

Impact of the Artemis Accords on its Signatories' National Space Laws

By Meer Shais Ali

Email: meershaisali@gmail.com

Affiliation: Assistant Professor at ILS Law College, Pune, India

Abstract

The US-led Artemis Accords, which seek to secure international cooperation for its mission to carry humans to the Moon and Mars, have introduced the concepts of space resource extraction and Safety Zones. Despite concerns that these activities could violate the Outer Space Treaty's principles of non-appropriation and freedom of access, over half the States Parties to the treaty have now joined the Accords, holding these activities to be permitted by the freedom of space exploration and use and the injunction against harmful interference contained in the treaty itself. Ultimately, whether these activities comply with international law depends on how they are authorized and regulated in national laws. This paper, therefore, examines the domestic space legislations and policies of the Accords' signatories. This paper finds that there is a growing recognition of space resources activities but predominantly in the context of in-situ resource utilization to support further exploration, and predominantly in the Global North. It is only in a handful of countries, most with highly-developed space capabilities, including a few Global South members like India, where the Accords have led to acceptance of commercially exploiting space resources. Safety zones find no mention in the laws of any of the Accords' signatories.

Keywords: Artemis Accords, Space Resources, Safety Zones, Non-Appropriation, NewSpace

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Introduction

In December 2020, NASA executed contracts worth \$25,001 with four private companies to collect regolith from the lunar surface and transfer its ownership to the agency in-place.¹ This development came less than two months after the introduction of the US-led Artemis Accords,² which assert that “the extraction of space resources does not inherently constitute national appropriation under Article II of the Outer Space Treaty.”³ Article II declares that the Moon and other celestial bodies “[are] not subject to national appropriation by claim of sovereignty, by means of use or occupation, *or by any other means*.”⁴ Furthermore, Article I of the OST guarantees “free access to all areas of celestial bodies.”⁵ However, the signatories to the Accords have committed also to creating “Safety Zones”—a system of notification and coordination for avoiding harmful interference in the area of their space activities.⁶ Despite these seeming contradictions between the OST and the Artemis Accords, over half the States Parties to the OST have now also signed the Accords.⁷

Opinion has been divided over legality of the Accords’ provisions on space resources and safety zones. While the US has defended the Accords as merely operationalizing the OST,⁸

¹ Stephanie Schierholz & Josh Finch, “NASA Selects Companies to Collect Lunar Resources for Artemis Demonstrations” (3 December 2020), online: <<https://www.nasa.gov/news-release/nasa-selects-companies-to-collect-lunar-resources-for-artemis-demonstrations/>>.

² The Accords are a set of non-binding principles to implement the Outer Space Treaty, and to garner international cooperation for the Artemis mission to carry humans to the Moon and Mars (see Sean Potter & Cheryl Warner, “NASA, International Partners Advance Cooperation with First Signings of Artemis Accords” (13 October 2020), online: *NASA* <<https://www.nasa.gov/news-release/nasa-international-partners-advance-cooperation-with-first-signings-of-artemis-accords/>>).

³ *The Artemis Accords: Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids for Peaceful Purposes*, 13 October 2020, s 8 [Artemis Accords].

⁴ *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*, 27 January 1967, 610 UNTS 205, art II [OST] [emphasis added].

⁵ *Ibid.*, art I para 1.

⁶ *Supra* note 3, s 11(7).

⁷ As of 31 July 2026, 62 out of the 118 States Parties to the OST have signed the Artemis Accords (see NASA, List of the Signatories by Date, online: <<https://www.nasa.gov/wp-content/uploads/2024/10/signatories-02.pdf?emrc=9d47cd>> [Artemis Signatories]; *Status of International Agreements Relating to Activities in Outer Space as at 1 January 2026*, COPUOS Legal Subcommittee, UN Doc A/AC.105/C.2/2026/CRP.9/Rev.1 (2026) [Status of International Agreements]);

⁸ In an interview preceding the Accords’ introduction, NASA Administrator Jim Bridenstine also insisted that “[t]here is nothing in the Artemis Accords that isn’t enshrined in the Outer Space Treaty...It’s a forcing function to get nations to comply with the Outer Space Treaty.” Christian Davenport, “Seven nations join the U.S. in

China and Russia have criticized it as a blatant attempt by the US to hegemonize outer space.⁹ Among legal experts, Byers & Boley, Hobe, Lele & Gopalkrishnan, Mostesha, O'Brien and Wang have expressed reservations regarding the Artemis Accords,¹⁰ mostly on the grounds that the Accords' first-come-first-serve approach to space resources, and the establishment of safety zones, might lead to de facto national appropriation. Equally, however, Brooks, de Zwart & Lisk, Deplano, Hanlon, Johnson and von der Dunk have been broadly supportive of the Accords, even while pointing to possible points of friction with the OST.¹¹ In-situ utilization of space resources is viewed as indispensable for future human settlement of the Moon and Mars.¹² The prospect of commercially mining the Moon and Near-Earth asteroids could also serve as an incentive for private space exploration efforts.¹³

signing the Artemis Accords, creating a legal framework for behavior in space" (13 October 2020), online: <<https://www.washingtonpost.com/technology/2020/10/13/artemis-moon-mining-agreement-signed/>>.

⁹ Almudena A Ortega, "Artemis Accords: A Step Toward International Cooperation or Further Competition?" (15 December 2020), online: <<https://www.lawfaremedia.org/article/artemis-accords-step-toward-international-cooperation-or-further-competition>>.

¹⁰ See generally Aaron Boley & Michael Byers, "U.S. policy puts the safe development of space at risk" (2020) 370:6513 *Science* 174–175; Alexander Stirn, "Do NASA's Lunar Exploration Rules Violate Space Law?" (12 November 2020), online: <<https://www.scientificamerican.com/article/do-nasas-lunar-exploration-rules-violate-space-law>>; Lele & Gopalkrishnan, "Artemis Accords: Unilateralization In Space" (24 October 2020), online: <<http://ssponline.org/index.php/opinion-analysis/artemis-accords-unilateralization-space-sat-10242020>>; Sa'id Mostesha, "Artemis: The Discordant Accords" (2020) 44:2 *J Space L* 591–603; Dennis O'Brien, "The Space Review: The Artemis Accords: repeating the mistakes of the Age of Exploration" (29 June 2020), online: <<https://www.thespacereview.com/article/3975/1>>; Guoyu Wang, "The Space Review: NASA's Artemis Accords: The path to a united space law or a divided one?" (2020), online: <<https://www.thespacereview.com/article/4009/1>>.

¹¹ See generally Andrew Brooks, "The Artemis Accords: Necessary Incentive of Space Extraction Rights" (9 November 2020), online: <<https://www.jtl.columbia.edu/bulletin-blog/the-artemis-accords-the-necessary-incentive-of-space-extraction-rights>>; Melissa de Zwart & Joel Lisk, "The Artemis Accords and Subsequent Developments" in *International Space Law in the New Space Era: Principles and Challenges*, 1st edn (Oxford University Press, 2024); Rossana Deplano, "The Artemis Accords: Evolution or Revolution in International Space Law?" (2021) 70:3 *International and Comparative Law Quarterly* 799–819; Leonard David, "Cooperation on the moon: Are the Artemis Accords enough?" (27 February 2024), online: <<https://www.space.com/artemis-accords-moon-cooperation-pros-cons-signing>>; Christopher Johnson, "Renewed Ambitions in Space-Exploration Lawmaking" (2020) 33 *Air & Space Law* 19–21; Frans von der Dunk, "The Artemis Accords and the law: Is the Moon 'back in business'?" (2 June 2020), online: <<https://www.thebigq.org/2020/06/02/the-artemis-accords-and-the-law-is-the-moon-back-in-business/>>.

¹² For example, water from ice at the Moon's South Pole, and oxygen and metals, like iron and aluminium, from the lunar regolith (see "Overview: In-Situ Resource Utilization", online: <<https://www.nasa.gov/overview-in-situ-resource-utilization/>>; "Off-Earth Manufacturing: Using local resources to build a new home", online: <https://www.esa.int/Enabling_Support/Preparing_for_the_Future/Discovery_and_Preparation/Off-Earth_manufacturing_using_local_resources_to_build_a_new_home>).

¹³ For example, the prospectus released by SpaceX prior to its IPO in June contains numerous references to space mining, celestial manufacturing, establishing data centers on the Moon, etc (see Space Exploration Technologies

Considerable literature has, thus, developed with respect to the legality of the Artemis Accords, but the question of how its provisions on space resources and safety zones have influenced the domestic laws of its signatory States remains unexplored. Article VI of the OST makes States Parties internationally responsible for activities of their governmental agencies and private entities on the Moon and other celestial bodies, and for assuring that such activities are performed in conformity with the OST.¹⁴ Activities of private entities are further required to be authorized and continuously supervised by the States Parties concerned.¹⁵ In most instances, States fulfil their Article VI obligations by enacting national space legislations, regulations and policies. Domestic laws are also indicative of state practice and *opinio juris*, which are the elements for a norm to be recognized as an International custom, and creating a “norm of behaviour that will influence the entire world”¹⁶ is among the goals of the Artemis Accords. This paper thus examines the domestic laws of its signatories to answer whether they now permit (i) conducting space resources activities for scientific, ISRU as well as commercial purposes, and (ii) establishing Safety Zones as a mechanism to avoid harmful interference with the authorized activities.

This paper finds that there is an increasing inclusion of space resources activities in the national space legislations and policies of the Accords’ signatories. However, in most of these instances, the emphasis is on such activities being conducted for scientific and ISRU purposes rather than commercial gain. Especially among signatories with only nascent space programs, the driving force behind their participation in the Artemis Accords is the opportunity to develop their indigenous space capabilities through cooperation with the US and NASA. Consequently, the Accords’ impact in these countries has been to spur the creation of statutes and strategies

Corp., *Prospectus for the public offering to retail investors* (Prospectus) at 31, 57, 80, 82, 87 online: <Prospectus for the public offering to retail investors> [SpaceX Prospectus]).

¹⁴ *Supra* note 4, art VI.

¹⁵ *Ibid.*

¹⁶ Davenport, *supra* note 8.

for space activities in general rather than for space resources activities in particular. It is in countries with developed space capabilities or those that have invested significant capital into their space sectors, including Global South members like the India and UAE, that the Accords have encouraged an acceptance of space resource exploitation for commercial purposes as well. Nonetheless, only laws of five out of the Accords' seventy signatories currently sanction the private ownership and transfer of space resources. This paper finds that the incorporation of space resources activities into domestic law and policy does not follow the Global North–South divide, and the level of development of a country's space sector is a more reliable predictor. Safety Zones are not directly referred to in the regulatory frameworks of any of the Accords' signatories, and their establishment should ideally be governed by principles evolved through international consensus within the COPUOS.

Part I of this paper examines the domestic space statutes and policies of the Accords' signatories from the Global North. Part II of the paper repeats the very same exercise for the signatories from the Global South. Part III, lastly, offers an analysis of what the legal regimes of the various signatories reveal about the acceptance of the different types of space resources activities and of deconfliction using the mechanism of Safety Zones.

I. Space Law in the Accords' Global North Signatories

This part describes the provisions relating to space resources activities and Safety Zones in the space laws and policies of the Global North countries that have signed the Artemis Accords. As the initiator of the Artemis program and the Accords, the US is the first country discussed together with its long-standing collaborator and neighbor Canada. With ESA being NASA's most important partner in the Artemis missions, and the largest number of signatories to the Accords hailing from Europe, their legal frameworks are examined next. Lastly, this part

explores the space regulations in Japan and Australia, who are two of the founding signatories from Asia and Oceania.

A. United States and Canada

The US has been *the* pioneer of space resources activities and regulations. It was the prospect of mining the moon in the not-too-distant future which convinced the US Senate against ratifying the Moon Agreement.¹⁷ It was also the emergence of space mining start-ups in the early 2010s that provided the impetus for the US Congress¹⁸ to enact the Space Resource Exploitation and Utilization Act, 2015¹⁹. This Act is the first national legislation which confers private entities engaged in the commercial recovery of space resources the right to “possess, own, transfer, use and sell” the resources obtained by them.²⁰ In April 2020, the US President issued Executive Order 13914,²¹ which not only reiterated its opposition to the Moon Agreement and its conception of outer space as a “global commons”²² but also directed the US government to pursue international agreements “for the commercial recovery and use of space resources.”²³ The Artemis Accords are the culmination of this effort.

Several private ventures with the goal of exploiting space resources have sprung up in the US following the introduction of the Accords.²⁴ However, space resource exploitation on a

¹⁷ See generally Stephen S Buono, *Governing the Moon: A History* (NASA) Monographs in Aerospace History 59 at 67–76.

¹⁸ Isabel Feichtner, “Mining for humanity in the deep sea and outer space: The role of small states and international law in the extraterritorial expansion of extraction” (2019) 32 *Leiden Journal of International Law* 255 at 262–63.

¹⁹ *Space Resource Exploration and Utilization Act*, 51 USC § 51302 (2015) [SREU Act].

²⁰ *Ibid.*, § 51303.

²¹ US, President of the United States, *Executive Order on Encouraging International Support for the Recovery and Use of Space Resources* (2020) [EO 13914].

²² Article 11.1 of the Moon Agreement declares that the “moon and its natural resource are the common heritage of mankind.” This further requires the States Parties to the Moon Agreement (under Article 11.5) to establish an international regime for governing the exploitation of space resources when the same is about to become feasible. Among the purposes mentioned for this regime in Article 11.7(d) is the equitable sharing of the benefits derived from space resources between the developed spacefaring countries and the developing non-spacefaring ones. It has been this requirement of the CHM principle which has principally obstructed the popular acceptance of the Moon Agreement, including by the US (see *Agreement governing the Activities of States on the Moon and Other Celestial Bodies*, 5 December 1979, 1363 UNTS 22 [Moon Treaty]).

²³ *Supra* note 21.

²⁴ Argo Space, AstroForge, Interlune and Magna Petra are a few examples (see Erik Kulu, “Space Resources”, online: <<https://www.factoriesinspace.com/space-resources>>).

commercial scale itself has not occurred.²⁵ Instead, the last five years have witnessed a spate of scientific activities related to space resources being conducted by private space companies under NASA's Commercial Lunar Payload Services Initiative. NASA's Perseverance Rover included the MOXIE instrument, which proved the feasibility of ISRU by successfully generating enough oxygen from Mars' atmosphere to keep a small dog alive for 10 hours.²⁶ Intuitive Machine's failed IM-2 mission included a drill to extract lunar soil as well as a spectrometer to detect gases for providing fuel or breathable oxygen.²⁷ IM-4 is scheduled to deliver ESA's PROSPECT Package, which will drill into the lunar surface, extract samples and process them on the Moon itself, to identify the presence of sub-surface water, ice and gas.²⁸ Likewise, Firefly's Blue Ghost Mission 3 will contain NASA's SAMPLR instrument to collect and filter lunar regolith particles of different sizes using a robotic scoop.²⁹ NASA also resumed its VIPER mission in 2025, with Blue Origin now contracted to design and operate a lunar rover that will prospect for lunar resources, especially water ice, in permanently shadowed areas of the lunar south pole.³⁰

Since ISRU, rather than commercial space mining, has been the primary focus of the US space sector even after the Accords, its domestic regulatory regime for space resources activities has not undergone major developments.³¹ In any case, the US has been reluctant to

²⁵ Projects like AstroForge's ambitious Odin mission to the asteroid 2022 OB5 ended in failure (see Tariq Malik, "I think we all know that hope is fading." Private Odin asteroid probe is tumbling in space" (1 March 2025), online: <<https://www.space.com/space-exploration/private-spaceflight/i-think-we-all-know-that-hope-is-fading-private-odin-asteroid-probe-is-tumbling-in-space>>).

²⁶ An oxygen producing system would not only be necessary for providing breathable air to astronauts but also for producing the propellant to launch them back home (see "NASA's Oxygen-Generating Experiment MOXIE Completes Mars Mission" (6 September 2023), online: <<https://www.nasa.gov/missions/mars-2020-perseverance/perseverance-rover/nasas-oxygen-generating-experiment-moxie-completes-mars-mission/>>).

²⁷ Tiernan P Doyle, "NASA Receives Some Data Before Intuitive Machines Ends Lunar Mission" (7 May 2025), online: <www.nasa.gov/news-release/nasa-receives-some-data-before-intuitive-machines-ends-lunar-mission/>.

²⁸ Tiernan P Doyle, "NASA Awards Intuitive Machines Lunar South Pole Research Delivery" (29 August 2024), online: <www.nasa.gov/news-release/nasa-awards-intuitive-machines-lunar-south-pole-research-delivery/>.

²⁹ Tiernan P Doyle, "More NASA Tech will Fly to Moon Aboard Future Firefly Flight" (18 December 2024), online: <www.nasa.gov/news-release/more-nasa-science-tech-will-fly-to-moon-aboard-future-firefly-flight/>.

³⁰ "VIPER" (13 May 2023), online: <<https://science.nasa.gov/mission/viper/>>.

³¹ US does not have a single space activities law, and different aspects of a space mission require authorization from different government agencies (see "Navigating U.S. Commercial Space Regulations – Office of Space

impose binding rules upon such activities. In successive submissions to the COPUOS Legal Subcommittee between 2024 and 2026, the US has stridently opposed the codification of binding rules for space resource exploitation, given the scientific, technical, and operational uncertainties.³² According to the US, premature regulation would stifle the development of the sector.³³ However, with corporations such as SpaceX proposing to undertake large-scale commercial space activities involving space resources (off-world manufacturing, lunar data centers, asteroid mining and human settlements on the Moon and Mars),³⁴ it is possible the US implements a dedicated regime for such activities when they become feasible.

Canada has been among the US' closest collaborators in the Artemis program,³⁵ and was one of the eight founding signatories of the Accords.³⁶ Like the US, Canada's current forays into space resources activities are geared towards scientific investigation and technology demonstration.³⁷ Unlike the US, however, Canada has not enacted any law relating to space resources activities thus far. In April 2026, the Space Launch Bill was introduced in the Canadian Parliament to establish a dedicated framework for regulating space launches from

Commerce", online: <<https://space.commerce.gov/links/resources-for-space-entrepreneurs/navigating-u-s-commercial-space-regulations/>>).

³² *Statement by US Representative Emily Pierce on Agenda Item 9 – Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, COPUOS Legal Subcommittee, 63rd Sess (2024); *Statement by US Representative Caitlin Poling on Agenda Item 8 – Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, COPUOS Legal Subcommittee, 64th Sess (2025); *Statement by US Charge d'Affaires Howard Solomon on Agenda Item 4 – General Exchange of Views*, COPUOS Legal Subcommittee, 65th Sess (2026);

³³ *Ibid.*

³⁴ *Supra* note 13.

³⁵ Gordon Osinski, "Canada's Space Technology and Innovations are a Crucial Contribution to the Artemis Missions" (12 December 2022), online: <<https://theconversation.com/canadas-space-technology-and-innovations-are-a-crucial-contribution-to-the-artemis-missions-196328>>.

³⁶ Artemis Signatories, *supra* note 7.

³⁷ The Canadian Space Agency recently awarded 2 million dollars to four Canadian companies to study technologies for managing regolith and generating power on the lunar surface (see "Preparing the future of Moon exploration" (9 June 2026), online: <<https://www.asc-csa.gc.ca/eng/news/articles/2026-06-09-preparing-the-future-of-moon-exploration.asp>>); Several contracts have also been awarded for studying lunar rover technology, which could conceivably be used for sample collection missions (see "A Canadian utility rover on the Moon" (5 October 2023), online: *Canadian Space Agency* <<https://www.asc-csa.gc.ca/eng/astronomy/moon-exploration/canadian-utility-rover-on-the-moon.asp>>).

the country. This bill does not mention either space resources or Safety Zones.³⁸ Canada's position on enacting binding rules for space resources activities hews closely to the US position. In its 2024 statement to the COPUOS, Canada asserted that an international legal framework for space resources must not preempt technical progress in such activities.³⁹ Canada too believes legal flexibility to be necessary for continued innovation in outer space.⁴⁰

B. Europe

Luxembourg was a founding signatory of the Accords, and the second country after the US to have enacted a domestic space resources law. The 2017 Law on the Exploration and Use of Space Resources begins with the declaration that “space resources are capable of being owned.”⁴¹ The law further provides that no person shall explore or use space resources without a written authorization from the Ministry of Economy and Space Activities, which shall be granted only if the applicant meets certain financial⁴² and technical criteria.⁴³ On 22 November 2024, Luxembourg granted *ispace Europe* approval to collect lunar regolith using a micro-rover to fulfill its 2020 contract with NASA.⁴⁴ This is the first authorization granted in Europe

³⁸ Within the COPUOS, Canada has emphasized the need for domestic regulation of space resources activities and has urged the Working Group on Legal Aspects of Space Resource Activities (WGSRA) to provide guidance for the same. Since Article VI of the OST requires States to authorize and supervise the activities of NGEs, States must have some form of legal framework in place if private entities under its jurisdiction plan to engage in space resources activities. Such national legal frameworks would not amount to unilateralism in the opinion of Canada (see *Statement by Curtis Schmeichel on Agenda Item 9 – Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, COPUOS Legal Subcommittee, 65th Sess (2026)).

³⁹ *Statement by Curtis Schmeichel on Agenda Item 9 – Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, COPUOS Legal Subcommittee, 63rd Sess (2024)).

⁴⁰ *Statement by Curtis Schmeichel on Agenda Item 8 – Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, COPUOS Legal Subcommittee, 64th Sess (2025)).

⁴¹ *Law of July 20th 2017 on the Exploration and Use of Space Resources*, JO, 28 July 2017, 674 [Luxembourg Space Resources Law].

⁴² Article 10 requires applicant to have an insurance policy based on risk involved in the mission (see *ibid*, art 10).

⁴³ Article 7 requires the operator to have a robust scheme of financial and technical procedures and arrangements through which the exploration and utilization mission, including the commercialisation of space resources are planned and implemented. There must be a clear organisational structure with well defined, transparent and consistent lines of responsibility...as well as control and security arrangements for its technical systems and applications. Arrangements, processes, procedures and mechanisms must be comprehensive and proportionate to the nature, scale and complexity of the risks inherent to the business model and the space mission (see *ibid*, art 7).

⁴⁴ Authorisation(s) granted under the Law of 20 July 2017 on Exploration and Use of Space Resources, online: <space-agency.public.lu/dam-assets/old-website/publications/2025/draft-registry-sr-authorisations-final.pdf>.

for a commercial space resources mission.⁴⁵ Further, on the scientific front, Luxembourg has also established the European Space Resources Innovation Centre (ESIRIC), which is currently testing different technologies for the extraction and processing of space resources, and the use of lunar regolith for building purposes.⁴⁶

Italy and UK are two other founding signatories which have consistently emphasized space resources activities since joining the Accords. The 2022–24 activity plan of the Italian Space Agency clarified that developing ISRU capabilities did factor in Italy’s participation.⁴⁷ The agency’s Strategic Vision for 2020–29 mentions ISRU and also includes as an objective the promotion of commercial opportunities in lunar resource exploitation.⁴⁸ Italy has further enacted a Space Economy Law in 2025,⁴⁹ which contains several provisions respecting space resources activities as well. “Space activities” are now defined as including the exploration, extraction and use of resources in outer space and on celestial bodies.⁵⁰ In contrast to the laws of the US, Luxembourg, Japan and UAE, however, the Italian version does not confer any ownership in space resources. Also, it is silent on the possibility of establishing Safety Zones, as envisioned by the Accords.⁵¹ The UK too has incorporated space resources into its policy

⁴⁵ “ispace-Europe Secures the First-Ever Mission Authorization under Luxembourg’s Space Resources Law” (8 January 2025), online: <<https://www.ispace-inc.com/2025/01/08/ispace-europe-secures-first-ever-mission-authorization-under-luxembourgs-space-resources-law/>>.

⁴⁶ “European Space Resources Innovation Centre”, online: <<https://www.esric.lu/>>.

⁴⁷ Italy, Agenzia Spaziale Italiana, *Piano Triennale delle Attività 2022–24* (2022) Annex at 98 online: <https://www.asi.it/wp-content/uploads/2022/05/2022_04_28-DEL-052-PTA-2022-2024.pdf> [Translated by author]; Stimulating the development of ISRU capabilities continues to be a medium- to long-term objective of the Italian Space Agency (see Italy, Agenzia Spaziale Italiana, *Piano Triennale delle Attività 2025–27* (2025) at 87 online: <www.asi.it/wp-content/uploads/2026/05/PTA-2025-2027_PUBBLICO_Marcato.pdf> [Translated by author]).

⁴⁸ Italy, Agenzia Spaziale Italiana, *Documento di Visione Strategica per lo Spazio 2020–29* (2020) at 23, 28 online: <https://www.asi.it/wp-content/uploads/2020/04/DVSS-2020-2022-Finale_compressed_compressed.pdf> [Translated by author].

⁴⁹ *Legge n.89 Disposizioni in Materia di Economia dello Spazio*, GU, 13 June 2025, 144 online: <<https://pg-perugia.giustizia.it/cmsresources/cms/documents/L%202025%2089%20spazio.pdf>> [Translated by author].

⁵⁰ *Ibid*, art 2.

⁵¹ Besides, the definition of “space activities” also includes (i) production of objects in outer space and on celestial bodies, and (ii) short or long-term human habitation of outer space or celestial bodies, and these would necessitate some form of mechanism to avoid harmful interference.

since at least 2023,⁵² but it has not introduced any binding legislation thus far. This has been in keeping with the UK's position that, since there exists no commercial model for the extraction of space resources and returning them to Earth for sale, current regulatory efforts ought to focus on space resources activities for scientific purposes rather than for-profit space mining.⁵³ However, UK has been working on a new policy for lunar orbit and surface missions, to create the foundations for how space resources are used.⁵⁴

Germany joined the Accords in September 2023, and its Space Strategy from the same month expressly recognizes that space resources will be *sine qua non* for executing future missions to the Moon and other celestial bodies.⁵⁵ The strategy not only contemplates the utilization of natural resources, like regolith and water, but also is the rare example of a policy which rightly acknowledges “strategically favourable locations” on celestial bodies as a scarce resource.⁵⁶ This leads to the question of whether the Accords’ proposed Safety Zones could be established around such locations. For its part, the strategy does not advocate for unilateral declarations over celestial territories. It in fact reaffirms Germany’s commitment to “work[ing] with its international partners to establish a legally watertight basis for sustainable, ethical use of space resources and for mining in space.”⁵⁷ Germany accepts that the Moon as well as its

⁵² The UK published its Lunar Exploration Technology Roadmap in 2023, highlighting the importance of ISRU. “Space Exploration Technology Roadmap”, online: <<https://www.gov.uk/government/publications/space-exploration-technology-roadmap/space-exploration-technology-roadmap--3>>.

⁵³ *United Kingdom – Input to the Working Group on Legal Aspects of Space Resource Activities*, COPUOS, 62nd Sess, A/AC.105/C.2/2023/CRP.21 (2023); UK has made its position clear that it does not at all support governing space resources activities using principles of a binding nature. (see *Statement by the United Kingdom on Agenda Item 9 – Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, COPUOS Legal Subcommittee, 65th Sess (2026)).

⁵⁴ *Statement by the United Kingdom on Agenda Item 15 – Space Resources*, COPUOS Legal Subcommittee, 61st Sess (2021).

⁵⁵ Germany, Federal Ministry for Economic Affairs and Climate Action, *The German Federal Government's Space Strategy* (2023) at 54 online: <https://www.bundeswirtschaftsministerium.de/Redaktion/EN/Publikationen/Technologie/the-german-federal-governments-space-strategy.pdf?__blob=publicationFile&v=1>.

⁵⁶ *Ibid.*

⁵⁷ *Ibid.*; Germany's view is that an international framework based on the precautionary principle must be developed multilaterally within COPUOS to ensure that space resources activities remain safe, sustainable and consistent with international law, and that the long-term scientific and economic value of space environments is preserved. (see *Statement by Germany on Agenda Item 9 – Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, COPUOS Legal Subcommittee, 65th Sess (2026)).

natural resources are beyond national jurisdiction and, despite not being a State Party, it has referred favourably to the Moon Agreement.⁵⁸

Europe has four countries who are States Parties to the Moon Agreement, and two more signatories thereto. All have now joined the Accords, yet continue to reiterate their support for the Moon Agreement. France joined in June 2022,⁵⁹ and it is currently contracted to contribute to UAE's Rashid rovers to explore the far side of the Moon for future resource utilization.⁶⁰ Interestingly, France has also participated in China's 2024 Chang'e 6 mission, which returned the first samples from the far side.⁶¹ France supports a governance model for space resources activities that distinguishes scientific, exploratory and commercial missions.⁶² Its 2008 Law on Space Operations,⁶³ however, has not been amended yet to cover such activities within its scope.⁶⁴ Austria, Belgium and Netherlands too have not enacted dedicated legislations on space resources activities since joining the Accords.⁶⁵ These States Parties to the Moon Agreement

⁵⁸ Germany has opined that there are important clauses of the Moon Agreement that remain valid and over which international consensus must be reaffirmed. At the same time, Germany believes that there is need for a discussion on the limitations of the treaty and how these can be overcome (see *Statement by Germany on Agenda Item 9 – Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, COPUOS Legal Subcommittee, 63rd Sess (2024)).

⁵⁹ France has not yet ratified the Moon Agreement, but it has repeatedly emphasized the importance of the treaty for a future international governance regime related to space resources (see *Second French Contribution to the Working Group on Legal Aspects of Space Resource Activities*, COPUOS Legal Subcommittee, 63rd Sess (2024)); France also stated that several of the Moon Agreement's principles are reaffirmed by the Artemis Accords, such as transparency of activities, freedom of scientific research, protection of the lunar environment, and the principle of due regard, although the Moon Agreement calls for due regard not just for other States but for future generations as well (see *France – Input to the Working Group on Legal Aspects of Space Resource Activities*, COPUOS Legal Subcommittee, 62nd Sess, A/AC.105/C.2/2023/CRP.12 (2023) at 5).

⁶⁰ *Report on Lunar Activities Conducted by France*, UNOOSA, (2025) online: <https://www.unoosa.org/documents/pdf/copuos/ATLAC/Written_submissions/STC_lunar_activities/States_members/France_Synthesis_of_lunar_activities_finale_EN.pdf>.

⁶¹ "The French DORN Instrument Successfully Completes its Lunar Mission Aboard the Chang'E 6 Lunar Probe" (2 July 2024), online: <<https://www.irap.omp.eu/en/2024/07/the-french-dorn-instrument-successfully-completes-its-lunar-mission-aboard-the-change-6-lunar-probe/>>.

⁶² See *France – Input to the Working Group on Legal Aspects of Space Resource Activities*, COPUOS Legal Subcommittee, 62nd Sess, A/AC.105/C.2/2023/CRP.12 (2023) at 2).

⁶³ LOI no 2008-518 du 3 Juin 2008 Relative aux Opérations Spatiales, JO, 4 June 2008, 129.

⁶⁴ "Space operation" is defined in Article 1(3) of this law as any activity consisting of the (i) launch or attempted launch of a space object, (ii) control of a space object during its stay in outer space, including the Moon and other celestial bodies; and (iii) return of a space object to Earth. (see *ibid*, art 1(3)); Although, space objects used during resource activities could be covered under this definition, France has clarified that the authorization regime established by this law only covers the launch and control of space objects in orbit, and does not govern activities conducted on celestial bodies (see *supra* note 62 at 6).

⁶⁵ While recognizing the effectiveness of national legislations on space resources activities and multilateral agreements between like-minded states, Belgium has expressed concerns that a "club-based" approach will reduce

have repeatedly stressed the need for an international regime on space resources, and the vital role that both the Accords and the Moon Agreement can play in evolving the same.⁶⁶ Safety Zones do not find a mention in the domestic space laws of any of these three countries, but have been advocated for by them in COPUOS discussions.⁶⁷

Several other European signatories to the Accords also now explicitly recognize space resources activities in their domestic space policies. Lithuania's policy connects its signing of the Accords to its commitment to ensuring that space missions, including the extraction and use of space resources, are conducted safely, sustainably and as per the OST.⁶⁸ Poland's 2026 Act on Space Activities does not mention space resources, but its space agency has acknowledged the indispensability of ISRU in lunar missions, and has expressed optimism that such mining could become a Polish specialization.⁶⁹ Czechia's National Space Policy 2020–25 too plainly lists spacecrafts for space resources prospection and utilization as a priority area of intervention.⁷⁰ Spain alone appears to be an outlier among the signatories. It joined the Accords in May 2023, but its National Aerospace Strategy published in 2025 refers to space mining and

the normative force of Articles I and II of the OST, and not guarantee equitable sharing of the benefits of space resources (see *Contribution by Belgium to Agenda Item 9 – Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, COPUOS Legal Subcommittee, 62nd Sess (2023) at 2).

⁶⁶ Austria continues to advocate for the ratification by other States of the Moon Agreement. It considers the Accords to be an additional cooperative framework that can supplement the work being done within the COPUOS to further develop international space law (see Statement on the Occasion of the Signing of the Artemis Accords by the Republic of Austria, online: <<https://austria-in-space.at/resources/pdf/news/artemis-accords-austrian-signing-statement.pdf>>); In a similar vein, Netherlands has stated that emphasized that ratification of all five UN space treaties would allow for a more comprehensive legal regime, and that these treaties must be complemented by non-binding instruments like the Artemis Accords (see *Statement Kingdom of the Netherlands Item 4 – General Exchange of Views*, COPUOS Legal Subcommittee, 65th Sess (2026) at 2).

⁶⁷ *Contribution by Austria on Elements for an Initial Draft Set of Recommended Principles for Space Resource Activities*, COPUOS Legal Subcommittee, 63rd Sess (2024) at para 6; *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*, COPUOS Legal Subcommittee, 63rd Sess (2024) at para 11.

⁶⁸ “Space Policy – Ministry of the Economy and Innovation of the Republic of Lithuania”, online: <<https://eimin.lrv.lt/en/sector-activities/innovation/space-policy/>>.

⁶⁹ “Poland Hosts Talks on the Artemis Space Program” (16 June 2023), online: *Polska Agencja Kosmiczna* <<https://polsa.gov.pl/news/poland-hosts-talks-on-the-artemis-space-program/>>; Polish company, Creotech, has also contracted with ESA to implement the European Twardowski mission, which involves placing a satellite in lunar orbit to create a detailed map of potential landing sites and lunar resources for the Artemis program. (see “Creotech Instruments leads European mission to the Moon” (December 2025), online: <<https://creotech.pl/news/creotech-instruments-leads-european-mission-to-the-moon/>>).

⁷⁰ Czechia, Czech Space Portal, *National Space Plan 2020 – 2025* (2020) at 30 online: <czechspaceportal.cz/en/national-space-strategy/national-space-plan-2020-2025/>.

colonization as likely future threats, and it apprehends the non-appropriation principle being challenged in the future by national laws enacted to facilitate the commercial exploitation and use of space resources.⁷¹

A few European signatories have adopted legislations which could be interpreted to impliedly include space resources activities within their ambit. Cyprus' 2023 Space Law has created a separate category of "high-risk space activities," which are innovative in nature, use unproven technologies, or could attract greater liability.⁷² Portugal, similarly, amended its law in 2024 to incorporate a special licensing regime for "experimental space activities," i.e., those involving new concepts, technologies or procedures, even when they have commercial purposes.⁷³ These high-risk or experimental activities could conceivably include the extraction and utilization of space resources.⁷⁴ Estonia's 2024 draft law contains a principle that space activities must avoid adverse environmental impacts *on* celestial bodies.⁷⁵ Switzerland's 2026 draft Space Operations Act, likewise, defines "space activity" to be inclusive of any activity *on* celestial bodies.⁷⁶ These references to activities *on* celestial bodies may again be construed as encompassing space resources activities. Furthermore, in Liechtenstein, Norway and Slovakia,

⁷¹ The Spanish President has sought to distinguish his country's approach to space from that of private space companies, remarking that while "megalomania and delusion" are behind the space colonization plans of eccentric millionaires, Spain is guided by a sense of "common sense and responsibility" (see "Pedro Sánchez underlines Spain commitment to becoming a "European benchmark in the space sector"", online: <<https://www.lamocloa.gob.es/lang/en/presidente/news/paginas/2026/20260520-space-congress.aspx>>).

⁷² *The Space Law of 2023*, 13 October 2023, art 2 online: <[https://www.olc.gov.cy/olc/olc.nsf/056FE9AC12F521D9C2258AFC002745C9/\\$file/The%20Space%20Law.pdf](https://www.olc.gov.cy/olc/olc.nsf/056FE9AC12F521D9C2258AFC002745C9/$file/The%20Space%20Law.pdf)>.

⁷³ Vieira de Almeida, *Amendment of the Portuguese Law on Space Activities* at 3 online: <https://www.vda.pt/xms/files/05_Publicacoes/2024/Flashes_e_Newsletters/Flash_VdA_-_Amendment_of_the_Portuguese_Law_on_Space_Activities_nv.pdf>

⁷⁴ On the occasion of the Artemis II mission, George Danos, President of Cyprus Space Exploration Organization, highlighted the importance of the Artemis missions in exploring lunar resources, which could help preserve Earth's environment by providing substitutes for minerals like lithium (see Eleni Panayiotou, "Cyprus contributes to Nasa's Artemis mission, says space organisation head" (2 April 2026), online: <<https://cyprus-mail.com/2026/04/02/cyprus-contributes-to-nasas-artemis-mission-says-space-organisation-head>>).

⁷⁵ *Draft Space Law*, 24 September 2024, s 6(1) online: <https://cms.spacesecurityportal.org/uploads/Estonia_Draft_Space_Act_06b7a4db11.pdf> [Translated by author].

⁷⁶ *Draft Space Operations Act*, 25 February 2026, art 3(c) online: <<https://cms.news.admin.ch/fileservice/sdweb-docs-prod-nsbceh-files/files/2026/02/25/3d5ddece-b69b-4580-ba7f-7b289fb3c658.pdf>> [Translated by author].

joining the Accords has been followed by, or has itself come at the heels of, the formulation of national laws or policies for space activities in general, although space resources are not separately mentioned.⁷⁷

Armenia, Bulgaria, Denmark, Finland, Greece, Hungary, Iceland, Ireland, Latvia, Malta, Romania, Sweden and Ukraine are the Accords' remaining European signatories. Most of these countries too have joined the Accords in order to enhance the technological prowess⁷⁸ and commercial potential⁷⁹ of their domestic space sectors through international cooperation.⁸⁰ Sweden is notable for also mentioning the enhancement of its defence capabilities as a reason.⁸¹ However, the national space laws and policies of the foregoing countries are yet to incorporate provisions relating to space resources.

⁷⁷ Liechtenstein joined the Accords in December 2024, just over a year after enacting its Space Activities Act, whose definition of "space activity" includes a catch-all clause of "any other activity taking place in space for which Liechtenstein may be held internationally liable" (see *Act on the Authorization of Space Activities and the Registration of Space Objects*, LG, 5 October 2023, vol 2023, No 443, art 3(a)); Norway joined the Accords in May 2025, and in December 2025 it repealed and replaced its 1969 space activities law (see *Act Relating to Activities in Outer Space*, 22 December 2025, 128, art 29(1)); Slovakia joined the Accords in May 2024, which was followed in November 2024 with the adoption of a new law on the regulation of space activities (see Act No. 378 on the Regulation of Space Activities, 28 November 2024).

⁷⁸ Jennifer M Dooren, "NASA Welcomes Armenia as 43rd Artemis Accords Signatory" (12 June 2024), online: <www.nasa.gov/news-release/nasa-welcomes-armenia-as-43rd-artemis-accords-signatory/>; Tiernan P Doyle, "NASA Welcomes Denmark as Newest Artemis Accords Signatory" (13 November 2024), online: <<https://www.nasa.gov/news-release/nasa-welcomes-denmark-as-newest-artemis-accords-signatory/>>; Elizabeth Shaw, "NASA Welcomes Latvia as Newest Artemis Accords Signatory" (20 April 2026), online: *NASA* <<https://www.nasa.gov/news-release/nasa-welcomes-latvia-as-newest-artemis-accords-signatory/>>.

⁷⁹ Svetoslav Alexandrov, "The Space Review: Significance of Bulgaria joining Artemis Accords" (15 July 2024), online: <<https://www.thespacereview.com/article/4826/1>>; Elizabeth Shaw, "NASA Welcomes Malta as Newest Artemis Accords Signatory" (4 May 2026), online: <<https://www.nasa.gov/missions/artemis/nasa-welcomes-malta-as-newest-artemis-accords-signatory/>>; Will Knight, "Russia's Killer Drone in Ukraine Raises Fears About AI in Warfare" (17 March 2022), online: <<https://www.wired.com/story/ai-drones-russia-ukraine/>>.

⁸⁰ Tiernan P Doyle, "NASA Welcomes Finland as Newest Artemis Accords Signatory" (21 January 2025), online: <www.nasa.gov/news-release/nasa-welcomes-finland-as-newest-artemis-accords-signatory/>; Roxana Bardan, "NASA Welcomes Greece as Newest Artemis Accords Signatory" (9 February 2024), online: <<https://www.nasa.gov/news-release/nasa-welcomes-greece-as-newest-artemis-accords-signatory/>>; Elizabeth Shaw, "NASA Welcomes Ireland as Newest Artemis Accords Signatory" (4 May 2026), online: <<https://www.nasa.gov/missions/artemis/nasa-welcomes-ireland-as-newest-artemis-accords-signatory/>>.

⁸¹ Lauren E Low, "NASA Embraces Sweden as Newest Member of Artemis Accords Family" (16 April 2024), online: <www.nasa.gov/news-release/nasa-embraces-sweden-as-newest-member-of-artemis-accords-family/>.

C. Japan and Australia

JAXA's two Hayabusa missions hold the distinction of being the first spacecrafts to return samples from the surface and subsurface of near-earth asteroids.⁸² The presence of Japan as one of the founding signatories of the Accords was not, therefore, a surprise. Since the introduction of the Accords, Japan has also adopted a national space resources law in June 2021, becoming only the fourth country to do so. The Act on the Promotion of Business Activities for the Exploration and Development of Space Resources empowers the Japanese Prime Minister to issue licenses for the exploration and development of space resources⁸³ (defined as “water, minerals and other natural resources that exist in outer space, including the Moon and other celestial bodies”).⁸⁴ Applicants are required to submit a “business activity plan” detailing the purpose, place, duration and methods of their proposed space resources activities.⁸⁵ Licensed activities entitle the licensee to acquire the ownership of space resources that have been mined, by possessing said resources with the intention to own them.⁸⁶ While the Act does not authorize the setting up of Safety Zones, it does contain an assurance that no provision of its “shall unjustly harm the interests of other States exercising freedom of the exploration and use of outer space.”⁸⁷

So far, Japan has issued two licenses under the aforementioned Act, both to *ispace inc.* The first license, issued in November 2022, was for a 14-day mission to the Moon's Atlas

⁸² “Hayabusa”, online: <<https://science.nasa.gov/mission/hayabusa/>>; Ashley Strickland, “Hayabusa2 mission lands first subsurface asteroid sample on Earth” (5 December 2020), online: <<https://www.cnn.com/2020/12/05/world/hayabusa2-asteroid-sample-earth-return-scen-trnd>>.

⁸³ *Act on the Promotion of Business Activities for Exploration and Development of Space Resources*, 23 December 2021, art 3 online: <<https://www.japaneselawtranslation.go.jp/en/laws/view/4816/en>>.

⁸⁴ *Ibid*, art 2(i).

⁸⁵ *Ibid*, art 3(1).

⁸⁶ *Ibid*, art 5. This provision mirrors Article 239 of the Civil Code of Japan: “[o]wnership of movables without an owner are acquired by possessing the same with the intention to own” (see Minpō, art 239 para 1, (1896) online: <https://www.japaneselawtranslation.go.jp/en/laws/view/3494/en#je_pt2ch3sc2at1>).

⁸⁷ *Supra* note 83, art 6(2).

Crater.⁸⁸ This mission was intended to fulfil *ispace*'s 2020 contract with NASA by collecting lunar regolith on the Hakuto-R spacecraft's footpads and transferring it to the agency in place.⁸⁹ The second license, granted in December 2024,⁹⁰ was for a repeat of the 2022 mission, which had ended in failure,⁹¹ but the outcome of this second mission too was unsuccessful.⁹² Still, JAXA has several sample-return and space resource exploration projects planned for the near future. The Martian Moon eXploration mission plans to collect samples from Phobos.⁹³ The Chandrayaan-5 / LUPEX mission in collaboration with ISRO will investigate the presence of water resources in the south pole region of the Moon.⁹⁴

Australia was the only founding signatory of the Accords which was also a State Party to the Moon Agreement. Despite the US' consistent repudiation of the Moon Agreement, Australia has maintained its stance that both the Accords and the agreement can provide a harmonious framework to guide future activities on the Moon.⁹⁵ Unlike the US, Luxembourg and Japan, Australia has also not enacted any legislation or issued regulations dealing with space resources activities.⁹⁶ The Statement on Space released by the Australian government in July 2026 includes Lunar exploration technologies as one of the five focus areas for the Australian space sector. While space resources activities are not explicitly mentioned herein, there is a recognition that lunar exploration programs will provide Australia a proving ground

⁸⁸ Japan, Cabinet Office, *License No. S22-019* (2022) online: <https://www8.cao.go.jp/space/english/resource/documents/bap_e_22019.pdf>.

⁸⁹ "ispace Receives License to Conduct Business Activity on Moon from Japanese Government" (7 November 2022), online: <<https://www.ispace-inc.com/2022/11/08/ispace-receives-license-to-conduct-business-activity-on-the-moon-from-japanese-government/>>.

⁹⁰ Japan, Cabinet Office, *License No. S24-025* (2024) online: <https://www8.cao.go.jp/space/english/resource/documents/bap_e_24025.pdf>.

⁹¹ "ispace Announces Results of the "HAKUTO-R" Mission 1 Lunar Landing" (26 May 2023), online: <<https://www.ispace-inc.com/2023/05/26/ispace-announces-results-of-the-hakuto-r-mission-1-lunar-landing/>>.

⁹² "ispace Releases Technical Cause Analysis for HAKUTO-R Mission 2" (24 June 2025), online: <<https://www.ispace-inc.com/2025/06/24/ispace-releases-technical-cause-analysis-for-hakuto-r-mission-2/>>.

⁹³ "MMX – Martian Moons eXploration", online: <<http://www.mmx.jaxa.jp/>>.

⁹⁴ "ISRO and JAXA Gear Up for Joint Chandrayaan-5 / LUPEX Mission in the Technical Interface Meet", online: <https://www.isro.gov.in/ISRO_JAXA_CH5_Technical_Interface_Meet.html>.

⁹⁵ See *Statement by Australia on Item: 9 – Potential Legal Models for Activities in the Exploration, Exploitation and Utilisation of Space Resources*, COPUOS Legal Subcommittee, 63rd Sess (2024) at 1.

⁹⁶ The Space (Launches and Returns) Act, 2018 generally regulates space activities conducted from the Australian territory or by Australian nationals, and it does not include any specific provisions relating to space resources.

for developing and validating capabilities that can then be applied back on Earth in the areas of mining and critical minerals.⁹⁷

Like many Global North countries, Australia remains unconvinced of the immediate need for a binding legal framework on space resources. In its 2025 statement to the COPUOS, Australia stressed that space resource utilization will only become a reality “if the framework developed for such activities is practical, encourages innovation, and creates the conditions necessary for it to thrive.” In any case, no significant space resources activities are planned for the near future by Australia. NASA and the Australian Space Agency signed a treaty-level framework agreement in September 2025 respecting Australian participation in future Artemis missions.⁹⁸ As a part of its contribution, Australia is slated to land its first rover on the Moon’s south pole in 2030. The rover will carry a NASA scientific instrument and it is expected to “help global efforts to establish possible sustainable human presence in space.”⁹⁹

II. Space Law in the Accords’ Global South Signatories

This part describes the provisions relating to space resources activities and Safety Zones in the space laws and policies of the Global South countries that have signed the Artemis Accords. Since India and UAE are the only two countries who, apart from the US, Luxembourg and Japan, have expressly greenlit the acquisition of property rights in space resources, the Asian scenario is scrutinized first. This is followed by a survey of the signatories from Central and South America, which contains both well-established and emerging space powers. Lastly,

⁹⁷ Australia, Australian Space Agency, *Statement on Space* (2026) at 14 online: <<https://www.space.gov.au/sites/default/files/media-documents/2026-07/Statement-on-Space.pdf>>.

⁹⁸ Lauren E Low, “NASA signs US-Australia Agreement on Space Cooperation” (30 September 2025), online: <<https://www.nasa.gov/missions/artemis/nasa-signs-us-australia-agreement-on-aeronautics-space-cooperation/>>.

⁹⁹ “Aussie Moon Rover’s Journey Confirmed” (22 June 2026), online: *Australian Space Agency* <<https://www.space.gov.au/news-and-media/nasa-selects-intuitive-machines-to-carry-australian-rover-to-the-moon>>.

this part studies the legal developments amongst the Accords' African signatories, all of whom have very incipient space programs.

A. Asia and Oceania

India and China are the two leading space powers of the Global South, with both countries boasting numerous firsts to their name in lunar exploration.¹⁰⁰ Following the introduction of the US-led Accords in 2020 and the Sino-Russian ILRS project in 2021, India was confronted with the choice of either joining the Accords and further distancing itself from its traditional ally Russia,¹⁰¹ or remaining unaligned and risking slower development of its space sector. Joining the ILRS was not an option due to a strained Indo-Chinese relationship.¹⁰² Ultimately, a combination of geopolitical and commercial considerations persuaded India in June 2023 to sign the non-binding Accords, in a departure from its conventional preference for multilateral, legally binding treaties negotiated under the auspices of the UN.¹⁰³

India began opening its space sector to private players in the very year that the Accords were introduced,¹⁰⁴ and less than a year after joining the Accords, India also approved upto 100% FDI in its domestic space sector.¹⁰⁵ However, India has yet to implement a national law

¹⁰⁰ China's Chang'e 4 was the first spacecraft to land on the Moon's far side in 2019, but India's Chandrayaan-3 took the lead in landing near the lunar south pole. Chang'e 6 in 2024 became the first lunar mission to retrieve samples from the far side of the Moon, while the 2008 Chandrayaan-1 mission is credited with discovering water molecules in the lunar soil (see Namrata Goswami, "China and India's National Strategy and Competition in Cislunar Space", *The Diplomat* (5 December 2025), online: <<https://thediplomat.com/2025/12/china-and-indias-national-strategy-and-competition-in-cislunar-space/>>).

¹⁰¹ Russia has criticized the Artemis Accords and the US approach to lunar exploration as a "colonization" and an "invasion" (see Ortega, *supra* note 9).

¹⁰² Aditya Ramanathan, Aditya Pareek & Nitansha Bansal, "India and the Artemis Accords" (2021) 01 Takshashila Issue Paper 1–15, 8; For a historical account of the geopolitical tensions between India and China (see Vijay Gokhale, "The Road from Galwan: The Future of India-China Relations" (2021) Carnegie India, online: <<https://carnegieendowment.org/india/research/2021/03/the-road-from-galwan-the-future-of-india-china-relations>>).

¹⁰³ Dimitrios Strokos, "India's Space Policy: Between Strategic Autonomy and Alignment with the United States" (5 June 2025), online: <<https://www.cfr.org/articles/indias-space-policy-between-strategic-autonomy-and-alignment-united-states>>.

¹⁰⁴ India, Indian Space Research Organization, *Opening up of the Space Sector* (2020) online: <<https://static.pib.gov.in/WriteReadData/specificdocs/documents/2022/nov/doc20221125136001.pdf>>

¹⁰⁵ India, Union Cabinet, *Cabinet Approves Amendment in the Foreign Direct Investment Policy on Space Sector* (2024) online: <www.pib.gov.in/PressReleasePage.aspx?PRID=2007865®=48&lang=2>; By liberalizing its space sector, India is hoping to attract investments from US companies like SpaceX and Blue Origin (see "India

on space activities.¹⁰⁶ The Indian Space Policy, 2023 currently serves as the primary guide for the domestic space sector.¹⁰⁷ The primary aim of the policy is to encourage space activities by private entities,¹⁰⁸ while repurposing the national space agency ISRO into a more research and development oriented organization.¹⁰⁹ Space resources are included as a part of this push for greater privatization and commercialization of the space sector. Under the policy, private space entities will be encouraged to “engage in the commercial recovery of an asteroid resource or a space resource,”¹¹⁰ and any entities engaged in such activities “shall be entitled to possess, own, transport, use, and sell any such asteroid resource or space resource...”¹¹¹ Interestingly, this provision is a facsimile of the US’ 2015 SREU Act.¹¹²

In 2024, the Norms, Guidelines and Procedures for Implementation of the Indian Space Policy (NGP) were published by the Indian government’s Department of Space. The NGP requires Indian entities wanting to conduct space resources activities to obtain a separate authorization from IN-SPACe.¹¹³ IN-SPACe¹¹⁴ may authorize or reject space resources activities, based on considerations relating to (i) necessity of the extraction and utilization of space resources, (ii) applicable international law, and (iii) likelihood of the activities causing

is opening its space sector to foreign investment” (28 February 2024), online: <<https://www.weforum.org/stories/geographies-in-depth/india-space-sector-foreign-investment/>>).

¹⁰⁶ A draft Space Activities Bill was released for public comment in 2017, but it was shelved following a mostly negative response from stakeholders. In May 2025, the Chairman of IN-SPACe, Pawan Goenka, informed the press that a new draft of the Space Activities Bill would be circulated for inter-ministerial consultations (see Gaurav Saini, “A New Draft for the Space Activities Bill: Amidst A Sea-Change in India’s Space Sector” (9 June 2025), online: <<https://csdronline.com/blind-spot/a-new-draft-for-the-space-activities-bill-amidst-a-sea-change-in-indias-space-sector/>>).

¹⁰⁷ India, Department of Space, *Indian Space Policy* (2023) online: <https://www.isro.gov.in/media_isro/pdf/IndianSpacePolicy2023.pdf>.

¹⁰⁸ *Ibid.*, para 4.

¹⁰⁹ *Ibid.*, para 6.

¹¹⁰ *Ibid.*, para 4.13.

¹¹¹ *Ibid.*

¹¹² *Supra* note 19, § 51303.

¹¹³ India, IN-SPACe, *Norms, Guidelines and Procedures for Implementation of Indian Space Policy-2023 in respect of Authorization of Space Activities*, ch III para 25 online: <https://www.inspace.gov.in/sys_attachment.do?sys_id=5d532e37877102503b0f0d060cbb35cf> [IN-SPACe NGP].

¹¹⁴ Established in 2020, the Indian National Space Promotion and Authorisation Centre was designated as the single-window nodal agency for authorizing all private space activities in India by the 2024 policy (see *supra* note 107, para 5).

harmful interference to space activities of other States.”¹¹⁵ The NGP prohibits applicants from asserting sovereign claims on the whole or any portion of outer space, including over resources extracted from space, but it acknowledges that “not all forms of extraction and utilization of resources in space qualify as appropriation.”¹¹⁶ However, the NGP itself provides no clarity as to which forms of space resources activities would in fact qualify as appropriation.¹¹⁷

Furthermore, the Terms of Authorization annexed to the NGP require applicants to conduct their space activities in a transparent manner with due regard to the rights of other person(s) and states.¹¹⁸ Applicants are required to operate in a safe and sustainable manner, while adhering to the obligations of India under not only the four main UN space treaties but also the Moon Agreement and the Artemis Accords.¹¹⁹ Mention of both instruments one after the other is significant, since it indicates that India (which is a signatory to the latter treaty but has not yet ratified it) does not view the Accords as being an impediment to its existing international obligations.¹²⁰ This would align India’s approach with that of Australia, France and Netherlands, which are a few of the other countries to have signed and/or ratified both instruments.¹²¹

UAE was the only founding signatory of the Accords hailing from the Global South. Since joining the Accords, UAE has also become the third country to have a national space law

¹¹⁵ IN-SPACe NGP *supra* note 113, ch III para 25.

¹¹⁶ *Ibid.*

¹¹⁷ In its statement to the COPUOS, delivered on behalf of the G77, India expressed the group’s concern that some countries have introduced national laws allowing the exploitation of celestial bodies for economic purposes, likely referring to the space resource legislations of US, Luxembourg, Japan and UAE. As mentioned earlier, however, the Indian Space Policy, 2023 itself contains a provision that is a near facsimile of the US’ SREU Act, 2015 and permits NGEs to own, possess, use and transfer the space resources extracted by them (see *Statement of the G77 and China on Agenda Item 9 – Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, COPUOS Legal Subcommittee, 65th Sess (2026) at para 2).

¹¹⁸ IN-SPACe NGP *supra* note 113, Exhibit-1.

¹¹⁹ *Ibid.*

¹²⁰ The Vienna Convention on the Law of Treaties (1969) obliges States “to refrain from acts which would defeat the object and purpose of a treaty when it has signed the treaty...until it shall have made its intention clear not to become a party to the treaty” (see *Vienna Convention on the Law of Treaties*, 23 May 1969, 1155 UNTS 331, art 18(a)).

¹²¹ See *infra* Part I.A.

with provisions on space resources activities. Federal Law No. (12) of 2019 on the Regulation of the Space Sector defined space resources as “[a]ny non-living resources present in outer space, including minerals and water.”¹²² Space resources exploration, extraction, and activities for the exploitation and use of space resources for scientific or commercial were expressly listed among the activities falling within the regulatory scope of the law.¹²³ The law empowered UAE’s Council of Ministers to decide the conditions and controls relating to space resources activities, including their “acquisition, purchase, sale, trade, transportation, storage, and related logistical services.”¹²⁴ These provisions have also been retained in the Federal Decree by Law No. (46) of 2023,¹²⁵ which repealed and replaced the 2019 law.¹²⁶

In 2023, UAE issued detailed regulations to implement its 2019 space resources law.¹²⁷ These regulations apply to space resources activities¹²⁸ carried out by Emirati nationals, or companies with headquarters in the UAE, or foreign companies with a branch in the country.¹²⁹ Operators are permitted to carry out space resources activities only upon apprising the UAE Space Agency of all relevant technical details and risk assessments, and after taking the necessary measures to prevent and mitigate (i) threats to the safety of people and property, (ii) harm to the environment of the Earth and celestial bodies, and (iii) harmful interference with ongoing space activities.¹³⁰ Even at the end of their activities, operators must submit a report

¹²² *Federal Law No. (12) of 2019 On the Regulation of the Space Sector*, 19 December 2019.

¹²³ *Ibid*, art 4.

¹²⁴ *Ibid*, art 14(2). This task has now been delegated to the UAE Space Agency under the 2023 Regulations.

¹²⁵ *Federal Decree Law No. (46) of 2023 Concerning Regulation of Space Sector*, 28 September 2023, arts 1, 4, 8.

¹²⁶ *Ibid*, art 39(1).

¹²⁷ UAE, The Cabinet, *Cabinet Resolution No. (19) of 2023 Concerning the Space Resources Regulation* (2023) online: <<https://uaelegislation.gov.ae/en/legislations/1634/download>>. Although these regulations were issued under the repealed 2019 Act, Article 39(1) of the new 2023 Act states that regulations issued under the old law will continue to remain in force.

¹²⁸ The regulations given an all-encompassing definition of space resources activities as “[a]ctivities related to the exploration, exploitation and use of space resources, whether for commercial, scientific or other purposes, and include extracting, recovering, refining, processing, benefiting from, owning, purchasing, selling, trading, storing or transporting space resources, as well as activities related to logistics, performed in the specified area, such as transporting, storing, or supplying space resources” (see *Ibid*, art 1).

¹²⁹ *Supra* note 127, art 2.

¹³⁰ *Ibid*, art 4.

on its results as well as the status of the area in which the activity was carried out.¹³¹ Most significantly, the regulations entitle operators to exercise ownership rights over the space resources explored, exploited or used by them in their authorized activities.¹³² This provision makes UAE one of only a handful of countries which currently recognize property rights in space resources.

While the foregoing regulations do not authorize operators to establish Safety Zones, they do require operators to mandatorily notify the UAE Space Agency of “any safety measures in the area associated with authorised space resources activities.”¹³³ Also, before granting authorization, the agency is required to consider the “rights of other States related to access to all stations, facilities, equipment, and spacecraft on the surface of the moon and other celestial bodies, in accordance with [UAE’s] international obligations.”¹³⁴ Moreover, the agency is obliged to “consult with any affected State when it has reasons to believe that space resources activities may lead to obstruction of the activities of another State.”¹³⁵ Operators must also notify the agency of “any unintended interference or damage to sites on the moon or any other celestial bodies of historical importance.”¹³⁶ The regulations have also created a national Space Resource Database, in which the agency shall maintain information on the purposes, locations, and duration of space resources activities.¹³⁷ UAE has thus implemented some of the most comprehensive measures of any national framework for avoiding harmful interference.

Saudi Arabia borrowed a leaf from its Gulf neighbour’s space policy by joining the Accords in July 2022, and its most immediate impact was the Kingdom’s withdrawal a few

¹³¹ *Ibid*, art 8(3).

¹³² *Ibid*, art 7. Property rights include the rights to own, buy, sell, trade, transfer, store, use or dispose of resources extracted through the authorized space resources activities.

¹³³ *Ibid*, art 8(1)(g).

¹³⁴ *Ibid*, art 5(3).

¹³⁵ *Ibid*, art 5(4).

¹³⁶ *Ibid*, art 8(1)(h).

¹³⁷ *Ibid*, art 6.

months later from the Moon Agreement (which it had become a State Party to only in 2012).¹³⁸ Participating in the Accords can be viewed as part of Saudi Arabia's Vision 2030 program of diversifying its heavily oil-dependent economy by developing other sectors, such as space.¹³⁹ To complement this focus on private space activities, the Kingdom's Communications, Space and Technology Commission (CST) has sought public consultation on a draft Space Law in November 2022¹⁴⁰ and again on a draft set of Space Sector Regulations and Guidelines in December 2025.¹⁴¹ Both these drafts have included provisions for licensing space resources activities.¹⁴² The 2023 draft law defined space resources in the exact same terms as its UAE counterpart. Possible uses of space resources considered by that draft included their extraction, exploitation use, distribution, ownership, trading, transportation and storage.¹⁴³

Among the other Asian countries that have signed onto the Accords, South Korea¹⁴⁴ has witnessed the most developments with respect to space resource activities since joining in May 2021. The Fourth Basic Plan for Space Development, released in 2022, mentions the acquisition of ISRU technologies as a short-term goal along the path to establishing a lunar base and conducting manned activities on Mars.¹⁴⁵ In September 2021, Hanwha Aerospace became the first South Korean company to secure a government agreement for the use of ISRU

¹³⁸ Saudi Arabia had become a State Party to the Moon Agreement only in 2012. While the Kingdom did not publicize any official reason behind its decision to withdraw, it is likely to have been driven by a belief that either the provisions of the Moon Agreement are no longer conducive to the space aspirations of the Kingdom or that they are incompatible with the principles of the Accords (see Michael J Listner, "Four key points regarding Saudi Arabia's withdrawal from the Moon Agreement" (11 December 2023), online: <<https://www.thespacereview.com/article/4706/1>>); Of course, this does not appear to be a belief shared by the other States Parties and signatories to the Moon Agreement, almost all of whom have simultaneously joined either the US-led Accords or the Sino-Russian ILRS (see *supra* note 7).

¹³⁹ Olga Volynskaya, "Space Law of Saudi Arabia" (2023) 66:7 International Institute of Space Law 329–42 at 331, 333.

¹⁴⁰ *Ibid.*

¹⁴¹ Ibrahim Alsubait, Regulatory Development Journey for the Space Sector in Saudi Arabia (2026), online: <www.unoosa.org/documents/pdf/copuos/lsc/2026/TPs/14%20April/PDF_Slides_Saudi_Arabia_Item_5.pdf>.

¹⁴² *Ibid.*

¹⁴³ Olga Volynskaya, *supra* note 139.

¹⁴⁴ Andrew Jones, "South Korea signs Artemis Accords, aims for moon by 2030" (27 July 2022), online: <<https://www.space.com/south-korea-artemis-accords-moon-exploration>>.

¹⁴⁵ Republic of Korea, Fourth Basic Plan for Space Development (2022–27) at 15, 16, 60, 61 online: <<https://www.msit.go.kr/bbs/view.do?sCode=user&bbsSeqNo=65&nttSeqNo=3017397>>.

for participation in the Artemis Program.¹⁴⁶ Moreover, the plan also contemplates introducing regulations specifically for space resources activities under an all-encompassing new national space Act.¹⁴⁷

Bahrain, Bangladesh, Israel, Jordan, Malaysia Oman, Philippines and Singapore and Thailand are the Accords other Asian signatories. Boosting their nascent space exploration programs and local space industries through deeper international cooperation appears to be the primary motivation behind their joining.¹⁴⁸ Apart from Malaysia¹⁴⁹ and Thailand¹⁵⁰ none of these countries have so far enacted dedicated legislations to regulate space activities,¹⁵¹ and even their various space policies do not include references to either space resources activities or Safety Zones.¹⁵² Even New Zealand (the sole Oceanian participant in the Accords) has not

¹⁴⁶ “Business agreement for In Situ Resource Utilization (ISRU)” (9 September 2021), online: <<https://www.kier.re.kr/board/view?pageNum=15&rowCnt=10&no1=292&linkId=256099&menuId=MENU00642&schType=0&schText=&boardStyle=&categoryId=&continent=&country=>>>.

¹⁴⁷ *Supra* note 145 at 36. South Korea is preparing an ‘Aerospace Basic Law’ to serve as a comprehensive legal foundation for national aerospace governance and policy. Following its enactment, the country has also promised to develop regulations for each sector, including space resource utilization (see *Statement Republic of Korea on Agenda Item 4 – General Exchange of Views*, COPUOS Legal Subcommittee, 65th Sess (2026)).

¹⁴⁸ See e.g. “Thailand Seizes the Lunar Moment” (31 March 2026), online: <<https://www.ohesdc.org/post/thailand-seizes-the-lunar-moment>>; Phar Kim Beng & Jitkai Chin, “Artemis II and the Moon Economy – Will Malaysia play a role?” (30 March 2026), online: <<https://www.malaymail.com/news/what-you-think/2026/03/30/artemis-ii-and-the-moon-economy-will-malaysia-play-a-role-phar-kim-beng-and-jitkai-chin/214406>>>.

¹⁴⁹ The Malaysian Space Board Act set up the Malaysian Space Board in 2022 and empowered it to license and supervise certain space activities, but these do not include space resources activities (see *Malaysian Space Board Act*, 19 January 2022, Act 834 online: <cms.spacesecurityportal.org/uploads/MLY_Act_834_01e6c326f3.pdf>).

¹⁵⁰ Thailand does not have an operational space law, but the Cabinet of Thailand had in July 2021 approved a Draft Space Activities Act, which is pending further legislative approval. The Act defines “space activities” as meaning exploration, experimentation, or any other operation in space, including space mining or activities involving the utilization of space resources (see Draft Space Activities Act, 13 July 2021, s 3, online: <https://cms.spacesecurityportal.org/uploads/TH_Draft_Space_Act_26edcab8df.pdf>).

¹⁵¹ Singapore issued guidelines for space activities in May 2024 (Singapore, National Space Agency of Singapore, *Guidelines for Singapore-related Space Activities*, May 2024 online: <<https://www.space.gov.sg/singapore-space-ecosystem/>>); Oman issued a directive on space launches in August 2025 (see Oman, Civil Aviation Authority, *Directive CAD 5-01 on Airspace Usage for Launch Vehicle Activities*, 28 August 2025; Bahrain is currently developing a national space law to cover licensing of space activities and encourage private participation in its domestic space sector (see Bahrain, Bahrain Space Agency, *Space Policy of the Kingdom of Bahrain and Strategic Plan for 2019–23* online: <<https://www.bsa.bh/bsa-policy-booklet/>>)).

¹⁵² Malaysia, in fact, appears to rule out such activities, since it has stated that its National Space Policy will not bind the country to space programmes that are “high risk, expensive and unreasonable” (see Malaysia, Ministry of Science, Technology and Innovation, *Space Industry Strategic Plan 2030* (2023) at 2); However, this absence should not be taken to mean that there have been no space resources-related endeavours in these countries, For example, Helios Project Ltd. has been founded in Israel with the goal of extracting oxygen from lunar regolith, and two PETRA missions were conducted by the Jordan Space Research Initiative in Wadi Rum to simulate human adaptation to the lunar and Martian environments (see “Lunar Oxygen – Helios”, online:

included space resources into its 2017 Outer Space Act or its 2023 Space Policy since joining the Accords in May 2021. However, Kiwi representatives have stated that among the reasons for New Zealand's joining was its desire to ensure safe and sustainable long-term management of space resources on the moon.¹⁵³ "Space resources" and "Space sustainability" are also listed as two areas of mutual interest in which New Zealand and USA shall develop cooperative programs under their 2022 bilateral Framework Agreement.¹⁵⁴

B. Latin America

Brazil became the first Latin American country to join the Accords in June 2021. While its decision to do so would have been strongly influenced by considerations of foreign policy,¹⁵⁵ there appear to be legal implications as well. Brazil's new General Act on Space Activities of July 2024¹⁵⁶ has been made applicable even to the "exploration of space resources,"¹⁵⁷ which are defined as "natural resources derived from a celestial body."¹⁵⁸ Nevertheless, Brazil has clarified that it does not intend to proceed with detailed domestic regulation in the area of space resources activities in the absence of a broad and internationally agreed understanding.¹⁵⁹ According to Brazil, issues related to space resources should be addressed primarily through a multilateral process, with the goal of achieving a consensus-based outcome.¹⁶⁰

<<https://heliosmatters.com/our-solutions/lunar-oxygen/>>; "JSRI – Analog Missions", online: <www.jsri.space/analog-missions>).

¹⁵³ "Space Exploration Soars with Artemis Accords" (1 June 2021), online: <<https://www.beehive.govt.nz/release/space-exploration-soars-artemis-accords>>.

¹⁵⁴ *Framework Agreement between the Government of the United States of America and the Government of New Zealand on Cooperation in Aeronautics and the Exploration and Use of Airspace and Outer Space*, US and New Zealand, 9 August 2022, TIAS 22-1109.

¹⁵⁵ Brazil, Agência Espacial Brasileira, *Plano Estratégico da Agência Espacial Brasileira 2023–2026* (2023) at 10, online: <<https://www.gov.br/aeb/pt-br/aceso-a-informacao/planejamento-estrategico/plano-estrategico-da-agencia-espacial-brasileira-2023-2026>> states that Brazil's motivations in the aerospace sector are strongly related to foreign policy> [Translated by author].

¹⁵⁶ *Lei Nº 14.946, de 31 de Julho de 2024 Institui Normas Aplicáveis a Atividades Espaciais Nacionais*, 31 July 2024 online: <www.planalto.gov.br/ccivil_03/_ato2023-2026/2024/lei/14946.htm> [Translated by author].

¹⁵⁷ *Ibid.*, art 3(IX).

¹⁵⁸ *Ibid.*, art 2(XII).

¹⁵⁹ *Intervention by Brazil on Agenda Item 9 – Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, COPUOS Legal Subcommittee, 65th Sess (2026).

¹⁶⁰ Brazil has also previously acknowledged that initiatives such as its national law, to fill gaps in the existing international regime, were "no substitute for multilaterally negotiated, universally recognized and, preferably,

Chile, Mexico, Peru and Uruguay have signed the Accords too, and they represent four of the Moon Agreement's five States Parties from Latin America.¹⁶¹ None of these countries have enacted a dedicated space activities law yet, but less than a year after joining the Accords in October 2024, Chile approved its first national space policy.¹⁶² Incentivizing research into planetary exploration and space mining, through international collaboration, is among the initiatives proposed in this July 2025 document.¹⁶³ Mexico, in fact, has undertaken such research under NASA's CLPS program to support the Artemis missions. The unsuccessful Colmena-1 was Mexico's debut lunar mission, and it consisted of five micro-rovers designed for lunar resource prospecting.¹⁶⁴ Within the COPUOS, Mexico has acknowledged the role of domestic regulatory frameworks in ensuring the sustainable use of space resources.¹⁶⁵ It has also urged the need for short-term coordination agreements between interested parties, dealing *inter alia* with the definition of Safety Zones.

Argentina, Colombia, Dominican Republic, Ecuador, Panama and Paraguay are the other signatories of the Accords from Central and South America. Like Peru, Uruguay, and their Asian counterparts with emerging space programs, the main impetus here also has been the desire to achieve national space development through closer international cooperation.¹⁶⁶

legally binding rules" (see *Statement of Brazil on Agenda Item 8 – Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, COPUOS Legal Subcommittee, 64th Sess (2025)).

¹⁶¹ The fifth country, Venezuela, has instead joined the Sino-Russian ILRS.

¹⁶² Chile, Ministry of Science, Technology, Knowledge and Innovation, *Política Nacional Espacial* (2025), online: <https://cms.spacesecurityportal.org/uploads/1753657905578_ec8da135f9.pdf>.

¹⁶³ *Ibid* at 11.

¹⁶⁴ The ultimate objective of the Colmena project is to develop a swarm of micro-robots for lunar and asteroidal operation in prospection and mining (see Gustavo Medina-Tanco, *Validation of the lunar mission Colmena-1 in Deep Space* (International Astronautical Federation, 2024), online: <https://linx.nucleares.unam.mx/files/Colmena_IAC-24-A3-2B-5-x91388.v2.pdf>.

¹⁶⁵ *Statement of Mexico on Agenda Item 9 – Potential Legal Models for Activities in Exploration, Exploitation and Utilization of Space Resources*, COPUOS Legal Subcommittee, 63rd Sess (2024).

¹⁶⁶ See e.g. Roxana Bardan, "NASA Welcomes Argentina as Newest Artemis Accords Signatory" (27 July 2023), online: <<https://www.nasa.gov/news-release/nasa-welcomes-argentina-as-newest-artemis-accords-signatory/>>; "NASA Welcomes Vice President of Colombia for Artemis Accords Signing" (10 May 2022), online: <www.nasa.gov/humans-in-space/nasa-welcomes-vice-president-of-colombia-for-artemis-accords-signing/>; Claire A O'Shea, "NASA Welcomes Ecuador as 26th Artemis Accords Signatory" (21 June 2023), online: <www.nasa.gov/news-release/nasa-welcomes-ecuador-as-26th-artemis-accords-signatory/>; Jennifer M Dooren, "NASA Welcomes Peru as 41st Artemis Accords Signatory" (30 May 2024), online: <<https://www.nasa.gov/news-release/nasa-welcomes-peru-as-41st-artemis-accords-signatory/>>.

Given the incipient state of the space sectors in these countries, there is a dearth of legislations and policies on space activities. Consequently, there are no specific rules yet regulating space resources activities or Safety Zones in these countries.

C. Africa

Africa has emerged as a geopolitical battleground for the US and China, with each country trying to extend its sphere of influence in the continent. Even the space sector has not been immune to this rivalry. Till date, while the Sino-Russian ILRS has secured participation from Egypt and South Africa, the US-led Accords have garnered the support of Angola, Botswana, Mauritius, Morocco, Nigeria and Rwanda. Senegal is one of only two countries (Thailand being the other) which has joined both these competing projects.

All seven African signatories are nascent space powers whose first satellites were launched only after the year 2000.¹⁶⁷ None of these countries have thus established domestic legal regimes for regulating space activities.¹⁶⁸ Rwanda and Botswana, in fact, are yet to ratify the OST, and in case of Angola and Senegal, they have yet to sign the treaty.¹⁶⁹ Hence, for these two countries, the Artemis Accords actually represent a first formal commitment to the principles that are incontrovertibly common between the OST and Accords, such as (i) use of outer space for peaceful purposes, (ii) rendering assistance to personnel in distress in space, (iii) registration of space objects, (iv) avoiding harmful interference, and (v) mitigation of space debris. On the other end of the spectrum, Morocco is a State Party to all five UN space treaties. It is the only African member of the Moon Agreement, and with its addition to the Accords in

¹⁶⁷ “First Satellites by Country 2026” (30 July 2026), online: <<https://worldpopulationreview.com/country-rankings/first-satellites-by-country>>.

¹⁶⁸ Nigeria and Rwanda do have national space legislations, but both concern the establishment of and assignment of functions to their respective space agencies only (see *National Space Research and Development Agency*, 30 August 2010, vol 97 A1249; Rwanda, Rwanda Space Agency, *National Space Policy 2025* (2025)).

¹⁶⁹ Liechtenstein also is a signatory to the Artemis Accords that has not yet signed the OST, while Philippines and Jordan have yet to ratify the OST (see *supra* note 7).

April 2026, nineteen of the treaty's twenty-one signatories have now entered into either the Accords or the ILRS.

Unlike in the Americas, Europe and Asia, space resources activities do not feature in the official space policies of any of the African signatories that have signed the Accords. The foremost objective of these countries in joining the Accords has been to boost their incipient spacefaring journeys through international collaboration, including with private space entities from the US.¹⁷⁰ For example, Senegal and Botswana launched their first satellites in 2024 and 2025 respectively aboard SpaceX rideshare missions.¹⁷¹ In case of Nigeria and Rwanda, whose space sectors are relatively more advanced, the aspiration for a commercially thriving space industry, and for a seat at the table in matters of international space governance, is even more pronounced.¹⁷²

III. Current Position on Space Resources and Safety Zones

The previous parts elaborated the space resources-related provisions contained in the space laws and plans formulated by signatories of the Artemis Accords. Based on those provisions, this part now analyzes whether the Accords' principles on space resources and Safety Zones have been incorporated into national regulatory and policy frameworks. Firstly, this part evaluates whether commercial space resources activities and private ownership of and

¹⁷⁰ Angola joined the Accords in December 2023, and one of the goals set by Angola's Spatial strategy of 2016–25 is for the country to enter into bilateral and multilateral partnerships with other States and entities in order to carry out joint space projects; See *also* Jennifer M Dooren, "NASA Welcomes Botswana as 68th Artemis Accords Signatory" (25 June 2026), online: *NASA* <<https://www.nasa.gov/organizations/oiiir/nasa-welcomes-botswana-as-68th-artemis-accords-signatory/>>; Elizabeth Shaw, "NASA Welcomes Mauritius as 70th Artemis Accords Signatory" (17 July 2026), online: *NASA* <<https://www.nasa.gov/organizations/oiiir/artemis-accords/nasa-welcomes-mauritius-as-70th-artemis-accords-signatory/>>.

¹⁷¹ Ayooluwa Adetola, "Senegal Launches its First Satellite, Gaindesat-1A" (17 August 2024), online: <<http://spaceinafrica.com/2024/08/17/senegal-launches-its-first-satellite-gaindesat-1a/>>; Samuel Nyangi, "Botswana Successfully Launches First Satellite, BOTSAT-1" (15 March 2025), online: <<https://spaceinafrica.com/2025/03/15/botswana-successfully-launches-first-satellite-botsat-1/>>.

¹⁷² See Anne Uruegi Agi, "Outer space: Rwanda & Nigeria sign an accord for more responsible exploration — Why this matters" (21 April 2023), online: <<https://www.downtoearth.org.in/africa/outer-space-rwanda-nigeria-sign-an-accord-for-more-responsible-exploration-why-this-matters-88883>>.

transactions in space resources have received domestic recognition. Secondly, this part assesses whether Safety Zones have been incorporated as a permissible mechanism for avoiding harmful interference on celestial bodies with others' space activities.

A. Space Resources Activities

The Accords, coupled with the Artemis mission to return humans to the Moon and establish permanent lunar bases, have undoubtedly spurred the recognition of space resources activities in domestic legislations and policies. In most examples from the Accords' signatories, the focus is on ISRU and scientific exploration rather than commercial exploitation. There is a broad acceptance, in both the Global North and South, that utilizing space resources is key to deeper human exploration of outer space. State practice among the Accords' signatories has by and large accepted the interpretation that the freedom to use outer space under the OST¹⁷³ includes a right to make sustainable use of natural resources from celestial bodies for further space exploration and human habitation. We may refer to this as "using the province of [hu]mankind to expand the province of [hu]mankind."

By contrast, it is only among the more advanced spacefaring powers of Europe, and in developed countries like the US and Japan, that we find unequivocal support for the commercial extraction and utilization of space resources. Among the Global South signatories, India and UAE are the only countries which have made an extensive effort to incorporate such activities into their domestic legal frameworks, by permitting the ownership and transfer of the natural resources recovered from celestial bodies. In almost all other Global South countries, and even among the emerging space powers of the Global North, wherever there is a mention of space resources activities, it is mostly for scientific investigation and ISRU, and not in the context of for-profit exploitation.

¹⁷³ *Supra* note 4, art I para 1.

While exploiting space resources at a commercial scale is not technologically viable at the moment,¹⁷⁴ it is an aspiration of numerous private companies. Hence, there is a serious risk that experimental ventures by these entities might kickstart an unsustainable use of the natural resources found on the Moon and Mars. Preserving the sustainability of outer space is now a well-settled customary rule of international space law under the OST¹⁷⁵ and COPUOS' 2019 Long-Term Sustainability Guidelines.¹⁷⁶ Some disruptive activities planned by corporations such as SpaceX (off-world manufacturing, lunar data centres, and large-scale mining on the Moon and Near-Earth asteroids, etc.)¹⁷⁷ if executed solely with a profit motive could cause irreparable harm to the celestial environment. Deliberations over such activities must happen within the COPUOS and international guidelines must be evolved after accounting for the inputs of all countries and not just the countries where these corporations are based.

Only five of the seventy signatories to the Artemis Accords have implemented legal provisions which sanction the acquisition of private property rights in the space resources recovered. Even the Accords merely assert the signatories' belief that extraction and utilization space resources does not inherently constitute a violation of the non-appropriation principle enshrined in the OST,¹⁷⁸ and that contracts for such activities must be in conformity for the treaty. Most of the Accords' signatories mention space resources in their national laws and policies only to the extent needed for ISRU. There exists no consensus yet on the legality of large-scale resource exploitation of the Moon and Mars for profit. A majority of the countries that have joined the Accords, especially the emerging space powers from the Global South, have done so primarily to seize the opportunity of building up their domestic space programs

¹⁷⁴ *Space Resource Extraction: Overview and Issues for Congress*, Commerce & Small Business; Science & Technology, by Rachel Lindbergh, Commerce & Small Business; Science & Technology R48144 (Library of Congress, 29 July 2024) online: <<https://www.congress.gov/crs-product/R48144>>.

¹⁷⁵ *Supra* note 4, art IX.

¹⁷⁶ *Guidelines for the Long-Term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space*, COPUOS, (2019).

¹⁷⁷ *Supra* note 13.

¹⁷⁸ *Supra* note 4, art II.

through cooperation with NASA and the US. Building a legal norm supportive of commercial resource exploitation may have been a goal of the US when introducing the Artemis Accords,¹⁷⁹ but it does not appear to have been foremost in the contemplation of most signatories.

Lastly, there remains the question of equitably sharing with the developing countries the benefits derived from the natural resources of the Moon and other celestial bodies. This aspect of the Common Heritage of [Hu]mankind principle has been the chief impediment in the broader acceptance of the Moon Agreement.¹⁸⁰ Nevertheless, if we look at the statements of the States Parties to the Moon Agreement who have joined the Accords, including those from the Global South, neither is there a demand for compulsory benefit-sharing nor is this a provision that any of the States Parties to the Moon Agreement have conceded to including in any future international regime negotiated under the treaty.¹⁸¹ Instead, as indicated from their joining statements, the expectation of the developing countries which have signed the Accords (whether from Africa, Asia, Latin America, or even Europe) appears to be that it will enable them to boost their indigenous space industries through the voluntary sharing of scientific information, space technologies and financial resources.

B. Safety Zones for Deconfliction

The OST expects all States Parties to conduct their space activities with “due regard to the corresponding interests” of other States Parties to the Treaty.”¹⁸² It further provides that States Parties must undertake appropriate international consultation if they apprehend that the space activities conducted or licensed by them could cause “potentially harmful interference”

¹⁷⁹ *Supra* note 8.

¹⁸⁰ Fabio Tronchetti, “Legal Aspects of Space Resource Utilization” in Frans von der Dunk, ed, *Handbook of Space Law* (Edward Elgar Publishing, 2015) 769 at 783.

¹⁸¹ See e.g. *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*, COPUOS Legal Subcommittee, 63rd Sess (2024) at para 13.2.

¹⁸² *Supra* note 4, art IX.

with the activities of others.¹⁸³ To operationalize this “deconfliction,” the signatories to the Accords “intend to provide notification of their activities and commit to coordinating with any relevant actor.”¹⁸⁴ The area within which this notification and coordination is implemented will be referred to as a Safety Zone.¹⁸⁵

Although Safety Zones are described as an “area in which nominal operations of a relevant activity or an anomalous event could reasonably cause harmful interference,”¹⁸⁶ they evoke the image of an exclusionary perimeter. The enclosure of areas in which only a country, or private entities licensed by it, is permitted to conduct space activities would be violative of the freedom of access guaranteed in the OST.¹⁸⁷ The Artemis Accords themselves acknowledge this, and provide guidelines to restrict Safety Zones to a “reasonable” area.¹⁸⁸ These include (i) maintaining an evolving correlation between the size and scope of the zones and the changing nature of the space operations being conducted within them, and (ii) application of commonly accepted scientific and engineering standards.¹⁸⁹ The Accords further provide that, upon being requested to do so, the Signatory maintaining a Safety Zone shall provide others “with the basis for the area in accordance with the national rules and regulations applicable.”¹⁹⁰

None of the domestic space legislations or policies in the Accords’ seventy signatories expressly authorize the establishment of Safety Zones by either their governmental agencies or authorized private entities. There is a general recognition of the obligation to maintain due regard and avoid harmful interference, but these provisions have simply adopted the principle laid down in Article IX of the OST. Arguably, UAE’s 2023 space regulations alone come close

¹⁸³ *Ibid.*

¹⁸⁴ *Supra* note 3, s 11(7).

¹⁸⁵ *Ibid.*

¹⁸⁶ *Ibid.*

¹⁸⁷ *Supra* note 4, art I para 1.

¹⁸⁸ *Supra* note 3, s 11(7).

¹⁸⁹ *Ibid.*

¹⁹⁰ *Ibid.*, s 11(8).

to authorizing Safety Zones, but they too do not do so in clear terms. The regulation merely makes it incumbent upon operators licensed by the UAE Space Agency to inform the agency about “*any* safety measures in the area associated with authorised space resources activities.”¹⁹¹

Before national regulatory authorities begin authorizing the imposition of Safety Zones by their licensed space operators, international consensus must be reached within the COPUOS on the basic parameters for the same. A truly multilateral instrument under the aegis of the UN, instead of minilateral agreements among the Accords’ signatories, is necessary to prevent Safety Zones turning into de facto “keep-out” zones, arbitrarily created as per each country’s subjective interpretation of what is reasonable. Devising certain basic criteria to ascertain what is a reasonable size, scope and duration for a Safety Zone must be accomplished with inputs from all countries, whether signatories to the US-led Artemis Accords or not. This will be especially critical when an overlap of activities is not among the Accords’ signatories but between an Artemis mission and a Sino-Russian ILRS one.¹⁹² Besides, the Accords themselves clarify that its signatories shall employ their experience under the Accords “to contribute to multilateral efforts to further develop international practices, criteria, and rules applicable to the definition and determination of safety zones and harmful interference.”¹⁹³

On a more semantic note, rather than empowering entities engaged in the extraction and utilization of space resources on the Moon or Mars to establish “Safety Zones,” they should instead be obligated to publish “Safety Protocols.” These would be a list of precautions which an authorized space operator would expect other actors in the vicinity to take. In the event of disagreements between two operators concerning adherence, they could undertake mutual

¹⁹¹ *Supra* note 127, art 8(1)(g) [Emphasis added].

¹⁹² Overlaps have already been identified in the potential landing sites announced by the US and China at the lunar South Pole for their Artemis 3 and Chang’e 7 missions (see Andrew Jones, “NASA and China are eyeing the same landing sites near the lunar south pole” (31 August 2022), online: <<https://spacenews.com/nasa-and-china-are-eyeing-the-same-landing-sites-near-the-lunar-south-pole/>>).

¹⁹³ *Supra* note 3, s 11(6).

consultations to resolve the issue. That freedom of access for other operators will be curtailed while one entity is making use of a celestial area is an inevitable consequence of conducting space activities. However, detaching such restrictions from the physical area of the concerned celestial body, and associating them instead with the concerned space activity, would go a long way towards precluding any future assertions of state sovereignty or private title in violation of the non-appropriation principle.

Furthermore, the Committee on Space Research, International Astronomical Union, International Academy of Astronautics, and the Moon Village Association have advanced the concept of lunar “Sites of Special Scientific Interest” (SSSIs).¹⁹⁴ On account of their immense scientific value, three types of lunar areas have been singled out as requiring careful management for them to co-exist with other human activities on the Moon. These SSSIs include (i) permanently shadowed regions at the lunar poles, (ii) sites that are uniquely suitable for astronomical observations (like the radio-quiet far side of the Moon), and (iii) scientifically significant unique features (such as lava tubes which provide access to sub-surface lunar environments).¹⁹⁵ Contamination by terrestrial waste, lunar dust kicked up by lunar landings, and geological deformation from ISRU activities or human settlement, are among the risks to SSSIs.¹⁹⁶ Preserving the integrity of these fragile lunar environments for scientific investigation would again depend on reaching international consensus on identifying SSSIs and prioritizing the activities therein.¹⁹⁷ Even under the Accords signatories commit to use Safety Zones in a manner that encourages scientific discovery and technology demonstration, as well as the safe and efficient extraction and utilization of space resources.

¹⁹⁴ *The Need for the Designation and Preservation of Sites of Special Scientific Interest (SSSI) on the Moon*, COPUOS Legal Subcommittee, UN Doc A/AC.105/C.1/2025/CRP.18 (2025).

¹⁹⁵ *Ibid*, paras 9–13.

¹⁹⁶ *Ibid*, para 5.

¹⁹⁷ *Ibid*, para 19.

Conclusion

With over half the States Parties to the OST now having joined the Artemis Accords, the US-led endeavour certainly represents a milestone in international space cooperation, and in the evolution of principles for guiding the extraction and utilization of space resources. Following the introduction of the Accords, countries from both the developed Global North and those from the developing Global South have begun devoting far more attention to space resources in their legal and policy frameworks. Among the countries with full-fledged space programs, and those which have invested significant financial sums into their space sectors, this encompasses not only activities for scientific investigation and ISRU but also commercial purposes. However, in countries where space exploration is just lifting-off, the recognition of space resources is limited, at least for the moment, to activities meant for science and ISRU. Relatedly, owning and transacting in space resources has only received sparse legal acceptance, whereas the Accords' proposed Safety Zones mechanism have not been explicitly provided for in any of the signatories' space statutes or policies. These aspects would thus require concerted deliberations within the COPUOS in order to flesh out their legalities.

This paper dealt with the domestic space law of signatories to the Artemis Accords, but a similar exercise could also be undertaken for the countries participating in the ILRS project, especially China and Russia. This paper includes copious references to the positions taken by countries before the COPUOS, and an analysis of submission to the Legal Subcommittee and its Working Group on Space Resources could be a further topic of research. Lastly, several countries, like the US, Canada, UK and Australia, have displayed a considerable resistance to regulating space resources activities through legally binding instruments, due to apprehensions that this might hamper technological progress. Yet another area of research could thus be into

how the Pacing Problem¹⁹⁸ and Collingridge Dilemma¹⁹⁹ may be effectively tackled in space resources activities through the right balance between binding rules and non-binding guidelines.

¹⁹⁸ Governance of nearly all emerging technologies is plagued by the challenge that innovation leapfrogs whereas regulations crawl at snail's pace (see Gary E Marchant, "The Growing Gap Between Emerging Technologies and the Law" in *The Growing Gap Between Emerging Technologies and the Law* (Dordrecht: Springer, 2011) 19).

¹⁹⁹ David Collingridge has articulated a central problem concerning the regulation of technology—when controlling technology is easy, the need for it is difficult to foresee; and when the need is apparent, regulatory change has become difficult (see Angeliki Vourdakís, "What is the Collingridge dilemma and why is it important for tech policy?" (15 February 2022), online: *Demos Helsinki* <<https://demoshelsinki.fi/what-is-the-collingridge-dilemma-tech-policy/>>).