergence of interest in managing disputes. By presenting dispute resolution as a procedural tool for predictability rather than compulsory judgment, support may be achieved. A simple mechanism involving consultation, transparency, and voluntary assistance would lower the cost to sovereignty while meeting the common desire for legal clarity.

References to "due regard" recur frequently, reflecting shared concern with preventing harmful interference. However, the terminology of "safety zones," promoted through the Artemis Accords, is politically charged and often perceived as veiled appropriation under Article II of the OST. A more constructive approach involves reframing the term "safety" as a set of operational measures, including notification, transparency, and coordination, aimed at preventing incidents. Decoupling safety from exclusionary "zones" and linking it to cooperative procedures would make it acceptable as a common-interest norm, advancing security in space while diffusing fears of territorial carve-outs.

Some specialists might contend that rephrasing "safety zones" to a term that better reflects security through notification and coordination is merely a semantic distinction (Newman and Ralston, 2022). However, the difference is significant and foundational. While safety zones may imply exclusive operational control with potentially exclusionary effects, notification and coordination establish procedural obligations grounded explicitly in Article IX of the OST. This reframing thus lowers sovereignty costs and transforms a politically charged concept into a broadly acceptable cooperative norm.

The redistributive conception of benefit-sharing remains politically untenable. The virtual absence of the term “redistribution” across the corpus confirms that neither developed nor developing States are willing to advance wealth-transfer obligations. However, softer modalities appear to enjoy wide support. For instance, capacity-building, scientific data exchange, and joint environmental monitoring recur across submissions. Indonesia’s reference to the Space Benefit Declaration (UNGA, 1996) illustrates this preference for non-monetary solidarity, while the Hague Building Blocks’ proposal for an International Fund for benefit-sharing shows how voluntary or proportional contributions could signal equity without mandating redistribution (Hague Building Blocks, 2019, Section 13(g)). Reframing benefit-sharing around proportionality and equity, rather than redistribution, could enable consensus by allowing technologically advanced States to show solidarity at modest cost while ensuring meaningful participation for developing countries.

These dynamics illustrate the possibility of conditional convergence. What appear today as fault lines can tomorrow be reframed as consensus points. This is not to suggest that consensus will emerge automatically. Rather, it requires deliberate diplomatic framing that highlights overlaps, emphasises procedural obligations, and avoids symbolically divisive

terminology. In this way, the contested edges of the debate can be transformed into opportunities for functional compromise, enabling gradual convergence on a hybrid governance model that balances national interests with collective governance, ensuring that space resources are utilised for the benefit of all humankind.

6.4 Limitations and Directions for Future Research

In line with the limitations identified in §3.3, several limitations of this study warrant acknowledgement. The dataset, comprising forty-seven documents, is necessarily bounded. It excludes informal contracts, licensing agreements, and operational precedents that increasingly shape governance in practice. While thematic coding was applied systematically, it cannot fully capture the deliberate ambiguity that characterises much of diplomatic discourse. Furthermore, the analysis has privileged legal rhetoric over material capabilities, thereby identifying interpretive patterns rather than offering causal explanations.

These limitations point to productive avenues for future research. First, more systematic work is needed on the interaction between law and practice. Contracts, licensing agreements, and operational precedents are increasingly influencing governance alongside formal legislation and diplomacy. Second, greater attention should be given to the role of emerging spacefaring nations, especially in Latin America, Africa and Asia, whose positions may evolve rapidly as technological capacities expand. Third, comparative analysis warrants deeper engagement. While this dissertation has drawn on analogies with WTO dispute settlement, UNCLOS seabed mining, and biodiversity benefit-sharing, future scholarship should undertake in-depth comparative studies of these regimes. Important work already exists, but significant gaps remain in understanding how institutional design features, such as enforcement mechanisms, revenue-sharing models, or technology-transfer provisions, could

be adapted to the distinctive political economy of outer space.

A fuller examination of participation bias would enhance understanding of how representative the Draft Principles truly are. The current dataset shows systematic underrepresentation of Africa and Latin America, suggesting that normative consolidation may be driven by states with greater political capacity and economic resources (Froehlich, 2024). Future research could investigate the structural causes of this imbalance, such as funding constraints, regional priorities, or diplomatic bandwidth, and assess the long-term implications for the legitimacy of global space governance.

Finally, theoretical extensions could further explore norm diffusion, entrepreneurship and localisation. In particular, the role of epistemic communities and private actors in framing procedural norms as universal deserves more detailed study. These dynamics may prove decisive in determining whether procedural consensus remains a ceiling or can evolve into a stepping stone towards greater equity. Another theoretical angle that could inform a non-classical perspective on the construction of the global space resources framework is Quantum Entanglement in Social Sciences. This perspective suggests that individuals and groups are intrinsically intertwined, offering insights into complex phenomena like collective decision-making and the ethical implications of interconnected systems. The author of this dissertation is particularly interested in pursuing this novel angle in further studies.

6.5 Conclusion

Stability Without Equity. The international community stands at the threshold of a new space age. Just as the introduction to this dissertation noted that the legal status of extracted resources remains unsettled, the conclusion must underline that governance is already taking shape, albeit asymmetrically. Allocational justice is structurally blocked, but procedural

convergence has consolidated a minimal foundation for cooperation. This duality, stability without equity, captures both the promise and the limits of current governance. Procedural norms reduce risks and legitimise activities at low sovereignty cost, but they leave distributive justice deferred. Whether these thin anchors evolve into a platform for greater equity depends on sustained diplomatic framing, epistemic entrepreneurship, and the willingness of states to revisit distributive principles in light of technological and geopolitical change. The task for future diplomacy is therefore twofold: to build upon procedural anchors as stabilising elements of hybrid governance, and to reintroduce distributive principles in ways compatible with sovereignty. Only by balancing state interests with collective aspirations can outer space truly fulfil its legal designation as the province of all humankind.

Chapter VII: Bibliography and Appendices

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Appendix A: Metadata Register

This Appendix A records essential document information to ensure full traceability and transparency.

Metadata Register								
	Actor	**Document Name**	**Year**	**Submission Type**	**Link/Reference**	**Doc tittle**	**Document features**	**Final note**
1	USA	U.S. Commercial Space Launch Competitiveness Act	2015	National Law	https://shorturl.at/ua3P6	USA_SpaceLaw_Act2015		The U.S. Commercial Space Launch Competitiveness Act is clearly sovereignty-leaning, with a dominant emphasis on empowering the private sector, securing U.S. jurisdiction and legal infrastructure, and establishing property rights over space resources. While some references to international obligations and cooperation exist, they serve to enable rather than constrain U.S. enterprise freedom. No benefit-sharing or global equity language appears. The neutral terms (like "exploration" and "use") are framed in pro-market contexts, reinforcing a domestic sovereignty rationale rather than a pluralistic or solidaristic approach.
2	Luxembourg	Law of July 20th 2017 on the exploration and use of space resources	2017	National Law	https://shorturl.at/ioCOc	LUX_SpaceLaw_2017		Luxembourg's 2017 space resources law is a pioneering in economic and legal architecture, designed to attract private operators and assert national jurisdiction over resource activities. It strongly promotes a commercial logic, backed by detailed legal procedures, while remaining silent on environmental and cooperative norms. There are light strategic elements, mostly through institutional incentives and national benefit structures. Overall, this is a sovereignty-leaning model with dominant economic and legal rationales, setting a precedent for national-level legislation in the absence of international regulation.
3	Japan	Act on the Promotion of Business Activities for the Exploration and Development of Space Resources（Act No. 83 of 2021）	2021	National Law	https://shorturl.at/GJKW0	JPN_SpaceLaw_2021		Japan's law prioritises national regulatory authority and the empowerment of its private sector under domestic legal structures. While it acknowledges international cooperation and avoids direct contraventions of the OST, the core of the law is national authorisation, legal ownership, and economic competitiveness. Benefit-sharing and environmental concerns are essentially absent, and the cooperative framing is instrumental rather than normative.
4	UAE	Federal Law No. (12) of 2019 - On the regulation of Space Sector	2019	National Law	https://shorturl.at/wNypB	UEA_SpaceLaw_2019		The UAE's national law is heavily focused on domestic regulatory control, authorisation regimes, and legal accountability. Private sector promotion, safety oversight, and national interest are clearly foregrounded. Although hybrid legal tools like liability and international engagement are present, benefit-sharing or redistributive justice elements are absent. The document firmly establishes a state-centric, commercially oriented framework for space governance.
5	USA	United States – Input to the Working Group on Legal Aspects of Space Resource Activities	2023	Questionnaire Response	A/AC.105/C.2/2023/CRP.37	USA_RESPONSE_COPUOS_2023		The U.S. submission is clearly sovereignty-leaning. It asserts a strong domestic legal framework, defends a market-based approach, and emphasises national jurisdiction, authorisation, and ownership rights. While it includes some hybrid and transparency language through the Artemis Accords, benefit-sharing rationales are absent, and there is no engagement with redistributive, solidarity-based, or Global South-oriented discourse.

6	Australia	Australia – Input to the Working Group on Legal Aspects of Space Resource Activities	2023	Questionnaire Response	A/AC.105/C.2/2023/CRP.7 & A/AC.105/C.2/2024/CRP.24	AUST_RESPONSE7_COPUOS_2023 & AUST_RESPONSE24_COPUOS_2024	Australia presented 2 responses: Both responses are considered in the present study, however "Attachment A" from the submission 2024 is disrigarded since this segment addresses the legal and non-legal considerations applicable to the planning and execution of the Trailblazer program's activities.	Australia presents a hybrid governance posture on paper, but beneath the legal-cooperative and multilateral language, it is strategically nurturing national capabilities for future independent economic activity in space resources. Its approach is not confrontational or unilateral, but it is calibrated to protect sovereign interests and domestic industry development under the cover of international cooperation.
7	Azerbaijan	Azerbaijan – Input to the Working Group on Legal Aspects of Space Resource Activities	2022	Questionnaire Response	A/AC.105/C.2/2023/CRP.8	AZB_RESPONSE_COPUOS_2022		The document displays a clear emphasis on international cooperation, legal harmonisation, and binding multilateral rules, while also referencing sustainability and cautiously acknowledging economic/commercial elements. Sovereignty-based signals are minimal, and benefit-sharing is present but not dominant. The dominant framing is hybrid, legally grounded, cooperative governance.
8	Bahrain	Bahrain – Input to the Working Group on Legal Aspects of Space Resource Activities	2022	Questionnaire Response	A/AC.105/C.2/2023/CRP.9	BRN_RESPONSE_COPUOS_2022		Bahrain's contribution shows a moderate hybrid governance signal, with a cooperative legal-institutional emphasis and light references to both sovereignty and benefit-sharing. The approach is procedural and inclusive rather than deeply normative or ideological. The document calls for treaty revision, expert networks, legal databases, and shared standards, all of which support a collective governance structure, though with little explicit legal theorisation.
9	Belarus	Belarus – Input to the Working Group on Legal Aspects of Space Resource Activities	2022	Questionnaire Response	A/AC.105/C.2/2023/CRP.10	BELR_RESPONSE_COPUOS_2022	Submitted only in Russian (needs translation)	Belarus explicitly rejects unilateral national legislation and private appropriation, emphasising the need for a new international regime under UN leadership. It combines legal precision (especially regarding the OST and Moon Agreement) with clear procedural proposals for international cooperation, including shared definitions, monitoring and reporting mechanisms, licensing systems, dispute resolution structures, and fair benefit-sharing principles. The document's tone is prescriptive and normative, seeking convergence and institutionalisation, not just cooperation in principle.
10	France	France – Input to the Working Group on Legal Aspects of Space Resource Activities	2022	Questionnaire Response	A/AC.105/C.2/2023/CRP.12	FR_RESPONSE_COPUOS_2022		France's submission presents a moderate hybrid governance signal, with strong emphasis on multilateral legal harmonisation, international cooperation, and sustainable resource management. While some sovereignty-linked language appears (notably in references to national laws and authorisation regimes), it is secondary to the legal-cooperative multilateral logic. Benefit-sharing themes appear selectively (e.g. humankind, sustainability), but not in a redistributive or equity-driven frame. France's document fits clearly within a legal multilateralist paradigm with environmental sensitivity, but does not assert a sovereignty-first or equity-based normative position.
11	Germany	Germany – Input to the Working Group on Legal Aspects of Space Resource Activities	2022	Questionnaire Response	A/AC.105/C.2/2023/CRP.13	GRM_RESPONSE_COPUOS_2022		Germany's submission advocates a rules-based, multilateral regime grounded in existing treaties (OST, Moon Agreement), with emphasis on legal certainty, international cooperation, sustainability, and inclusive benefit-sharing. Sovereignty-related terms appear, but are consistently reframed through international law rather than national primacy. The legal rationale dominates, but is paired with strong cooperative and environmental discourses, making the hybrid nature both substantive and deliberate. Germany positions itself as a legal-institutionalist norm entrepreneur, seeking a consensus-based governance framework that balances scientific integrity, commercial feasibility, and equitable access.

12	Greece	Greece – Input to the Working Group on Legal Aspects of Space Resource Activities	2022	Questionnaire Response	A/AC.105/C.2/2023/CRP.14	GRC_RESPONSE14_COPUOS_2022	Also submitted a document A/AC.105/C.2/2022/CRP.13 called: "Questionnaire related to the discussion of item 15 on potential legal models for the exploration, exploitation, and utilization of space resources". This questionnaire is not considered in this study since it doesn't present a clear stance of the country regarding the preferred space resource governance model.	Greece shows a legally oriented hybrid governance model, with strong respect for international law, UN multilateralism, and equitable access. Although economic and strategic rationales are present, they are not dominant. Sovereignty-related terms (like jurisdiction and exploitation) appear frequently but are used to reaffirm treaty-based limits, not to assert national primacy. The legal framing tempers any sovereignty-leaning tendencies.
13	Jordan	Jordan – Input to the Working Group on Legal Aspects of Space Resource Activities	2022	Questionnaire Response	A/AC.105/C.2/2023/CRP.15	JRD_RESPONSE_COPUOS_2022	Submitted only in Arabic (needs translation)	There is no strong ideological or normative framing detectable. The only value-laden statement is too vague to confidently assign a sovereignty-leaning interpretation. Most of the document is descriptive, defining which bodies and activities should fall under the Working Group's mandate. The use of "property rights" is not framed in terms of ownership model, national control, or legal certainty.
14	Luxembourg	Luxembourg – Input to the Working Group on Legal Aspects of Space Resource Activities	2022	Questionnaire Response	A/AC.105/C.2/2023/CRP.16	LUX_RESPONSE_COPUOS_2022	Also submitted a doc called: "Current Status and Priorities of Space Resources Utilization - Views provided by the European Space Resources Innovation Centre" (In this study, only the Response is taken into account, as the second document is not representing the country, but an entity)	Luxembourg presents a clear legal-commercial governance model in which national jurisdiction and legal certainty are foundational. While it engages in multilateral forums and cooperative discussions, its core approach is rooted in asserting national regulatory authority and creating market conditions favourable to private enterprise. This positions Luxembourg as a strong sovereignty-leaning actor in the international space resources discourse.
15	Morocco	Morocco – Input to the Working Group on Legal Aspects of Space Resource Activities	2023	Questionnaire Response	A/AC.105/C.2/2023/CRP.17	MRCC_RESPONSE_COPUOS_2023	Submitted only in French (needs translation)	Morocco's submission consistently emphasises equitable access, capacity-building, the inclusion of developing countries, and sustainability, all framed as legal and normative imperatives. The invocation of common heritage, benefit for all countries, and support for multilateral, inclusive governance signals a clear commitment to distributive justice in space resource governance. Legal and hybrid elements are mobilised in service of this benefit-sharing rationale, rather than sovereignty or strategic positioning.
16	Norway	Norway – Input to the Working Group on Legal Aspects of Space Resource Activities	2022	Questionnaire Response	A/AC.105/C.2/2023/CRP.19	NWY_RESPONSE_COPUOS_2022		Norway's questionnaire response reflects a clear preference for a legal–cooperative approach to space resource governance. The submission emphasises the need for a multilateral legal framework to ensure predictability, transparency, and the peaceful use of space resources. While references to sustainability and benefit for all countries are present, they are framed procedurally rather than as strong normative commitments. The overall tone is consensus-seeking and institutional, avoiding commercial or strategic rhetoric, and focusing instead on developing common principles and norms within COPUOS to prevent legal fragmentation.

17	Belgium	Belgium – Input to the Working Group on Legal Aspects of Space Resource Activities	2023	Questionnaire Response	A/AC.105/C.2/2023/CRP.36	BLG_RESPONSE_COPUOS_2023		Belgium explicitly promotes a multilateral legal regime grounded in the Moon Agreement and Outer Space Treaty, seeking to balance legal certainty, equity, sustainability, and participation. It critiques unilateral and sovereignty-based models, even while referencing some related terms, but these are consistently framed negatively or cautiously. Cooperation, equity, and legal multilateralism are presented not as desirable add-ons, but as necessary structural principles for long-term governance.
18	Canada	Canada – Input to the Working Group on Legal Aspects of Space Resource Activities	2023	Questionnaire Response	A/AC.105/C.2/2023/CRP.11	CAN_RESPONSE_COPUOS_2023		Canada balances legal interpretation, multilateral cooperation, and pragmatic engagement with economic and strategic realities. While it avoids overt sovereignty assertions or benefit-sharing redistribution logic, it promotes normative and operational international cooperation, emphasis on legal certainty, treaty compliance, and non-binding law evolution structures that integrate industry, academia, and NGOs. The hybrid logic is not incidental but intentionally constructed as a framework strategy to bridge legal development and technical progress.
19	Japan	Japan – Input to the Working Group on Legal Aspects of Space Resource Activities	2023	Questionnaire Response	A/AC.105/C.2/2023/CRP.33	JPN_RESPONSE_COPUOS_2023		Japan's submission is anchored in a strong national legal framework (Space Resources Act) that grants licensing, ownership rights, and supervision over private operators. While it promotes international harmonisation and information sharing, these cooperative elements are positioned to support national regulatory authority and domestic industry. The emphasis on authorisation systems, property rights, and private sector empowerment, combined with minimal equity or CHM framing, results in a clear sovereignty-oriented signal.
20	New Zealand	New Zealand – Input to the Working Group on Legal Aspects of Space Resource Activities	2023	Questionnaire Response	A/AC.105/C.2/2023/CRP.18	NZL_RESPONSE_COPUOS_2023		The submission blends legal compliance, sustainability, and multilateral cooperation as core principles, with clear operational proposals and inclusive governance framing. Economic references are secondary, and sovereignty or strategic language is minimal, reinforcing a firmly cooperative–legal hybrid position.
21	Russian Federetion	Russian Federation – Input to the Working Group on Legal Aspects of Space Resource Activities	2023	Questionnaire Response	A/AC.105/C.2/2023/CRP.20	RUS_RESPONSE_COPUOS_2023		The submission presents a legal-cooperative vision anchored in detailed treaty interpretation, opposing unilateral appropriation and national legislation that grants private ownership. While using sovereignty-linked terms like "exploitation" and "jurisdiction," these are framed within a UN-led, multilateral regime that ensures equitable access and benefit-sharing for all States. Environmental concerns and operational safeguards are integrated, but always as part of a legal framework rather than standalone priorities.
22	United Kingdom	United Kingdom – Input to the Working Group on Legal Aspects of Space Resource Activities	2023	Questionnaire Response	A/AC.105/C.2/2023/CRP.21	UK_RESPONSE_COPUOS_2023		The United Kingdom's response reflects a strong hybrid governance orientation, grounded in legal cooperation, multilateralism, and sustainability. The submission consistently emphasises the need for international consensus and a framework rooted in the OST, prioritising scientific exploration and environmental protection over commercial exploitation. While acknowledging the potential role of non-governmental actors, the UK frames such involvement strictly within legal and scientific objectives. Overall, the response positions the UK as a rules-based actor committed to safe, sustainable, and inclusive space resource governance.

23	China	Submission by the Delegation of China to the Working Group on Legal Aspects of Space Resource Activities of the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space	2024	Questionnaire Response	A/AC.105/C.2/2024/CRP.5	CH_RESPONSE_COPUOS_2023		The submission heavily emphasises the application and operationalisation of OST principles with a strong legal framing that reinforces state responsibilities, supervision, and control over non-governmental entities. While cooperation and sustainability are significant, the legal framing revolves around sovereign obligations and procedural control under existing treaties.
24	Republic of Korea	Republic of Korea – Input to the Working Group on Legal Aspects of Space Resource Activities	2024	Questionnaire Response	A/AC.105/C.2/2024/CRP.17	RKO_RESPONSE_COPUOS_2023		The Republic of Korea's submission focuses on multilateral legal clarification, operational safety, and sustainability within the framework of COPUOS. While sovereignty-adjacent terms appear, they are procedural rather than assertive. The emphasis on sharing information, treaty compliance, and inclusive norm development supports a moderate hybrid governance classification.
25	Australia	Australian contributions relevant to the elements for an initial draft set of recommended principles for space resource activities	2024	Contribution	https://shorturl.at/2AaTm	AUST_CONTRIBUTION_2024		Australia balances national legal implementation and industry engagement with multilateral processes. While sovereignty-related themes are evident, they do not dominate. Instead, Australia signals intentional pluralism, grounding its actions in legal certainty, engaging with global partners, and supporting tools like the Artemis Accords and Hague Building Blocks. The result is a focus on bridging legal obligations and cooperative governance.
26	Austria	Contribution by Austria on elements for an initial draft set of recommended principles for space resource activities	2024	Contribution	https://shorturl.at/SbkNx	AUS_CONTRIBUTION_2024		Austria's position reflects a strong hybrid governance model, emphasising international legal frameworks, equitable participation, and environmental sustainability in a coherent, principled manner. It seeks to bridge national obligations with global solidarity, advocating for structured cooperation without undermining sovereignty or scientific access.
27	Bahrain	Recommended Principles for Space Resource Activities Submission by the Kingdom of Bahrain to the Working Group on Legal Aspects of SpaceResource Activities of the Legal Subcommittee of COPUOS	2024	Contribution	https://shorturl.at/TUjZE	BRN_CONTRIBUTION_2024		Bahrain reflects a moderately benefit-sharing-oriented perspective, grounded in the principles of the OST. The submission emphasizes that space activities should be conducted for the benefit of all countries, regardless of their economic or scientific development, highlighting global equity and sustainability. It calls for environmental preservation, legal adherence, transparency, and international cooperation, framing these as guiding principles rather than optional goals. While it does not engage in commercial, strategic, or sovereignty-based arguments, its language suggests a principled, inclusive, and precautionary approach to space resource governance.

28	Belgium	Contribution by Belgium to the general exchange of views on potential legal models for activities in the exploration, exploitation and utilization of space resources	2024	Contribution	https://shorturl.at/lIo02	BLG_CONTRIBUTION_2024		Belgium consistently advocates for a multilateral legal framework rooted in existing treaties, while recognising the need for operational mechanisms (e.g. notifications, impact assessments, registration) that balance legal clarity with practical coordination. The state clearly distances itself from sovereignty-leaning models (e.g. "club-based" national legislation) and elevates legal and equity-based principles, yet incorporates institutional pluralism and recognises the role of national operators (e.g. Antarctic analogy, advisory committees). Key proposals (e.g. periodic review, public registration, shared impact assessments) reflect hybrid operational tools to implement normative commitments.
29	Canada	Submission of Canada to the Working Group on Legal Aspects of Space Resource Activitiesof the Legal Subcommittee of COPUOS Principles Relating to the Legal Aspects of Space Resource Activities	2024	Contribution	https://shorturl.at/XeRUF	CAN_CONTRIBUTION_2024		Canada promotes a governance approach rooted in international law, transparency, and responsible state behaviour, but does so through mechanisms that affirm national prerogatives and responsibilities, not shared control or redistributive structures. Its tone is legalist and technocratic, signalling moderate sovereignty-leaning governance, with cooperative and environmental considerations layered in as procedural safeguards rather than normative commitments.
30	China	Submission by the Delegation of China to the Working Group on Legal Aspects of Space Resource Activities of the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space	2024	Contribution	https://shorturl.at/Ux3kx	CH_CONTRIBUTION_2024		China's submission defends sovereign regulatory oversight while advocating intl law compliance and cooperation. Although benefit-sharing is acknowledged, it is framed through national implementation (e.g. authorisation of commercial actors), not global redistribution or commons logic. The overall orientation is sovereignty-leaning but tempered by legal multilateralism, suggesting moderate sovereignty framing rather than hard unilateralism.
31	France	Second French contribution to the Working Group on Legal Aspects of Space Resource Activities	2024	Contribution	https://shorturl.at/NXgrc	FR_CONTRIBUTION_2024		France's contribution reflects a strong hybrid governance orientation. While it incorporates some sovereignty-based tools (notably national supervision and legal responsibility), it consistently subordinates them to international cooperation, multilateral legal frameworks, and procedural transparency. The use of treaties (OST, Moon Agreement), references to consultation mechanisms, and insistence on information sharing all indicate a deeply interdependent, rules-based model.
32	Germany	Invitation to provide contributions on elements for an initial draft set of recommended principles for space resource activities - Contribution by Germany	2024	Contribution	https://shorturl.at/2uHBJ	GRM_CONTRIBUTION_2024		Germany's contribution is anchored in legal certainty, environmental protection, and consultative cooperation, with relatively few sovereignty signals and a moderate emphasis on equity and sustainability. No advocacy for unilateral approaches, property rights, or national legislation is observed. While benefit-sharing ideas are visible, they are framed via procedural fairness and scientific stewardship rather than redistribution.

33	Indonesia	Indonesia's Proposal on an Inital Draft Set of Recommended Principles for Space Resource Activites	2024	Contribution	https://shorturl.at/LE8Xj	IDN_CONTRIBUTION_2024		Indonesia advocates for a multilateral legal framework grounded in the OST, CHM, and environmental norms, while also recognising the need for private sector incentives and national oversight. The framing is legally robust, strongly cooperative, and ethically driven, aiming for a balanced regime that is adaptable, fair, and enforceable.
34	Italy	Working Group on Legal Aspects of Space Resource Activities - Italian Contribution	2024	Contribution	https://shorturl.at/VTlV7	IT_CONTRIBUTION_2024		Italy presents a legally grounded and cooperative vision, but with clear emphasis on State primacy and procedural control under the OST. Its framing relies on robust legal mechanisms, especially authorisation, jurisdiction, and supervision, to uphold responsible use. While it strongly supports benefit-sharing and sustainability, these are framed within legal compliance structures rather than redistributive justice.
35	Japan	Japan Contributions on Elements for an Initial Draft Set of Recommended Principles for Space Resource Activities for the Working Group on Legal Aspects of Space Resource Activities under the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space	2024	Contribution	https://shorturl.at/MZ0kL	JPN_CONTRIBUTION_2024		Japan’s contribution is sovereignty-leaning in governance signal. The text reveals a clear orientation towards legal mechanisms rooted in domestic law and authorisation structures that support private enterprise, with moderate engagement in cooperative principles and light acknowledegment of benefit-sharing goals. Environmental or distributive justice framings remain secondary.
36	Luxembourg	Contribution of the Grand Duchy of Luxembourg on Elements for an Initial Draft Set of Recommended Principles for Space Resource Activities	2024	Contribution	https://shorturl.at/75RV8	LUX_CONTRIBUTION_2024	This submission + The Luxembourg–Netherlands joint submission is treated as a state-level endorsement and transposition of the BBs, with no substantive divergence. However, it is important to distinguish between the original Working Group process (non-state) and this state contribution (Luxembourg + NL), as this signals a shift from epistemic initiative to diplomatic positioning.	Luxembourg's contribution clearly promotes national regulatory frameworks, private sector facilitation, and safety mechanisms that align with decentralised legal implementation. While cooperation and environmental themes are present, they are secondary to the emphasis on legal autonomy, business flexibility, and operational security.

37	Mexico	Mexico's contribution to the draft principles on space-related activities	2024	Contribution	https://shorturl.at/NlkfP	MX_ENG_CONTRIBUTION_2024 (MX_CONTRIBUTION_2024)	Submitted only in Spanish (needs translation)	Mexico's submission reflects a hybrid governance orientation, with strong emphasis on legal supervision and state responsibility (sovereignty-leaning) alongside a robust benefit-sharing discourse rooted in the Moon Agreement, equity, and access for developing countries. While sovereignty-related terms slightly dominate in raw count, the intensity and recurrence of inclusive cooperation, equity principles, and environmental stewardship support a balanced hybrid model, leaning toward multilateral legalism and fairness, rather than unilateralism.
38	Netherlands	Joint contribution submitted by **Luxembourg and the Kingdom of the Netherlands** on Elements for an Initial Draft Set of Recommended Principles for Space Resource Activities	2024	Joint Contribution	https://shorturl.at/RelrY	NTLUX_CONTRIBUTION_2024	This submission is treated as a state-level endorsement and transposition of the BBs, with no substantive divergence. However, it is important to distinguish between the original Working Group process (non-state) and this state contribution (Luxembourg + NL), as this signals a shift from epistemic initiative to diplomatic positioning.	The Luxembourg–Netherlands joint submission consistently balances state-centered legal mechanisms with a strong cooperative and multilateral framing. The tone is neither overly sovereignty-defensive nor idealistically redistributive, it seeks procedural integration, transparency, and normative convergence without sacrificing legal precision or flexibility.
39	Russian Federetion	Contribution of the Delegation of the Russian Federation to the Working Group on Legal Aspects of Space Resource Activitiesof the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space on elements for an initial draft set of recommended principles for space resource activities	2024	Contribution	https://shorturl.at/HFZwP	RUS_CONTRIBUTION_2024		Russia's contribution is strongly anchored in a State-centric legalist model that reasserts State responsibility, non-appropriation, and treaty compliance. It shows openness to multilateral mechanisms and environmental safeguards, but always within a framework that preserves national regulatory control and legal sovereignty. Benefit-sharing and cooperation are secondary and conditional.
40	UAE	Elements for an Initial Draft Set of Recommended Principles for Space Resource Activities UAE Contributions	2024	Contribution	https://shorturl.at/uj8jm	UAE_CONTRIBUTION_2024		The UAE contribution emphasises state control, authorisation, safety, and national-level governance mechanisms, including national databases, operator supervision, and reporting obligations. These are all strong indicators of a sovereignty-leaning approach. The presence of cooperative and transparency-related language (e.g., sharing with UNOOSA, international databases) introduces hybrid elements, but they are not framed normatively and are generally voluntary or procedural. There is no normative benefit-sharing logic, no mention of CHM, and only vague gestures to "access" or "equity." Environmental and safety concerns are prominent but do not automatically shift the orientation unless framed as shared global duties, which they are not here.

41	Slovak Republic	Slovak Republic - Contributions on elements for an initial draft set of recommended principles for space resource activities	2025	Contribution	https://www.unoosa.org/oosa/en/ourwork/copuos/lsc/space-resources/index.html	SLV_CONTRIBUTION_2025		The Slovak Republic's submission reflects a moderate benefit-sharing rationale, grounded in OST principles and oriented toward fairness, shared access, and sustainability. It avoids sovereignty or commercial framings, and while cooperative values are clear, they are expressed in general terms rather than detailed proposals. The approach suggests a multilateralist vision with an emphasis on equity over enterprise.
42	USA	The Artemis Accords	2020	Treaty	https://shorturl.at/q6wxV	USA_ArtemisAccords_2020	The Outer Space Treaty, Moon Agreement, Artemis Accords, and Hague Building Blocks are included in this dataset as normative reference instruments. Although not national positions, they are coded using the same parameters to ensure methodological consistency and allow comparative analysis. Their results will be interpreted contextually and used as benchmarks to assess alignment, divergence, and normative influence on State practice.	The Artemis Accords project a cooperative sense but embed a strategic–legal architecture that strongly safeguards national autonomy in resource extraction and operations. Cooperative provisions are significant in rhetoric and form, yet subordinate to sovereignty-oriented control mechanisms, making the overall governance signal a strong sovereignty-leaning hybrid.
43	UNOOSA	Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Agreement)	1979	Treaty	https://shorturl.at/t5zXz	UNOOSA_MoonAgreement_1979		The Moon Agreement represents a robust hybrid governance model: it embeds benefit-sharing norms (CHM, equitable access, special consideration for developing countries) within a detailed legal framework that mandates cooperation, transparency, and environmental protection. Economic exploitation is permitted but subordinated to collective governance and sustainability. This makes it strongly hybrid, with clear normative commitments that bridge legal, cooperative, and distributive rationales.
44	UNOOSA	Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (OST)	1967	Treaty	https://shorturl.at/yfhzT	UNOOSA_OST_1967		The treaty balances national responsibilities and jurisdiction with robust cooperative obligations, equal access, and shared benefit principles, while embedding environmental safeguards and peace-focused strategic limits. Its governance design reflects a strong hybrid model, integrating binding legal norms with inclusive, collective-use principles.
45	Netherlands	Building Blocks for the Development of an International Framework on Space Resource Activities	2019	Proposed principles and guidelines	https://shorturl.at/wVlEX	HAGUE_BuildingBlocks_2019		The Building Blocks balances between enabling commercial activity, ensuring cooperative benefit-sharing, and embedding robust legal governance. Sovereignty and benefit-sharing terms are strongly present, but hybrid governance concepts are structurally central. The framework is designed to harmonise national and international approaches while safeguarding environmental and inclusive principles.
46	UNOOSA	Initial draft set of recommended principles for space resource activities	2025	Principles	A/AC.105/C.2/L.339	UNOOSA_PRINCIPLES_2025	The Vice-Chair of the Working Group has prepared the present initial draft set of recommended principles for space resource activities "on the basis of discussions held during the meetings of the Working Group at the sixty-third session of the Legal Subcommittee and the contributions received from States members and permanent observers of the Committee"	The UNOOSA Draft Principles balance strong legal framing with cooperative and environmental commitments, but the text deliberately avoids sovereignty-heavy or benefit-sharing dominance. The prevalence of Neutral/Contextual terms supports its role as a broad, non-contentious baseline for further negotiation.

47	UNOOSA	Updated draft set of recommended principles for space resource activities	2025	Principles	https://shorturl.at/p0bj0	UNOOSA_UPDATED_PRINCIPLES_2025	This update is not analysed with the same qualitative and quantitative methods, it is treated in this study as a meta-text: the product of multilateral negotiation, reflecting areas of consensus (black text), areas of live debate (green/blue text), and unresolved tensions.	The July 2025 Draft Principles expand significantly on the March draft, adding definitions, stronger environmental safeguards, and clearer review mechanisms. They also introduce bracketed proposals on non-appropriation, safety zones, benefit-sharing, and international oversight, highlighting unresolved political divisions. Overall, the text shows convergence around procedural norms of transparency and coordination, but fragmentation persists on allocational justice and institutional control.
48	Islamic Republic of Iran	Islamic Republic of Iran's Perspective on "The Initial draft set of recommended principles for space resource activities"	2025	Perspective	A/AC.105/C.2/2025/CRP.25	IRAN_PERSPECTIVE_2025	Iranina's perspective is not analysed with the same qualitative and quantitative methods as the responses and contributions of the previous respondents, since their viewpoint is grounded in the principles outlined in the Working Group draft. Instead, their analysis serves as a review of the working group's proposal.	Iran's document strongly leans toward benefit-sharing and legal-cooperative governance. While it minimally engages with economic or strategic logic, it provides robust legal argumentation and promotes environmental and equity-driven multilateralism. The call for a standalone cooperation principle reveals how central inclusivity and distributive fairness are in Iran's framing. Open to a binding agreement.

Appendix B: Thematic Coding Matrix

	Thematic Coding Matrix										
	Actor	***Source Type***	***Economic Indicators***	***Strategic Indicators***	***Legal Indicators***	***Cooperation Indicators***	***Environmental Indicators***	***Summative thematic***	***Key Instruments Referenced***	***Relevant Excerpts***	***Notes***
1	USA	National Law	5	4	5	4	3	Economic	ISS Intergovernmental Agreement (1998); NASA–international partner astronaut arrangements. Outer Space Treaty obligations. National Aeronautics and Space Administration Authorization Act.	"Facilitate commercial exploration for and commercial recovery of space resources by United States citizens"/"discourage government barriers to… economically viable… industries"/"promote the right… to engage in commercial exploration… free from harmful interference"/ "Department of Defense plays a vital and unique role in protecting national security assets in space"/ "maximize utilization of… international partners in the development, assembly, and operations of (ISS)"/"Mitigation of orbital debris"	The 2015 Act institutionalises a pro-market, innovation-friendly regime for U.S. space activities, granting domestic property rights over extracted resources while disclaiming sovereignty in line with OST. Strategic considerations are present but largely in the form of maintaining U.S. leadership and protecting national security assets. Cooperation is instrumental, focused on ISS operations and selective partnerships, while environmental concerns are addressed narrowly in relation to debris and traffic management rather than as a central principle.
2	Luxembourg	National Law	5	2	5	0	0	Economic	Luxembourg National Law	"Space resources are capable of being owned" (Art. 1)/"for commercial purposes" (Art. 3)/ "central administration and of the registered office… in Luxembourg" (Art. 7)/"commercialisation of space resources are planned and implemented" (Art. 7)/"financial bases that are appropriate to the risks associated with the mission" (Art. 10)	Strong economic and legal rationales. It establishes a domestically controlled licensing regime, affirms property rights over space resources, and prioritises national jurisdiction and regulatory oversight. The framing is geared toward enabling commercial activities under Luxembourg's legal and institutional infrastructure, with a strong emphasis on authorisation procedures, corporate structure, and financial safeguards. The law omits any reference to international cooperation, environmental considerations, or benefit-sharing principles, reinforcing a unilateral and market-driven approach.
3	Japan	National Law	5	2	4	3	1	Economic	Basic Space Act (2008), Space Activities Act (2016)	"promote business activities for the exploration and development of space resources by private business operators"/"ownership... by possessing said space resources with the intention to own"/ "strengthening of international competitiveness"/"establish internationally harmonized systems"/	Japan's law is strongly economic in rationale, with a clear legal foundation for space resource utilisation and private ownership. Legal certainty and domestic regulatory clarity are central. While cooperation is acknowledged, it is positioned in service of national legal and economic objectives. Environmental concerns are barely present, and strategic language is implicit rather than pronounced.

4	UAE	National Law	5	3	5	3	4	Economic	Outer Space Treaty (OST), Registration Convention, National permit and liability regimes, Domestic regulatory powers via Emirates Space Agency	"Stimulating investment and encouraging private and academic sector participation…"/"Work to establish investment projects… on economic bases"/"Achieve the objectives of the State's national space policy"/"Threat to national security or interests of the State" /"Represent the State in international forums…"/"Enhance the long-term stability and sustainability…"/"Mitigate Space Debris and reduce the effects…"	Market logic dominates rationale with consistent economic framing, commercial use and trade are explicitly enabled. Moderate strategic language with references to national interest and security, but not a dominant theme. Legal framing is comprehensive and central with a strong focus on compliance, liability, and legal certainty. Cooperation is present but functional and not framed as a normative imperative. Emphasis on sustainability and debris mitigation; concrete regulatory duties for environmental risk.
5	USA	Questionnaire Response	5	4	5	3	2	Economic	Outer Space Treaty, Artemis Accords, US Space Resource Act (2015), Registration Convention, Liability Convention	"The Act states that a U.S. citizen engaged in commercial recovery of a space resource shall be entitled to certain rights, including possession, ownership, use, and sale…"/ "NASA entered into several commercial contracts to purchase small amounts of Lunar regolith…"/"…to ensure their interests are protected…"/"Conference participation should be multistakeholder and inclusive…"/ "Utilization of space resources can benefit humankind by providing critical support for safe and sustainable operations…"	Strongly economic-legal model grounded in national law and treaty interpretation. While it incorporates cooperative language and soft commitments to sustainability, these are secondary to a market-oriented approach that centers commercial facilitation and legal predictability for private actors. Strategic elements are subtly embedded in the defence of U.S. normative leadership, with cooperation framed more as alignment than redistribution.
6	Australia	Questionnaire Response - AUST_RESPONSE7_COPUOS_2023	2	1	5	4	3	Legal	OST, Moon Agreement, Rescue Agreement, Registration Convention, Artemis Accords, Hague Building Blocks	"...an equitable sharing by all States Parties in the benefits derived from those resources…"/"...Article II... does not prohibit ownership of resources extracted..."/"...to permit a range of uses... unless such uses are excluded..."/"...obliged to extend assistance in search and rescue operations..."/"...framework could support technological and scientific developments and the rise of commercial and private entities..."	Australia's 2023 submission displays a moderate sovereignty-leaning rationale, grounded in a dominant legal framing. It offers detailed interpretations of the OST, Moon Agreement, and Registration Convention to justify permissibility of resource extraction, including by private actors under national supervision. Cooperation is strongly affirmed, but primarily as a treaty obligation rather than a redistributive imperative. Environmental protection is present but secondary, and economic motives are lightly acknowledged. The overall narrative is legalist and cautious, validating national jurisdiction within multilateral norms.
7		Questionnaire Response - AUST_RESPONSE24_COPUOS_2024	4	3	3	4	2	Cooperative	OST, Moon Agreement, Artemis Accords, Hague Building Blocks	"...activities conducted as part of the Trailblazer program include... environmental protection, and sustainability."/"...support the safety, stability and sustainability of outer space."/"...the Artemis Accords are consistent with its international legal obligations."/"...a grants program for the Australian private sector..."/"...to collect and transfer lunar regolith..."	The 2024 submission presents a hybrid but sovereignty-inclined approach, centred on operationalising national objectives through the Trailblazer program. While framed within multilateral cooperation (e.g. NASA partnership, Artemis Accords), the initiative reveals a strong economic rationale aimed at building domestic commercial capabilities. Strategic language is moderately present through references to national strengths and technological leadership. Legal references are less detailed than in 2023, used more to affirm treaty consistency than to drive argumentation. Environmental concerns are lightly mentioned but not developed. The document justifies national action under a cooperative framework, but with clear sovereign intent.

8	Azerbaijan	Questionnaire Response	2	1	4	5	4	Cooperative	OST; national regulations; need for international law	"...initial principles for exploration, scientific and commercial activities in the Outer Space..."/"...maintaining political, diplomatic, and labor stability."/"...we recommend to adopt legally binding requirements on space debris mitigation under international law."/"...space debris pose a serious hazard and creates a great risk to the possibility of future access to space."	Azerbaijan proposes a rule-based international regime focused on inclusive governance and sustainable practices. It emphasises trust-building and coordination over nationalistic or market-based agendas. Lacks strong economic or strategic framing. No language of competitiveness, private sector promotion, or spacepower.
9	Bahrain	Questionnaire Response	2	1	4	4	1	Legal	OST, UN treaties, UN resolutions, UNOOSA, COPUOS decisions	"Revise UN space treaties and suggest new ones…"/"Create a database for the space legal status…"/ "Addressing new space industry trends and activities"/"Importance of international legal space collaborations"/"Are the UN space treaties still standing?"	Bahrain's submission adopts a legal-cooperative orientation, with a moderate to strong engagement in legal structuring and international coordination mechanisms. It lacks economic, strategic, and environmental depth, though it acknowledges relevant themes at a conceptual level (e.g., space mining, privatisation, space debris). The document reflects a pragmatic interest in building international infrastructure and legal harmonisation, especially inclusive of emerging space nations.
10	Belarus	Questionnaire Response	2	1	5	4	1	Legal	OST (Article I and II), Moon Agreement (Paragraphs 5 and 7), References to national laws (unspecified, but clearly critical)	"The Treaty allows for the use of natural resources... However, under Article II... is not subject to appropriation…"/"...should be developed exclusively within relevant UN platforms…"/"...national level grant non-governmental entities... the right to extract, appropriate, own, transport, and sell…"/ "...the national law of any State cannot be applied to territories not under its jurisdiction…"	A strongly legalist and cooperative framing, Belarus's submission opposes unilateral action and national legislation that permits private appropriation. It calls for UN-led international rulemaking, clarification of legal statuses, and benefit-sharing mechanisms. Economic and environmental rationales are present but secondary and largely reactive.
11	France	Questionnaire Response	3	2	5	4	4	Legal	OST, Moon Agreement, Liability Convention, Registration Convention, Artemis Accords, Hague Building Blocks, COSPAR rules, ITU guidance	"major technological and financial investments"/"legal security... can only be obtained if the applicable international framework is clarified"/ "principles on multilateral and inclusive resource management"/"protection of the moon environment"; "coordination with other stakeholders"/"legal obligation to authorize and supervise"	A legalist and multilateral approach to space resource governance, emphasising the applicability of existing international space law, particularly the OST, while acknowledging the need for tailored principles addressing new activities. It prioritises legal certainty, coordinated international frameworks, and inclusive, sustainable management of space resources. Although it supports engagement with private and commercial actors, it frames these within a cooperative and rule-based context rather than asserting sovereign or strategic primacy. Environmental considerations are present, particularly site rehabilitation, intergenerational equity, and planetary protection, aligning with sustainability and precautionary governance norms.

12	Germany	Questionnaire Response	3	2	5	4	4	Legal	OST, Moon Agreement, Article I(3), ISA (by analogy), national regulation, due regard, CHM	"Legal certainty… of special importance for commercial actors" / "Space resource activities can only be governed by international law" / "facilitating information exchange and creating transparency" / "due account must be given to long-term sustainability and environmental compatibility"	Germany's questionnaire response reflects a strongly hybrid governance approach, with a clear normative orientation toward international law, cooperation, and sustainability. The submission emphasises the need for a multilateral legal framework that ensures legal certainty for all actors, balances scientific and commercial interests, and preserves the outer space environment for future generations. While acknowledging the role of private and national actors, Germany consistently reaffirms that space resources must be governed collectively, rejecting unilateral interpretations of sovereignty. The response demonstrates a principled and cautious legalist stance, rooted in consensus-building and inclusive global participation.
13	Greece	Questionnaire Response	2	1	5	4	3	Legal	OST, Moon Agreement, UNCLOS, International Civil Aviation Organization - ICAO, International Telecommunication Union- ITU, Antarctic Treaty	"The legal aspects of space resource exploitation must be regulated by international law."/"Greece strongly believes that any such activities need a solid and unequivocal legal framework…"/"Should a legal framework… promote equitable access to said resources for all States?"/"Should the issue be considered in the light of environmental considerations, in accordance with… Article IX?"	Extensive legal reasoning is provided, rooted in OST, with parallels drawn from other regimes. Strong advocacy for an international legal framework. Multilateralism and equitable access are explicitly supported. Greece wants COPUOS as the central platform and frames access as a fairness issue. Advocates for environmental concerns. Commercial aspects are acknowledged but not developed into a strong economic rationale. National interest is framed only in relation to legal jurisdiction and compliance.
14	Jordan	Questionnaire Response	2	1	4	1	0	Legal	OST (implicitly); property rights debates	"...the issue of property rights of space resources must be addressed"; "data retrieved from remote sensing missions…"	The Jordanian questionnaire response presents a legally focused yet thematically restrained position, centring primarily on defining the scope of activities and celestial bodies that should fall under the Working Group's mandate. While it briefly raises the need to address property rights, it does so without elaborating on the legal or policy direction this should take, offering no clear stance on ownership models or governance preferences. The document avoids framing in terms of economic gain, strategic positioning, environmental protection, or benefit-sharing imperatives. Overall, the submission adopts a descriptive and technical tone, with limited normative signals and no strong engagement with distributive or cooperative principles.
15	Luxembourg	Questionnaire Response	5	3	5	4	3	Economic	OST, Liability Convention, Registration Convention, Artemis Accords, Hague Building Blocks, National Law (2017), Space Law (2020)	"Luxembourg puts a strong emphasis on commercial partnerships and economic development through R&D."/"Position the country as a pioneer in the exploration and utilization of space resources." /"Luxembourg is the first European country, and the second worldwide, to adopt a specific law on the exploration and utilization of space resources." / "Actively contributes to multilateral fora including ESA, COPUOS, GEGSLA, etc."/Environmental issues… should be defined in cooperation within COPUOS."	Luxembourg's submission reflects a strong legal-economic governance model underpinned by a market-oriented approach and strong national legislation. It integrates cooperation and sustainability as guiding principles but with legal certainty and commercial viability as primary drivers. Cooperation is substantive and strategic dimensions are visible but not overt. Environmental discourse is emerging, framed within sustainability, but not yet deeply developed. It's more framed as a normative commitment.

16	Morocco	Questionnaire Response	2	1	5	5	4	Cooperative	Outer Space Treaty (OST), UN Charter	“Private actors… entail opportunities and challenges in terms of legal certainty, equitable access, sustainability…”/“Activities must be carried out in the interest and for the benefit of all countries… governed by a legal regime elaborated through multilateral negotiations…”/“Supports… legal certainty and transparency…”/“Multilateral, transparent, and inclusive approach…”/“Capacity-building… technology transfer… support for national space programmes…”/“Sustainable and responsible manner… environmental impact assessments…”	Economic score is modest, it acknowledges commercial interest but lacks policy support. Strategic framing is minimal, limited to general peace and conflict-avoidance language. Legal framing is dominant, with repeated references to OST, legal certainty, multilateral negotiations, and norm development. Cooperation is a core theme with emphasis on inclusiveness, benefit-sharing, and capacity-building. Environmental framing is strong with impact assessments, sustainability tied to space resources.
17	Norway	Questionnaire Response	2	1	4	3	2	Legal	OST (implied), International Seabed Authority as analogue - ISA	“Ownership to resources... and transfer of resources back to Earth” /“Norway would support the development of a UN legal framework…”/ “Ensure... safe, sustainable and peaceful manner in the interest and to the benefit of all countries”/ “Mechanisms which will ensure... sustainability”/“Achievements of the International Seabed Authority…”	Norway’s position reflects a legal–cooperative governance model, emphasizing multilateral legal development, inclusive benefit-sharing, and procedural sustainability. The submission avoids commercial and strategic framings, addressing environmental and economic aspects through legal-policy structures rather than normative advocacy.
18	Belgium	Questionnaire Response	2	1	5	5	4	Cooperative	Outer Space Treaty, Moon Agreement, Artemis Accords, Antarctic Treaty System	"Moon Agreement provides the only existing international legal framework..."/"Obligation to negotiate an international regime..."/"multilateral system must be capable of ensuring the inclusive, equitable, sustainable and rational sharing of the benefits..."/"Performance of an environmental and resource impact assessment..."/"Legal security to investors by ensuring that economic rights are acknowledged at the global level"	The submission emphasises the need for a multilateral framework grounded in existing international law, particularly the Moon Agreement, and proposes mechanisms such as impact assessments, registration systems, and periodic reviews to ensure inclusive, equitable, and sustainable resource governance. While it acknowledges economic and national considerations, these are framed within a broader legalist-cooperative logic rather than as standalone rationales. The overall approach prioritises legal certainty, shared benefit, and multilateral legitimacy over unilateral or sovereignty-based models.
19	Canada	Questionnaire Response	4	2	5	4	3	Legal	Outer Space Treaty (OST), Rescue and Return Agreement, Liability Convention, Registration Convention, UN Charter, Artemis Accords, Building Blocks, ISECG’s Global Exploration Roadmap	“grow the economy, create inspiring careers of the future”/“increase Canadian commercial participation, create high-quality jobs”/“Canada recognises the importance… of building an international consensus.”/“The legal framework should not get ahead of technical progress… allow sufficient flexibility.”	Canada’s position has strong legal argumentation and normative cooperation framing, complemented by clear economic interests. It avoids strategic power-based justifications and offers only moderate environmental engagement. The tone is procedural, cautious, and consensus-oriented, consistent with Canada's broader approach to space governance.

20	Japan	Questionnaire Response	4	2	5	4	3	Legal	Outer Space Treaty (OST), Space Resources Act (2021), Artemis Accords	“Exploration, development and use of space resources are included in such freedom… in conformity with… international law.”/“Promote business activities for… space resources by private business operators.”/“Establishment of internationally harmonized systems on the exploration and development of space resources in collaboration with foreign governments.”/“Safe and sustainable space activities… rational and peaceful.”	Japan’s submission is legal–economic in orientation, with legal certainty and national legislation at its core, closely tied to enabling private sector participation. Cooperation is framed as essential for harmonisation and dispute prevention. Strategic language is limited, and environmental framing is present but primarily in the sustainability context without detailed planetary protection measures.
21	New Zealand	Questionnaire Response	3	1	5	4	4	Legal	Outer Space Treaty; Liability Convention; Registration Convention; Rescue Agreement; Artemis Accords; Hague Building Blocks 2019; COSPAR; ISECG	“SRU… should be conducted in a safe, sustainable, responsible and peaceful manner, that is consistent with international law.” / “Providing certainty to both scientific and commercial SRU operators.” / “Limiting or avoiding long-term negative impacts of SRU.” / “New Zealand proposes using… relevant articles [of OST] as a basis for discussion.”	New Zealand’s submission is anchored in legal reasoning, repeatedly citing treaties, non-binding instruments, and specific governance proposals. Cooperation is framed as essential, with calls for multilateral rule-making, environmental protection is a central concern. Economic rationale is acknowledged in relation to commercial operators and strategic framing is minimal.
22	Russian Federation	Questionnaire Response	2	1	5	4	3	Legal	Outer Space Treaty (Articles I, II, IX), Moon Agreement, Convention on International Liability for Damage Caused by Space Objects, Convention on Registration of Objects Launched into Outer Space, ITU Radio Regulations, COPUOS Space Debris Mitigation Guidelines	“All countries of the world should benefit from outer space activities, rather than only those who have provided relevant investments or carried out specific activities.”/“Any act of appropriation… would be a violation of the guaranteed freedom of other interested parties’ access to any part of outer space.”/“The Working Group therefore needs to determine how to ensure the equal and equitable sharing of the benefits arising from the exploitation of space resources.”/“Avoidance of the depletion of extraterrestrial resources and conservation of the space environment.”	Legal framing is both defensive (against national unilateralism) and constructive (proposing new UN-based mechanisms). Cooperation language aligns with CHM-like solidarity without explicitly endorsing the Moon Agreement’s regime clause as binding. Economic references are definitional, not market-promotional, and strategic/security rationales are minimal. Environmental concerns are present but embedded in regulatory discourse.
23	United Kingdom	Questionnaire Response	2	1	5	4	4	Legal	Outer Space Treaty (OST), COSPAR Planetary Protection Policy, ITU remit (implicitly via exclusions)	"International law, should form the basis of the working group’s discussions."/"...international consensus... as a vital pillar of the safe exploration for all humankind."/"developing legal principles and practical measures is the optimal approach"/"commercial arrangements in place to support scientific investigation"/"ensure that SRU is undertaken in a safe and sustainable way."	The UK positions itself as a consensus-driven actor, prioritising multilateral agreement, OST-based legal foundations, and sustainability safeguards before engaging with commercial or sovereignty-heavy aspects. The balance of hybrid and neutral-scientific language points to a cooperative legalist stance rather than strategic or economic primacy.

24	China	Questionnaire Response	2	1	5	4	4	Legal	Outer Space Treaty, UN Charter.	"Any discussion… should be within the framework of international space law with the Outer Space Treaty as its basis."/"Exploration, exploitation and utilization of space resources shall be in conformity with the principle of non-appropriation."/"Promote coordination among relevant States."/"Prevent depletive exploitation of space resources which fails the requirements of sustainability."	The Chinese submission is legally anchored, positioning the OST as the interpretive and operational backbone for governance. Cooperation and sustainability emerge as strong supporting themes, while economic and strategic framings are present but secondary. The emphasis is on universal legal principles, state responsibility for non-governmental actors, and coordination to avoid conflicts.
25	Republic of Korea	Questionnaire Response	1	1	5	4	3	Legal	Outer Space Treaty, Rescue and Return Agreement, Liability Convention, Registration Convention, Artemis Accords	"…to ensure that they are conducted in accordance with international law and in a safe, sustainable, rational and peaceful manner."/"The Outer Space Treaty should form the basis of such discussions…"/"…no international consensus… further discussion is needed for universally accepted international legal norms."/"…sharing information on national plans and programmes…"/"…operational rules, standards and coordination mechanisms for safe and sustainable space exploration…"	Economic, only indirect reference via mission planning, no market/economic policy language. Strategic, exploration ambitions noted, but no geopolitical framing. Legal detailed, repeated references to treaties, legal uncertainty, principles development. String cooperation with emphasis on sharing data, inclusive processes, expert input. Environmental present, linked to safe and sustainable activities, but not central.
26	Australia	Contribution	3	2	5	4	3	Legal	OST, Moon Agreement, Artemis Accords, Hague BB, Registration Convention, Rescue Agreement	'…supports the exploration, exploitation and use of space resources in a manner consistent with international law' / '…key themes addressed in the obligations, commitments or guidelines of the OST, the Moon Agreement…' / '…international cooperation in scientific research and technological development…' / '…environmental and socio-economic considerations…' / '…collect and transfer lunar regolith; for scientific and technical demonstration purposes…'	Economic relevance is acknowledged and present, but not deeply framed as a central driver. Limited language around "profit," "markets," or "competitiveness", focus remains more on technical and policy processes. Lacks robust language of national advantage or competition. Strategic positioning is not strongly emphasised. Legal framing is the core rationale. Substantive legal reasoning underpins most recommendations. Cooperation is a strong theme, clearly valued and reflected in actions and proposals, though not the singular or dominant focus. Sustainability and environmental responsibility are moderately present. Explicit planetary ethics or precautionary principle not deeply discussed.
27	Austria	Contribution	2	1	5	4	5	Environmental	Outer Space Treaty, Moon Agreement, CRP.6	'…must be rooted in the existing legal framework…' / '…broad ratification of the Moon Agreement…' / '…international regime… remains a key objective…' / '…emphasizes the paramount importance of preventing harmful contamination…' / '…equitable sharing of benefits… for emerging spacefaring nations…'	Austria's contribution reflects a strong hybrid governance approach, grounded in international legal obligations while also promoting principles of equity, sustainability, and multilateral cooperation. The submission emphasises the authority of the existing legal framework, particularly the OST and the Moon Agreement, while supporting the establishment of an international regime for space resource governance. Austria advocates for scientific use, transparency, data sharing, and conflict prevention, while underscoring the importance of equitable benefit-sharing and access for emerging space actors. Its framing is legalist, inclusive, and environmentally conscious, signalling a commitment to structured, consensus-based governance.

28	Bahrain	Contribution	0	0	4	3	4	Environmental	OST (Article I)	"...Ensure strict adherence to the Outer Space Treaty and to International Law..." / "...for the benefit and in the interests of all countries, irrespective of their level of economic or scientific development..." / "...must preserve the environment in which they are performed and ensure that no irreparable damage is caused..." / "...Foster cooperation, coordination, and communication among space actors..."	Bahrain adopts a principled, non-commercial stance on space resource governance. Its approach is based on legal and environmental reasons, with a secondary emphasis on cooperation. Without a strategic or economic angle, Bahrain focuses on global benefits, legal clarity, and environmental preservation through benefit-sharing and sustainability.
29	Belgium	Contribution	3	2	5	4	4	Legal	Outer Space Treaty, Moon Agreement, Artemis Accords, Antarctic Treaty System, Registration Convention	"...legal security to investors by ensuring that economic rights are acknowledged at the global level."/"...economic survey on the distribution of benefits..."/"...runs the risk of increasing the political and economic divide between those who are 'in' and those who are 'out'."/"...likely to mitigate rather than increase the risk of international conflicts."/"...strong reaffirmation of the principles of the Outer Space Treaty..."/ "...an open multilateral system in which all States are invited to participate and contribute to decision-making."/"...inclusive, equitable, sustainable and rational sharing of the benefits..."/ "...performance of an environmental and resource impact assessment..."	Belgium's 2023 contribution reflects a strong hybrid governance orientation, combining legal, cooperative, and sustainability-based rationales. The submission firmly supports a multilateral framework rooted in existing international law—particularly the Outer Space Treaty and the Moon Agreement—and critiques unilateral or "club-based" national approaches. It emphasises the need for inclusive decision-making, equitable benefit-sharing, and legal certainty for all states, including developing countries. Environmental safeguards are also clearly integrated through proposals for impact assessments and oversight mechanisms. Overall, Belgium promotes a rule-based, inclusive, and sustainable model for governing space resource activities.
30	Canada	Contribution	2	1	5	4	5	Environmental	OST (esp. Arts I, II, III, V, VI, IX, XI), Charter of UN, LTS Guidelines, Debris Mitigation Guidelines	"Key elements necessary for future deep space exploration missions include water, oxygen, hydrogen for propellant... for construction of habitats and surface infrastructure..."/"This proposed principle reflects Article III of the Outer Space Treaty..."/"States should facilitate and encourage international cooperation…"/"consultations… to mitigate potentially harmful interference…"/ "benefit and in the interests of all States…"/"States should remediate sites…"/"avoid total depletion… or destruction of celestial body…"/"environmental sustainability of the celestial body…"	Canada's contribution reflects a moderately sovereignty-leaning approach, grounded in a legalist and procedural interpretation of the OST. While the submission emphasises international cooperation, transparency, and sustainability, these are primarily framed as state obligations rather than collective governance norms. Key principles such as authorisation, supervision, due regard, and safety zones highlight Canada's focus on ensuring national responsibility and operational control within a multilateral framework. The text avoids references to ownership, equity, or redistribution, instead presenting a state-centric vision of space resource governance anchored in legal compliance, risk mitigation, and technical coordination.

31	China	Contribution	2	1	5	4	3	Legal	OST (Articles I, II, IV, VI, IX), Charter of the UN, Registration Convention	"States should also make sure… that non-governmental entities… meet such national requirements as well as international law, including space law..."/ "...benefit sharing should be realized via… capacity-building"/"States should take appropriate measures to evaluate the possible environmental effects…"/"Advance current and future benefit of humankind"	Sovereignty-leaning legal framing with cooperative undertones. The emphasis lies in reinforcing state responsibility through national authorisation and continuous supervision of non-governmental entities, in line with established international law. The document strongly affirms OST principles, particularly non-appropriation, peaceful purposes, and due regard, while underscoring the need for legal clarity and coordination to ensure safe and orderly conduct. Although it acknowledges benefit-sharing and participation by developing countries, these are framed as desirable outcomes within a state-centric governance structure rather than as binding redistributive obligations. The approach is cautious, regulatory, and aligned with multilateral legalism, but retains clear sovereign control.
32	France	Contribution	2	1	5	4	4	Legal	OST, Moon Agreement, UN Charter, COSPAR Policy, French space law, UNCLOS (analogies)	"States should conduct their resource extraction and utilization activities for scientific research purposes…" / "All activities… should require authorization and continuing supervision…" / "Space resource extraction and use must not constitute national appropriation…" / "States shall take measures to prevent the disruption of the existing balance of the environment…"	France's 2024 contribution reflects a strong hybrid governance approach, grounded in legal multilateralism, procedural transparency, and environmental responsibility. It emphasises the importance of international cooperation, consultation mechanisms, and compliance with existing space law. France advocates for resource activities to serve scientific and public interest purposes, with benefit-sharing framed through dissemination of results and access to samples. While acknowledging sovereign responsibilities like national supervision, the submission subordinates them to a broader rules-based order, prioritising common interests and the rights of all countries and future generations.
33	Germany	Contribution	2	1	5	4	5	Environmental	OST, Moon Agreement, Rio Declaration (Principle 15), Article 7.3 of Moon Agreement	"ISRU… offers opportunities for both science and industry."/ "An international legal framework is required to provide legal certainty in an area beyond national jurisdiction…" / "Applying a precautionary approach as reflected in Principle 15 of the Rio Declaration…"	Germany's contribution reflects a strong hybrid governance approach, grounded in legal reasoning, environmental protection, and international cooperation. It advocates for a multilateral legal framework to ensure legitimacy, prevent conflict, and uphold the interests of all humankind in space resource activities. Environmental sustainability is framed as a core principle, with detailed proposals for environmental impact assessments, scientific preservation, and precautionary measures. Germany also promotes transparency and inclusive consultation mechanisms, reinforcing a cooperative and rule-based vision for space governance without asserting national or commercial primacy.
34	Indonesia	Contribution	4	2	5	5	5	Cooperative	OST (1967), Moon Agreement (1979), UN Charter, Article II/III/IV/IX OST, Space Benefit Declaration (1996)	"The OST serves as a reference point and cornerstone…"; "New regulations… should be in line with the OST…"; "Space resources should be utilized for the benefit of all humanity…"; "Legal framework must provide clear economic incentives…"; "Exploration… should be carried out for the benefit and in the interests of all states…"; "Strict environmental criteria… before any mining or resource extraction…"; "Capacity building and transfer of technology…"	Indonesia's contribution reflects a legally anchored and equity-oriented approach to space resource governance. It places strong emphasis on the foundational role of the OST and the principle of the Common Heritage of Mankind, while advocating for new instruments that reinforce peaceful use, environmental protection, and legal certainty. The submission promotes a balanced governance framework that integrates international cooperation, inclusive participation, especially for developing countries, and sustainable development principles. Although economic incentives and private sector involvement are acknowledged, they are framed within a broader cooperative and normative structure. Overall, Indonesia's position signals a moderate hybrid model that blends legal formalism with distributive justice and multilateral coordination.

35	Italy	Contribution	3	1	5	4	4	Legal	OST, Liability Convention, Registration Convention, Artemis Accords	“A clear set of principles will enhance legal certainty, promote investment, and mitigate tensions…”/ “economic and non-economic utilization”/ “Any international framework must be grounded in the United Nations outer space treaties…”/“Safeguards to ensure sustainability and responsible use”/“…to prevent environmental degradation and preserve long-term viability…”	The document recognises the importance of legal certainty to "promote investment". However, it avoids aggressive commercialisation discourse or market framing. Italy rarely invokes national interest or geopolitical positioning. It affirms Italy’s leadership in signing the Artemis Accords and supporting international dialogue, but without overtly strategic language. The document consistently grounds its recommendations in international space law and discusses concepts like usufruct vs. appropriation, authorisation and supervision, due regard, and legal certainty. It cites the ICJ opinion on environmental duties in areas beyond national jurisdiction.
36	Japan	Contribution	4	2	5	3	3	Legal	OST, Artemis Accords, Japan’s Space Resources Act	“Promote business activities for the exploration and development of space resources by private business operators”/ “Japan’s Space Resources Act provides a national authorization system, rules for the acquisition of ownership…”/“Complies with OST and other outer space treaties,” “not intended to create new legally binding instruments”/“Sustainable development of space resources”	Japan’s contribution reflects a strong sovereignty-leaning governance approach, centred on national legislation and legal mechanisms that regulate space resource activities. It emphasises compliance with the OST while promoting domestic authorisation systems, private sector engagement, and ownership rights through Japan’s Space Resources Act. Although the submission includes references to sustainability, scientific benefit, and international coordination, these are framed within a legal-national context rather than as normative imperatives. The overall discourse prioritises legal certainty, state oversight, and economic development, signalling a structured, state-centric model with limited emphasis on redistribution or equity.
37	Luxembourg	Contribution	4	2	3	3	3	Economic	Artemis Accords, Hague WG, national legislation	“Clear, transparent, legible and predictable initial framework… all actors, public and private, who wish to invest.”/“Challenges... particularly regarding security and legal aspects.”/“Resource rights over extracted resources lawfully acquired through a national legislation and authorization regime.”/ “Cooperation with other countries within COPUOS”; “assistance to developing countries.”/ “Mechanisms for avoiding harmful interference”; “avoid harmful impacts and conflicts.”	Sovereignty-leaning position with a pragmatic and commercially oriented legal framing. The submission emphasises the importance of national legislation, private sector participation, and flexible governance mechanisms tailored to evolving business models and operational realities. While it acknowledges cooperation, sustainability, and support for developing countries, these are presented more as procedural necessities than normative priorities. The document supports adaptive governance, the establishment of safety zones, and interoperability through common standards, aligning closely with initiatives like the Artemis Accords and the Hague Working Group. Overall, Luxembourg advances a governance vision grounded in regulatory clarity, market viability, and decentralised implementation.
38	Mexico	Contribution	2	1	5	5	4	Cooperative	OST, Moon Agreement, Artemis Accords	“States are… responsible for national activities… whether conducted by governmental or non-governmental entities.” / “The international community must develop a framework that ensures access and participation for all countries…” / “Adoption of environmental impact assessments prior to undertaking space resource-related operations.”	Mexico’s contribution reflects a strong hybrid governance model that integrates legal, cooperative, and environmental rationales. The submission emphasises strict compliance with existing international instruments, particularly the OST, the Moon Agreement, and the Artemis Accords, while advocating for equitable participation, transparency, and sustainability in space resource activities. It strongly supports state responsibility for private actors, opposes monopolisation, and promotes benefit-sharing with special attention to the needs of developing countries. Environmental safeguards, including impact assessments, are framed as essential to responsible resource use. Overall, Mexico advances a multilateralist and legally grounded vision prioritising fairness and collective oversight.

39	Netherlands*	Contribution	4	2	5	5	4	Cooperative	OST, Liability Convention (LIAB), Registration Convention (REG), Rescue and Return of Astronauts (ARRA), UNGA Resolutions 1721 B (XVI), 62/101, Permanent Court of Arbitration (PCA) 2011 Optional Rules for Arbitration of Disputes Relating to Outer Space Activities	"Create an enabling environment for space resource activities..."/"Promote the sustainable, rational, efficient and economic use of space resources"/"Incentivization of joint ventures"/"Legal certainty and predictability for operators"/"Priority rights... for a maximum period of time and a maximum area..."/"Compliance with the international framework..."/"Benefit and in the interests of all countries and humankind"/"Avoiding and mitigating potentially harmful impacts"	The joint Luxembourg–Netherlands contribution reflects a strongly hybrid governance vision grounded in legal formalism and multilateral cooperation. While it incorporates mechanisms to ensure legal certainty and protection of commercial actors, such as priority rights, authorisation, and national resource rights, it equally emphasizes international responsibility, benefit-sharing through inclusive participation, sustainability, and adaptive governance. The submission builds on the legacy of the Hague Working Group to advocate for a governance framework that is legally robust, internationally coordinated, and procedurally fair, particularly toward developing countries. It avoids overt strategic rhetoric and instead promotes a pluralistic model that integrates national legal systems within a cooperative international architecture.
40	Russian Federation	Contribution	2	2	5	3	4	Legal	Outer Space Treaty (OST), Moon Agreement, ITU Radio Regs	"...activities should be carried out in strict compliance with the provisions of the Treaty."/"used or can be used in the economic and other activities and have consumer value" / "commercial exploitation of space resources does not impair scientific investigation" / "States…shall bear international responsibility…" / "non-appropriation…" / "rational management…equitable sharing…"	Russia's contribution reflects a strong sovereignty-leaning position grounded in international legal principles, particularly the Outer Space Treaty and the Moon Agreement. The submission emphasises State responsibility, non-appropriation, and the need for regulatory oversight, including licensing, monitoring, and potential institutional mechanisms. While it acknowledges equitable benefit-sharing and sustainability, these are framed in conditional terms, linked to contribution and operational safeguards rather than redistributive justice. Cooperation is supported procedurally, but without strong, solidaristic framing. Overall, the document prioritises legal certainty and State control over market liberalism or global equity.
41	UAE	Contribution	3	2	4	2	3	Legal	National law; Planetary protection guidelines	"...whether for commercial, scientific or other purposes, including the extraction, recovery, refining, processing, utilization, ownership, purchase, sale, trade, transport or storage..."/"...in accordance with States' international obligations... taking into account the safety of operations... protection of intellectual property rights, and commercial sensitive data."/"...to the greatest extent feasible and practicable, in good-faith, and in accordance with applicable national laws."	Strong emphasis on state authorisation, legal compliance, and operational safety. Legal reasoning is a central framing device, structuring obligations for operators, consultation procedures, and reporting duties. While economic activity is acknowledged, it is not actively promoted. Strategic considerations are lightly present through the protection of national operational interests. Environmental concerns appear frequently but are framed instrumentally, serving risk mitigation rather than expressing a normative commitment to sustainability. Cooperative elements are limited to procedural mechanisms like data sharing and reporting, without invoking broader principles of equity or global solidarity.
42	Slovak Republic	Contribution	1	0	4	4	3	Cooperative	Outer Space Treaty (OST)	"...necessary to take into account the need to protect the environment not only on Earth, but also... in the handling and use of space resources..."/"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."	The Slovak Republic's contribution reflects a governance approach grounded in equitable benefit-sharing and environmental stewardship. It emphasises the need for equal access to and shared benefits from space resource activities, aligning closely with the principles of the Outer Space Treaty. While legal references are present, they serve to reinforce cooperative and inclusive norms rather than assert national regulatory autonomy. The submission also underscores the importance of protecting the outer space environment during resource extraction, signalling a precautionary and responsible posture. Overall, Slovakia promotes a multilateral framework that prioritises fairness, sustainability, and the common interest over commercial or strategic considerations.

43	USA	Artemis Accords	4	5	5	4	4	Strategic - Legal	Outer Space Treaty (1967); Rescue and Return Agreement (1968); Liability Convention (1972); Registration Convention (1975); UN LTS Guidelines (2019); COPUOS frameworks.	"Recognizing the global benefits of space exploration and commerce"/"interoperability to facilitate commercial infrastructure" / "coordination… before conducting operations in a safety zone"/ "Contracts and other legal instruments… consistent with that Treaty."/ "cooperation… with international and commercial partners"/ "preserve outer space heritage".	The Artemis Accords present a U.S.-led legal framework that uses cooperative language to advance strategic and economic objectives. While cooperation and sustainability are rhetorically present, the operational provisions (safety zones, Article II interpretation, discretion over information sharing) serve to protect freedom of action for the U.S. and partners, enable exclusive resource exploitation, and consolidate normative leadership in space governance.
44	UNOOSA	Moon Agreement	3	2	5	5	4	Legal - Cooperative	Outer Space Treaty, Rescue Agreement, Liability Convention, Registration Convention, UN Charter, Friendly Relations Declaration	"An equitable sharing by all States Parties in the benefits derived from those resources…"/"…promote higher standards of living and conditions of economic and social progress and development…"/"prevent the moon from becoming an area of international conflict"/"Moon… common heritage of mankind"/"establish an international régime… to govern the exploitation"/"prevent… disruption of… environment"	It is anchored in the "common heritage of mankind" principle and the creation of an international regime for resource exploitation. Economic benefits are acknowledged but subordinated to equitable sharing, environmental protection, and collective management. Strategic concerns are present primarily as prohibitions against conflict and militarization rather than competitive advantage.
45	UNOOSA	Outer Space Treaty	1	3	5	5	4	Legal - Cooperative	UN Charter, OST itself, UNGA Resolutions 1962 (XVIII), 1884 (XVIII), 110 (II)	"Shall be carried out for the benefit and in the interests of all countries… and shall be the province of all mankind"/ "is not subject to national appropriation by claim of sovereignty…"/ "with due regard to the corresponding interests of all other States Parties… avoid harmful contamination"/"shall require authorization and continuing supervision"	The legal dimension is pervasive. Cooperation is not incidental but structurally. Environmental protection appears as a clear operational norm, explicitly requiring the avoidance of harmful contamination and adverse changes to Earth's environment. Strategic considerations are framed almost entirely in defensive and peace-preserving terms. The economic dimension is largely absent, with only indirect recognition of private actors via authorisation and supervision requirements, there is no market or commercial development framing.
46	Netherlands	Building Blocks	4	1	5	5	5	Legal - Cooperative - Environmental	OST, LIAB, REG, ARRA, UNGA Resolutions 1721 B (XVI) and 62/101, ITU Radio Regulations, PCA Optional Rules (2011).	"Promote the sustainable, rational, efficient and economic use of space resources"/"Take into particular account the contributions of pioneer operators"/"Provide legal certainty and predictability"/"Promote international cooperation… benefit all countries and humankind"/"Avoidance and mitigation of potentially harmful impacts"	The Hague Building Blocks are cooperation-oriented and legally grounded, with strong environmental safeguards and explicit economic enablement for commercial resource utilization. Strategic framing is minimal and largely indirect. The document seeks to balance enabling industry with international benefit-sharing, sustainability, and legal certainty.

47	UNOOSA	Inicial Principles	2	1	5	5	5	Legal - Cooperative - Environmental	Outer Space Treaty, UN Charter, UNCOPUOS frameworks	Principle 1: Compliance with international law, including the Outer Space Treaty; Principle 2: Freedom of Access and Non-Appropriation; Principle 5: Sustainability and Protection of the Environment; Principle 8: Coordination, Cooperation and Consultation; Possible Additional 10(C): equitable sharing, capacity building, benefit sharing	Economic rationale secondary, mainly in Part 2 under sustainable commercial uses. Strategic framing minimal, mostly related to operational or capacity-related implication.. Legal framing dominates with detailed compliance, non-appropriation, jurisdiction, consultation. Cooperation is a core pillar with transparency, benefit for all humankind, equitable access. Environmental integration strong through sustainability principles tied directly to resource activities.

Appendix C: Keyword Frequency Table (frequency per 1000 words)

				SOVEREIGNTY-LEANING (suggest national primacy or decentralised regulation)										
	Actor	*Source Type*	*Total words*	*Sovereignty*	*National legislation/domestic law*	*Authorisation/supervision/ Licensing*	*Due regard*	*Private sector*	*Jurisdiction*	*National Interest*	*Legal Certainty*	*Exploitation*	*Safety*	*Property Rights*	*Entreprise Freedom*
1	USA	National Law	8,118.0	0.1	0.4	0.7	0.0	1.1	0.2	0.3	0.1	0.0	0.7	0.3	0.2
2	Luxembourg	National Law	1,723.0	0.0	3.4	11.6	0.0	3.4	2.3	0.5	1.7	1.1	0.5	1.1	0.0
3	Japan	National Law	2,528.0	0.0	2.3	1.9	0.0	3.1	0.7	0.3	0.7	0.3	0.3	1.5	0.0
4	UAE	National Law	8,012.0	0.0	0.8	2.6	0.0	0.7	0.3	0.3	0.4	0.3	1.2	0.2	0.1
5	USA	Questionnaire Response	2,071.0	0.9	2.8	1.9	1.4	2.4	0.9	0.9	1.4	0.9	0.9	1.4	0.4
6	Australia	Questionnaire Response 7	3,331.0	0.9	0.6	0.9	0.6	0.9	0.9	0.3	0.3	3.6	0.6	0.0	0.0
7		Questionnaire Response 24	1,451.0	0.6	0.0	0.6	0.6	1.3	0.6	0.6	0.0	2.0	1.3	0.0	0.0
8	Azerbaijan	Questionnaire Response	771.0	0.0	1.2	0.0	0.0	2.5	0.0	1.2	1.2	2.5	1.2	0.0	0.0
9	Bahrain	Questionnaire Response	511.0	0.0	1.9	0.0	0.0	1.9	0.0	1.9	1.9	1.9	0.0	0.0	0.0
10	Belarus	Questionnaire Response	963.0	2.0	2.0	2.0	0.0	1.0	2.0	0.0	2.0	7.2	1.0	1.0	0.0
11	France	Questionnaire Response	3,542.0	0.0	1.1	1.1	0.5	0.8	0.0	0.2	0.8	1.9	0.2	0.0	0.0
12	Germany	Questionnaire Response	2,494.0	0.8	0.4	0.8	1.2	1.2	0.8	0.0	1.6	3.2	1.6	0.0	0.0
13	Greece	Questionnaire Response	1,189.0	2.5	0.8	0.8	0.0	1.6	2.5	0.8	1.6	5.8	0.0	0.0	0.0
14	Jordan	Questionnaire Response	189.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0
15	Luxembourg	Questionnaire Response	2,858.0	0.3	1.7	1.3	0.0	2.4	0.6	0.6	1.0	2.4	0.3	1.0	0.6
16	Morocco	Questionnaire Response	635.0	0.0	0.0	0.0	1.5	1.5	0.0	0.0	3.1	3.1	0.0	0.0	0.0
17	Norway	Questionnaire Response	446.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	2.2	2.2	4.4	2.2	0.0
18	Belgium	Questionnaire Response	2,191.0	1.8	0.9	0.9	0.0	0.0	0.9	0.4	0.4	5.9	0.0	0.0	0.0
19	Canada	Questionnaire Response	2,149.0	0.4	0.9	1.3	0.4	1.3	0.0	0.9	1.3	0.9	1.8	0.0	0.0
20	Japan	Questionnaire Response	2,125.0	0.0	4.7	3.7	0.4	2.8	0.0	0.0	1.3	0.9	1.8	1.3	0.0
21	New Zealand	Questionnaire Response	1,286.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	1.5	0.7	2.3	0.0	0.0
22	Russian Federetion	Questionnaire Response	2,221.0	0.4	0.9	0.4	0.0	0.9	0.4	0.0	0.4	4.5	0.4	0.9	0.0
23	United Kingdom	Questionnaire Response	721.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.0	2.7	0.0	0.0
24	China	Questionnaire Response	1,344.0	0.7	0.0	1.4	1.4	0.0	0.0	0.0	0.7	1.4	0.7	0.0	0.0
25	Republic of Korea	Questionnaire Response	1,244.0	0.0	0.0	0.0	0.0	0.8	0.8	0.0	0.0	3.2	2.4	0.0	0.0
26	Australia	Contribution	979.0	0.0	1.0	0.0	2.0	2.0	2.0	0.0	1.0	5.1	2.0	0.0	0.0
27	Austria	Contribution	1,102.0	0.0	1.0	1.8	2.7	0.0	0.0	1.0	0.0	2.7	3.6	0.0	0.0
28	Bahrain	Contribution	263.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	Belgium	Contribution	1,191.0	2.5	2.5	1.6	0.0	1.6	1.6	0.8	1.6	14.2	0.0	0.8	0.0
30	Canada	Contribution	2,594.0	0.0	0.0	1.5	2.3	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0
31	China	Contribution	1,132.0	0.8	0.0	3.5	1.7	1.7	0.8	0.0	0.0	1.7	1.7	0.0	0.0
32	France	Contribution	3,162.0	0.3	0.6	1.8	1.2	0.6	0.0	0.0	0.3	1.5	0.6	0.3	0.0
33	Germany	Contribution	1,147.0	0.8	0.0	1.7	0.0	0.0	0.8	0.0	1.7	0.0	1.7	0.0	0.0
34	Indonesia	Contribution	2,408.0	0.4	1.2	1.6	0.0	2.0	0.8	0.4	1.2	2.4	0.4	0.4	0.0
35	Italy	Contribution	1,797.0	1.6	0.0	2.2	1.6	1.1	1.1	0.5	1.1	0.5	0.0	0.0	0.0
36	Japan	Contribution	1,396.0	0.0	2.1	3.5	0.7	2.8	0.0	0.7	0.7	2.1	2.1	1.4	0.0
37	Luxembourg	Contribution	748.0	0.0	2.6	2.6	0.0	4.0	1.3	0.0	1.3	2.6	6.6	1.3	1.3
38	Mexico	Contribution	972.0	1.0	2.0	4.1	0.0	3.0	1.0	0.0	1.0	6.1	1.0	0.0	0.0
39	Netherlands*	Contribution	3,206.0	0.0	0.6	1.5	0.3	0.6	0.6	0.0	0.6	0.9	1.8	0.6	0.3
40	Russian Federetion	Contribution	1,663.0	1.8	0.0	1.8	0.0	0.0	0.0	0.6	0.6	6.6	1.8	1.8	0.0
41	UAE	Contribution	613.0	0.0	1,6	13.0	0.0	1.6	3.2	0.0	0.0	4.8	11.4	1.6	0.0
42	Slovak Republic	Contribution	275.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.0	0.0	0.0
43	USA	Artemis Accords	2,472.0	0.0	0.4	0.8	1.2	1.2	0.0	0.0	0.0	0.4	3.2	0.0	0.0
44	UNOOSA	Moon Agreement	4,116.0	0.4	0.0	0.4	0.4	0.0	0.2	0.0	0.0	1.2	0.7	0.4	0.0
45	UNOOSA	Outer Space Treaty	2,547.0	0.3	0.0	0.7	0.3	0.7	0.3	0.0	0.0	0.0	0.7	0.3	0.0
46	Netherlands	Building Blocks	2,748.0	0.0	0.3	0.7	0.3	1.0	0.3	0.0	0.3	0.0	1.4	0.3	0.0
47	UNOOSA	Principles	2,892.0	0.6	0.0	1.3	0.3	0.0	0.0	0.0	0.0	1.0	2.0	0.0	0.0
			Av. 1.990 words	25.5	41.1	80.0	23.0	60.5	30.1	13.2	37.0	116.9	72.8	25.3	2.9

				BENEFIT-SHARING-LEANING (suggest solidarity, equity, or collective gain)							
	Actor	*Source Type*	*Total words*	*Common Heritage of Mankind / CHM*	*Benefit sharing*	*Equitable access / Equity*	*Capacity-building*	*Sustainability / Sustainable*	*Developing countries / Global South*	*Global commons*	*Redistribution*
1	USA	National Law	8,118.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
2	Luxembourg	National Law	1,723.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	Japan	National Law	2,528.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
4	UAE	National Law	8,012.0	0.0	0.0	0.0	0.1	0.6	0.0	0.0	0.0
5	USA	Questionnaire Response	2,071.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0
6	Australia	Questionnaire Response 7	3,331.0	0.9	0.6	0.3	0.0	1.2	0.3	0.0	0.0
7		Questionnaire Response 24	1,451.0	0.0	0.6	0.0	0.0	2.0	0.0	0.0	0.0
8	Azerbaijan	Questionnaire Response	771.0	0.0	0.0	0.0	1.2	2.5	0.0	0.0	0.0
9	Bahrain	Questionnaire Response	511.0	0.0	0.0	1.9	1.9	1.9	1.9	0.0	0.0
10	Belarus	Questionnaire Response	963.0	0.0	2.0	2.0	0.0	1.0	0.0	0.0	0.0
11	France	Questionnaire Response	3,542.0	0.0	0.5	0.2	0.0	1.9	0.0	0.0	0.0
12	Germany	Questionnaire Response	2,494.0	0.4	0.8	0.4	0.4	3.6	1.2	0.8	0.0
13	Greece	Questionnaire Response	1,189.0	0.0	0.0	2.5	0.0	3.5	0.0	0.0	0.0
14	Jordan	Questionnaire Response	189.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Luxembourg	Questionnaire Response	2,858.0	0.0	0.0	1.0	0.6	1.3	0.3	0.0	0.0
16	Morocco	Questionnaire Response	635.0	1.5	1.5	3.1	3.1	4.7	3.1	0.0	0.0
17	Norway	Questionnaire Response	446.0	0.0	2.2	2.2	0.0	4.4	2.2	0.0	0.0
18	Belgium	Questionnaire Response	2,191.0	0.9	1.3	1.8	0.0	2.2	0.4	0.0	0.4
19	Canada	Questionnaire Response	2,149.0	0.0	0.0	0.0	0.4	2.7	0.0	0.0	0.0
20	Japan	Questionnaire Response	2,125.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0
21	New Zealand	Questionnaire Response	1,286.0	0.0	1.5	0.0	0.0	3.8	0.0	0.0	0.0
22	Russian Federetion	Questionnaire Response	2,221.0	0.0	0.9	0.9	0.0	0.4	0.0	0.4	0.0
23	United Kingdom	Questionnaire Response	721.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0
24	China	Questionnaire Response	1,344.0	0.0	0.7	0.7	0.0	2.2	0.0	0.0	0.0
25	Republic of Korea	Questionnaire Response	1,244.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0
26	Australia	Contribution	979.0	1.0	1.0	1.0	1.0	3.0	0.0	0.0	0.0
27	Austria	Contribution	1,102.0	1.0	1.8	2.7	1.0	3.6	1.8	0.0	0.0
28	Bahrain	Contribution	263.0	0.0	3.8	3.8	0.0	7.6	0.0	0.0	0.0
29	Belgium	Contribution	1,191.0	1.6	2.5	4.1	0.0	3.3	1,6	0.0	0.8
30	Canada	Contribution	2,594.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0
31	China	Contribution	1,132.0	0.0	1.7	0.8	0.8	0.8	0.8	0.0	0.0
32	France	Contribution	3,162.0	0.0	0.6	0.3	0.0	1.2	0.0	0.0	0.0
33	Germany	Contribution	1,147.0	0.8	0.8	1.7	0.0	5.2	0.0	0.0	0.0
34	Indonesia	Contribution	2,408.0	2.0	1.6	1.6	1.2	2.0	1.6	0.4	0.4
35	Italy	Contribution	1,797.0	0.0	1.6	1.1	1.1	3.3	0.5	0.0	0.0
36	Japan	Contribution	1,396.0	0.0	0.7	0.0	0.0	2.8	0.0	0.0	0.0
37	Luxembourg	Contribution	748.0	0.0	0.0	1.3	0.0	1.3	1.3	0.0	0.0
38	Mexico	Contribution	972.0	2.0	3.0	4.1	1.0	3.0	2.0	0.0	0.0
39	Netherlands*	Contribution	3,206.0	0.0	1.2	0.6	0.6	1.8	0.9	0.0	0.0
40	Russian Federetion	Contribution	1,663.0	1.8	3.0	1.2	0.0	3.0	0.0	1.8	0.0
41	UAE	Contribution	613.0	0.0	0.0	1.6	0.0	3.2	0.0	0.0	0.0
42	Slovak Republic	Contribution	275.0	3.6	7.2	3.6	0.0	3.6	0.0	3.6	0.0
43	USA	Artemis Accords	2,472.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0
44	UNOOSA	Moon Agreement	4,116.0	0.4	0.4	0.4	0.2	0.4	0.2	0.0	0.0
45	UNOOSA	Outer Space Treaty	2,547.0	0.0	0.7	0.3	0.0	0.0	0.3	0.3	0.0
46	Netherlands	Building Blocks	2,748.0	0.0	1.8	0.0	1.0	1.4	0.7	0.0	0.0
47	UNOOSA	Principles	2,892.0	0.0	0.6	0.6	0.3	2.0	0.6	0.0	0.0
			Av. 1.990 words	17.9	46.6	47.8	15.9	111.7	20.1	7.3	1.6

				HYBRID GOVERNANCE (principles bridging or pluralistic structures)							
	Actor	***Source Type***	***Total words***	***International cooperation***	***Transparency***	***Liability***	***Dispute resolution***	***Sharing information***	***Voluntary guidelines***	***Common benefit***	***Normative convergence***
1	USA	National Law	8,118.0	0.4	0.0	0.6	0.0	0.3	0.2	0.0	0.0
2	Luxembourg	National Law	1,723.0	0.0	1.7	1.1	0.0	0.5	0.0	0.0	0.0
3	Japan	National Law	2,528.0	1.9	0.3	0.0	0.0	0.7	0.0	0.0	0.3
4	UAE	National Law	8,012.0	0.4	0.1	2.3	0.0	0.4	0.0	0.0	0.0
5	USA	Questionnaire Response	2,071.0	1.4	1.9	1.0	0.0	1.4	0.4	0.4	0.4
6	Australia	Questionnaire Response 7	3,331.0	1.5	0.0	0.6	0.0	0.3	0.3	0.6	0.0
7		Questionnaire Response 24	1,451.0	1.3	0.6	0.0	0.0	0.6	0.6	0.6	0.0
8	Azerbaijan	Questionnaire Response	771.0	7.7	1.2	0.0	0.0	0.0	1.2	1.2	5.1
9	Bahrain	Questionnaire Response	511.0	5.8	0.0	0.0	0.0	3.9	0.0	0.0	1.9
10	Belarus	Questionnaire Response	963.0	5.1	0.0	1.0	2.0	1.0	0.0	1.0	0.0
11	France	Questionnaire Response	3,542.0	1.6	1.1	0.8	0.0	1.4	0.5	0.2	0.2
12	Germany	Questionnaire Response	2,494.0	1.6	0.8	0.0	0.4	1.2	0.0	0.8	0.8
13	Greece	Questionnaire Response	1,189.0	3.3	0.0	0.0	0.0	0.8	0.0	0.8	0.8
14	Jordan	Questionnaire Response	189.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	Luxembourg	Questionnaire Response	2,858.0	2.0	0.3	1.0	0.0	0.6	0.3	0.6	1.3
16	Morocco	Questionnaire Response	635.0	4.7	3.1	0.0	0.0	0.0	1.5	1.5	1.5
17	Norway	Questionnaire Response	446.0	4.4	2.2	0.0	0.0	2.2	0.0	2.2	4.4
18	Belgium	Questionnaire Response	2,191.0	2.7	0.4	0.0	0.0	1.3	0.0	0.9	0.4
19	Canada	Questionnaire Response	2,149.0	2.7	0.4	0.4	0.0	0.9	0.4	0.9	0.9
20	Japan	Questionnaire Response	2,125.0	3.7	0.0	0.0	0.9	1.8	0.0	0.0	0.4
21	New Zealand	Questionnaire Response	1,286.0	3.8	0.7	0.7	0.0	0.7	0.7	0.7	0.7
22	Russian Federetion	Questionnaire Response	2,221.0	2.2	0.0	0.4	0.9	0.9	0.0	0.4	0.4
23	United Kingdom	Questionnaire Response	721.0	5.5	0.0	0.0	0.0	1.3	0.0	0.0	2.7
24	China	Questionnaire Response	1,344.0	2.2	0.0	0.0	0.0	0.7	0.0	0.0	0.0
25	Republic of Korea	Questionnaire Response	1,244.0	0.8	0.0	0.8	0.0	2.4	0.0	0.0	0.0
26	Australia	Contribution	979.0	4.0	0.0	1.0	0.0	1.0	2.0	1.0	1.0
27	Austria	Contribution	1,102.0	1.8	2.7	1.0	1.8	3.6	0.0	1.0	1.0
28	Bahrain	Contribution	263.0	7.6	3.8	0.0	0.0	3.8	0.0	3.8	0.0
29	Belgium	Contribution	1,191.0	5.0	1.6	0.8	0.8	2.5	0.0	1.6	0.8
30	Canada	Contribution	2,594.0	1.5	1.1	0.0	0.0	0.0	0.0	0.0	0.0
31	China	Contribution	1,132.0	0.8	0.0	0.0	0.0	1.7	0.0	0.8	0.0
32	France	Contribution	3,162.0	0.9	0.9	0.0	0.3	1.5	0.0	0.6	0.0
33	Germany	Contribution	1,147.0	2.6	1.7	0.0	0.0	3.4	1.7	0.8	0.0
34	Indonesia	Contribution	2,408.0	2.4	1.2	0.8	0.4	1.2	0.0	0.4	0.8
35	Italy	Contribution	1,797.0	1.6	1.6	0.5	0.0	2.2	0.0	1.0	0.0
36	Japan	Contribution	1,396.0	2.1	0.7	0.0	0.7	2.1	0.0	0.7	0.0
37	Luxembourg	Contribution	748.0	2.6	0.0	0.0	0.0	2.6	0.0	0.0	1.3
38	Mexico	Contribution	972.0	5,1	2.0	0.0	2.0	1.0	0.0	2.0	1.0
39	Netherlands*	Contribution	3,206.0	1.5	0.3	0.9	0.6	1.8	0.3	0.6	0.3
40	Russian Federetion	Contribution	1,663.0	1.8	0.0	0.6	0.6	1.2	0.0	0.6	0.6
41	UAE	Contribution	613.0	3.2	1.6	1.6	0.0	8.1	1.6	0.0	0.0
42	Slovak Republic	Contribution	275.0	3.6	0.0	0.0	0.0	0.0	0.0	3.6	3.6
43	USA	Artemis Accords	2,472.0	2.0	1.6	0.4	0.0	2.0	1.0	0.4	0.4
44	UNOOSA	Moon Agreement	4,116.0	1.2	0.4	0.4	0.4	1.2	0.0	0.7	0.2
45	UNOOSA	Outer Space Treaty	2,547.0	1.9	0.3	0.7	0.0	0.7	0.0	0.7	0.3
46	Netherlands	Building Blocks	2,748.0	1.8	0.0	1.0	0.3	1.8	0.0	0.3	0.0
47	UNOOSA	Principles	2,892.0	1.3	0.3	0.6	0.3	2.4	0.0	0.0	0.0
			Av. 1.990 words	117.9	36.6	21.0	12.4	71.1	12.7	33.4	33.5

				NEUTRAL / CONTEXTUAL (ambiguous without context)						
	Actor	*Source Type*	*Total words*	*Non-appropriation*	*Exploration*	*Use*	*Peaceful/Scientific Purposes*	*Access to Space*	*Governance Signal*	*Intensity (weak/moderate/strong)*
1	USA	National Law	8,118.0	0.1	0.8	0.7	0.2	0.2	Sovereignty	Strong
2	Luxembourg	National Law	1,723.0	0.0	4.0	6.9	0.0	0.5	Sovereignty	Strong
3	Japan	National Law	2,528.0	0.0	5.1	1.1	0.3	0.0	Sovereignty	Strong
4	UAE	National Law	8,012.0	0.0	0.9	0.8	0.3	0.2	Sovereignty	Strong
5	USA	Questionnaire Response	2,071.0	2.8	1.9	1.4	1.9	0.9	Sovereignty	Strong
6	Australia	Questionnaire Response 7	3,331.0	1.2	2.4	2.1	1.8	0.3	Sovereignty	Moderate
7		Questionnaire Response 24	1,451.0	0.6	4.8	2.0	2.7	0.0	Hybrid	Moderate
8	Azerbaijan	Questionnaire Response	771.0	0.0	3.8	2.5	2.5	1.2	Hybrid	Strong
9	Bahrain	Questionnaire Response	511.0	0.0	1.9	1.9	0.0	3.9	Hybrid	Moderate
10	Belarus	Questionnaire Response	963.0	5.1	6.2	4.1	0.0	1.0	Hybrid	Strong
11	France	Questionnaire Response	3,542.0	0.0	1.9	1.4	1.6	0.5	Hybrid	Moderate
12	Germany	Questionnaire Response	2,494.0	0.8	2.4	1.2	2.8	0.4	Hybrid	Strong
13	Greece	Questionnaire Response	1,189.0	3.3	5.0	2.5	0.0	1.6	Hybrid	Moderate
14	Jordan	Questionnaire Response	189.0	0.0	15.8	0.0	0.0	15.3	Neutral/Contextual	High
15	Luxembourg	Questionnaire Response	2,858.0	0.6	2.0	1.0	0.6	0.3	Sovereignty	Strong
16	Morocco	Questionnaire Response	635.0	1.5	1.5	0.0	1.5	1.5	Benefit-sharing	Strong
17	Norway	Questionnaire Response	446.0	0.0	2.2	4.4	4.4	2.2	Hybrid	Moderate
18	Belgium	Questionnaire Response	2,191.0	1.3	3.6	3.1	1.8	0.9	Hybrid	Strong
19	Canada	Questionnaire Response	2,149.0	0.4	3.2	1.8	1.3	0.4	Hybrid	Strong
20	Japan	Questionnaire Response	2,125.0	0.0	5.6	1.8	1.3	0.0	Sovereignty	Strong
21	New Zealand	Questionnaire Response	1,286.0	0.0	4.6	1.5	2.3	0.0	Hybrid	Strong
22	Russian Federetion	Questionnaire Response	2,221.0	3.1	5.4	1.8	0.4	1.3	Hybrid	Strong
23	United Kingdom	Questionnaire Response	721.0	0.0	2.7	1.3	5.5	0.0	Hybrid	Strong
24	China	Questionnaire Response	1,344.0	2.2	4.4	2.9	2.2	0.0	Sovereignty	Moderate
25	Republic of Korea	Questionnaire Response	1,244.0	0.0	4.0	1.6	1.6	0.0	Hybrid	Moderate
26	Australia	Contribution	979.0	2.0	7.1	7.1	3.0	1.0	Hybrid	Moderate
27	Austria	Contribution	1,102.0	1.0	1.8	1.8	3.6	1.0	Hybrid	Strong
28	Bahrain	Contribution	263.0	0.0	3.8	3.8	3.8	3.8	Benefit-sharing	Moderate
29	Belgium	Contribution	1,191.0	3.3	11.7	9.2	6.7	2.5	Hybrid	Strong
30	Canada	Contribution	2,594.0	0.0	2.6	2.3	0.7	0.0	Sovereignty	Moderate
31	China	Contribution	1,132.0	2.6	3.5	2.6	2.6	0.8	Sovereignty	Moderate
32	France	Contribution	3,162.0	1.2	1.8	3.1	2.8	0.6	Hybrid	Strong
33	Germany	Contribution	1,147.0	0.0	1.7	2.5	3.4	0.8	Hybrid	Strong
34	Indonesia	Contribution	2,408.0	1.2	2.4	2.4	1.6	0.4	Hybrid	Moderate
35	Italy	Contribution	1,797.0	1.6	2.2	2.7	1.1	0.5	Sovereignty	Moderate
36	Japan	Contribution	1,396.0	0.7	2.8	2.8	1.4	1.4	Sovereignty	Strong
37	Luxembourg	Contribution	748.0	0.0	1.3	0.0	1.3	1.3	Sovereignty	Strong
38	Mexico	Contribution	972.0	3.0	3.0	3.0	1.0	1.0	Hybrid	Strong
39	Netherlands*	Contribution	3,206.0	0.9	0.9	0.9	0.9	0.6	Hybrid	Strong
40	Russian Federetion	Contribution	1,663.0	3,6	5.4	3.6	3.0	0.0	Hybrid	Strong
41	UAE	Contribution	613.0	0.0	4.8	3.2	3.2	1.6	Sovereignty	Moderate
42	Slovak Republic	Contribution	275.0	3.6	7.2	7.2	7.2	7.2	Benefit-sharing	Moderate
43	USA	Artemis Accords	2,472.0	0.4	2.4	2.0	1.2	0.4	Sovereignty	Strong
44	UNOOSA	Moon Agreement	4,116.0	0.7	1.9	1.9	0.9	0.2	Hybrid	Strong
45	UNOOSA	Outer Space Treaty	2,547.0	0.3	1.9	1.9	1.9	0.7	Hybrid	Strong
46	Netherlands	Building Blocks	2,748.0	0.7	0.3	1.4	0.7	0.3	Hybrid	Strong
47	UNOOSA	Principles	2,892.0	1.7	2.0	2.0	2.7	2.0	Neutral/Contextual	High
			Av. 1.990 words	47.9	168.6	117.2	91.7	60.7		

Appendix D: Overlay Matrix: Evolution of Draft Principles (March 2025 vs July 2025)

Overlay Matrix: Evolution of Draft Principles (March 2025 vs July 2025)				
Section	***Initial Draft (Mar 2025)***	***Updated Draft (Jul 2025)***	***Evolution / Notes***	***Categorisation***
Preamble	Peaceful purposes; benefit of all humankind; references to OST	Expanded with responsible stewardship, sustainable use and intergenerational framing; explicit disclaimer that the text is non-binding and complements (does not replace) existing treaties	Environmental + intergenerational emphasis; legal clarity strengthened	*Innovation*
Principle 1: Compliance with International Law	Conduct activities in accordance with OST and international law	Same core rule, with clearer emphasis that the draft is non-binding and complementary to existing law	Clearer legal-positivist framing; otherwise stable	*Continuity*
Principle 2: Freedom of Access & Non-Appropriation	Freedom of exploration/use; due regard	Stronger "due regard" and anti-interference. Part 2 adds 2(E): "extraction … does not inherently constitute national appropriation under Article II OST" (bracketed and conditional)	Procedural reinforcement; non-appropriation/extraction clause is sensitive	*Contestation*
Principle 3: Peaceful Purposes	Peaceful purposes only	Adds "and not for hostile purposes"	Minor wording expansion; stable norm	*Continuity*
Principle 4: Safety	Ensure safety; prevent accidents; minimise risks	Widened rubrics (e.g., Safety [and Rescue] [and Resilience]). Part 2 adds option to declare temporary safety/coordination zones with prior notification to avoid harmful interference	Operational detail rises; zones remain politically sensitive	*Contestation*
Principle 5: Sustainability	Minimise debris; prevent contamination; restore environment	Expanded to remediation/restoration; avoid depletion; protect cultural/indigenous/heritage/scientific sites; avoid destruction of celestial bodies. Part 2 adds explicit clauses on protected areas and resource depletion	Strong substantive broadening to environmental/ethical duties	*Innovation*
Principle 6: Science	Encourage science, open research, sample sharing	Stronger expectations on data-sharing and dissemination. Part 2 adds non-interference with scientific activities and promotion of broad participation	Science emphasised as a public good; inclusive participation flagged	*Innovation*

Principle 7: Information Sharing	Transparency and information to UN/States	Expanded prior notification and transparency; possible registries. Part 2 adds advance public/UN/academic notification and (bracketed) EIAs disclosure	Clearer procedural obligations; transparency elevated	*Innovation*
Principle 8: Coordination	Consultations to avoid interference and coordinate	More operational coordination duties and possible coordination/safety zones. Part 2 adds duty to consult States likely to suffer harmful interference	Coordination thickened; territorial-effects concerns persist	*Contestation*
Principle 9: Responsibility / Authorisation	Authorise/supervise; ensure liability compliance	Expanded licensing architecture: continuous supervision, (bracketed) EIAs, and ethical/cultural/indigenous considerations	Stronger screening and oversight of non-governmental actors	*Innovation*
Principle 10: Review of Principles	Periodic review by COPUOS	Adds monitoring/reporting. Part 2 adds 10(C) menu for future elaboration: benefit-sharing rules/mechanisms, capacity-building and tech transfer, interoperability/standards, liability, differentiated governance by celestial body, criteria for safety/coordination zones, possible licensing/coordination "mechanism", etc.	Clearer path toward institutional development without hard delegation	*Innovation*
Principle XXX: Definitions (new)	—	Defines "space resources" (natural abiotic materials, e.g., minerals, water/ice, gases) and "space resource activities" (search, extraction, exploitation/utilisation and related processing/transport in space), with bracketed alternatives and carve-outs	Clarificatory but bracketed; important for scope	*Contestation*
Principle XXX: [Monitoring and] Review of Principles (new/alternative)	—	Alternative framing of monitoring/review parallel to Principle 10; retains UNCOPUOS-centred review/revision language with bracketed terms	Structural alternative rather than substantive change; unresolved placement	*Contestation*
Principle XXX: International Cooperation (new)	—	Bracketed proposal to promote capacity-building, technology transfer, equitable access; joint ventures and multilateral R&D; exploration of UN-auspices mechanisms for equitable benefit-sharing	Introduces an explicit cooperation/benefit-sharing plank; politically salient	*Contestation*
Principle XXX: Control (new)	—	Bracketed proposal: activities under State control; State monitoring of compliance; consider establishing a special international body to ensure compliance in the interests of all States	Oversight architecture floated; high sovereignty costs; unresolved	*Contestation*

Appendix E: Summative Matrix and Treaties

Summative Matrix					*Treaty signing and ratification*			
					Binding		*Non-Binding*	
	Actor	*Source Type*	**Summative thematic**	*Governance Preference & tone*	*OST*	*Moon Agreement*	*Artemis Accords*	*Hague Building Blocks Member and Consortium Partner (Academics)*
1	USA	National Law	Economic	Sovereignty Strong	Signed and Ratified	Neither signed nor ratified	Proposer and founding signatory	Member and Consortium Parthner
2	Luxembourg	National Law	Economic	Sovereignty Strong	Signed and Ratified	Neither signed nor ratified	Founding signatory	Member and Consortium Parthner
3	Japan	National Law	Economic	Sovereignty Strong	Signed and Ratified	Neither signed nor ratified	Signed	Member and Consortium Parthner
4	UAE	National Law	Economic	Sovereignty Strong	Signed and Ratified	Neither signed nor ratified	Signed	—
5	USA	Questionnaire Response	Economic	Sovereignty Strong	Signed and Ratified	Neither signed nor ratified	Proposer and founding signatory	Member and Consortium Parthner
6	Australia	Questionnaire Response - *AUST_RESPONSE7_COPUOS_2023*	Legal	Sovereignty Moderate	Signed and Ratified	Signed and Ratified	Founding signatory	—

7	Australia	Questionnaire Response - *AUST_RESPONSE24_COPUOS_2024*	Cooperative	Hybrid Moderate	Signed and Ratified	Signed and Ratified	Founding signatory	—
8	Azerbaijan	Questionnaire Response	Cooperative	Hybrid Strong	Signed and Ratified	Neither signed nor ratified	Not signed	—
9	Bahrain	Questionnaire Response	Legal	Hybrid Moderate	Signed and Ratified	Neither signed nor ratified	Signed	—
10	Belarus	Questionnaire Response	Legal	Hybrid Strong	Signed and Ratified	Neither signed nor ratified	Not signed	—
11	France	Questionnaire Response	Legal	Hybrid Moderate	Signed and Ratified	Signed but not Ratified	Signed	—
12	Germany	Questionnaire Response	Legal	Hybrid Strong	Signed and Ratified	Neither signed nor ratified	Signed	—
13	Greece	Questionnaire Response	Legal	Hybrid Moderate	Signed and Ratified	Neither signed nor ratified	Signed	—
14	Jordan	Questionnaire Response	Legal	Neutral/Contextual High	Signed but not Ratified	Neither signed nor ratified	Not signed	—
15	Luxembourg	Questionnaire Response	Economic	Sovereignty Strong	Signed and Ratified	Neither signed nor ratified	Founding signatory	Member and Consortium Parthner
16	Morocco	Questionnaire Response	Cooperative	Benefit sharing Strong	Signed and Ratified	Signed but not Ratified	Not signed	—
17	Norway	Questionnaire Response	Legal	Hybrid Moderate	Signed and Ratified	Neither signed nor ratified	Signed	—
18	Belgium	Questionnaire Response	Cooperative	Hybrid Strong	Signed and Ratified	Signed and Ratified	Signed	—

19	Canada	Questionnaire Response	Legal	Sovereignty Strong	Signed and Ratified	Neither signed nor ratified	Signed	—
20	Japan	Questionnaire Response	Legal	Sovereignty Strong	Signed and Ratified	Neither signed nor ratified	Signed	Member and Consortium Parthner
21	New Zealand	Questionnaire Response	Legal	Hybrid Strong	Signed and Ratified	Neither signed nor ratified	Signed	—
22	Russian Federetion	Questionnaire Response	Legal	Hybrid Strong	Signed and Ratified	Neither signed nor ratified	Not signed	—
23	United Kingdom	Questionnaire Response	Legal	Hybrid Strong	Signed and Ratified	Neither signed nor ratified	Signed	—
24	China	Questionnaire Response	Legal	Sovereignty Moderate	Signed and Ratified	Neither signed nor ratified	Not signed	—
25	Republic of Korea	Questionnaire Response	Legal	Hybrid Moderate	Signed and Ratified	Neither signed nor ratified	Signed	—
26	Australia	Contribution	Legal	Hybrid Moderate	Signed and Ratified	Signed and Ratified	Founding signatory	—
27	Austria	Contribution	Environmental	Hybrid Strong	Signed and Ratified	Signed and Ratified	Signed	—
28	Bahrain	Contribution	Environmental	Benefit sharing Moderate	Signed and Ratified	Neither signed nor ratified	Signed	—
29	Belgium	Contribution	Legal	Hybrid Strong	Signed and Ratified	Signed and Ratified	Signed	—
30	Canada	Contribution	Environmental	Sovereignty Moderate	Signed and Ratified	Neither signed nor ratified	Signed	—

31	China	Contribution	Legal	Sovereignty Moderate	Signed and Ratified	Neither signed nor ratified	Not signed	—
32	France	Contribution	Legal	Hybrid Strong	Signed and Ratified	Signed but not Ratified	Signed	—
33	Germany	Contribution	Environmental	Hybrid Strong	Signed and Ratified	Neither signed nor ratified	Signed	—
34	Indonesia	Contribution	Cooperative	Hybrid Moderate	Signed and Ratified	Neither signed nor ratified	Not signed	Member and Consortium Parthner
35	Italy	Contribution	Legal	Sovereignty Moderate	Signed and Ratified	Neither signed nor ratified	Signed	—
36	Japan	Contribution	Legal	Sovereignty Strong	Signed and Ratified	Neither signed nor ratified	Signed	Member and Consortium Parthner
37	Luxembourg	Contribution	Economic	Sovereignty Strong	Signed and Ratified	Neither signed nor ratified	Founding signatory	Member and Consortium Parthner
38	Mexico	Contribution	Cooperative	Hybrid Strong	Signed and Ratified	Signed and Ratified	Signed	—
39	Netherlands*	Joint Contribution	Cooperative	Hybrid Strong	Signed and Ratified	Signed and Ratified	Signed	Member and Consortium Parthner
40	Russian Federetion	Contribution	Legal	Hybrid Strong	Signed and Ratified	Neither signed nor ratified	Not signed	—
41	UAE	Contribution	Legal	Sovereignty Moderate	Signed and Ratified	Neither signed nor ratified	Signed	—
42	Slovak Republic	Contribution	Cooperative	Benefit sharing Moderate	Signed and Ratified	Neither signed nor ratified	Signed	—

43	USA	Artemis Accords	Strategic - Legal	Sovereignty Strong	N/A	N/A	N/A	N/A
44	UNOOSA	Moon Agreement	Legal - Cooperative	Hybrid Strong	N/A	N/A	N/A	N/A
45	UNOOSA	Outer Space Treaty	Legal - Cooperative	Hybrid Strong	N/A	N/A	N/A	N/A
46	Netherlands	Building Blocks	Legal - Cooperative - Environmental	Hybrid Strong	N/A	N/A	N/A	N/A
47	UNOOSA	Principles	Legal - Cooperative - Environmental	Neutral/Contextual High	N/A	N/A	N/A	N/A