

Seizing the High Ground: The Case for U.S. Leadership in Space Mining

By
Rachel Butler

Since the Cold War, space has served as a powerful symbol of American identity. It is an arena where national pride, technological daring, and the spirit of exploration converge. It has embodied the same frontier ethos that once drove the settling of the West, while simultaneously showcasing the unity and resolve that defined U.S. competition against rival powers. Yet as space becomes increasingly contested, that legacy of exploration and resolve must now address a new challenge: the rise of space mining.

Advances in space technology are making the extraction of lunar and asteroid materials increasingly feasible. These capabilities promise the potential for significant economic gains, greater energy security, and new avenues of geopolitical influence for any spacefaring nation capable of developing and sustaining resource-extraction operations. As competition accelerates, the question is no longer whether space mining will occur, but who will shape the rules, norms, and capabilities that govern it.

To preserve American power in space, the United States must take formative policy action and protective research and development (R&D) measures to define the future of space mining before rival nations do. Building on the strategic momentum established in the space domain during the first Trump Administration, namely the creation of the U.S. Space Force, securing an early foothold in space mining will help counter adversarial efforts to undermine American leadership and preserve space as a key frontier for American power.

Formative Policy Action in Space Mining

In emerging domains, the first actors often leave a legacy that serves as a reference point for subsequent laws and behavior, such as the [Outer Space Treaty \(OST\) of 1967](#). During the Cold War, the U.S. and the Soviet Union pushed outer space beyond its initial symbolic and scientific uses. Concerns over nuclear escalation prompted the creation of a legal framework that addressed non-weaponization and restrictions on national sovereignty. Despite approaching its 60th anniversary, the OST remains a foundational pillar of outer space governance, demonstrating how proactive U.S. leadership defined the rules of engagement and established operational precedents in an emerging domain. Sustaining this proactive approach is critical if the U.S. is to seize the strategic opportunities in outer space.

Space mining is among the more recent technical opportunities to emerge, alongside [satellite constellations, orbital maneuvering, and AI-enabled platforms](#). Yet space mining is unique in that it offers potential energy security and trillions of dollars in economic value to those possessing return-to-Earth capabilities (currently limited, forcing a focus on [in-situ resource utilization](#) (ISR) for propulsion and life support). According to [NASA's Asterank database](#), extracting resources from the ten most cost-effective asteroids could yield profits exceeding \$1.5 trillion. The promise of energy resilience and economic gain has captured the attention of global powers and middle-state actors alike, leading to a growing number of spacefaring nations and sparking geopolitical friction.

The [U.S.](#) and [Luxembourg](#) were among the first to formalize space mining in their legal frameworks, recognizing outer space resources as property subject to ownership and commercial trade. Conversely, Russia cites the Outer Space Treaty's designation of space as the "[province of all mankind](#)" as a basis for prohibiting resource extraction and ownership. In response to the Trump Administration's proposed lunar mining initiatives, Russian officials went so far as to accuse the U.S. of orchestrating an "[invasion](#)" of the Moon, likening it to "[another Afghanistan or Iraq](#)." Russia's actions, however, contrast sharply with its public stance, given its willingness to explore an [agreement on space mining with Luxembourg in 2019](#).

Yet American space mining laws have been relatively insulated from further international criticism because they align with formative international frameworks. For example, the [U.S. Commercial Space Launch Competitiveness Act of 2015](#) reflects [Article II](#) of the OST, which prohibits national appropriation of celestial bodies. Additionally, the [2020 National Space Policy](#) aligns with the [Artemis Accords](#) by emphasizing transparency in national space policies and space exploration plans, as well as the sharing of scientific information. The legitimacy of U.S. legal principles has been strengthened by demonstrating its commitment to sharing the space domain as a collaborative partner while advancing its own interests and strategic advantages.

Critical questions about access to mining sites, extraction limits, and fair participation remain unanswered because frameworks such as the OST predate the concept of space mining. Addressing these questions and providing certainty before capabilities mature or competing nations establish their own frameworks is essential to preserving a U.S. strategic advantage in space.

Protective R&D Measures for Space Mining Capabilities

As the future of space mining and its economic potential threaten to catalyze geopolitical tensions, it is crucial for the U.S. not only to be among the first to establish governance frameworks but also to develop tangible space mining capabilities. Yet space is no longer a domain of uncontested U.S. dominance, as China has evolved from a near-peer to a peer competitor. Initiatives such as the Tiangong Space Station and the International Lunar Research Station underscore [China's growing space capabilities](#) and its ambitions to assume a leadership role.

China's rapid rise may be attributed in part to its exposure to U.S. space technologies, as bilateral cooperation agreements have provided avenues for interaction with U.S. research and development efforts. Despite the [Wolf Amendment](#), which prohibits bilateral cooperation with China without explicit authorization from Congress and the FBI, numerous violations of the provision have likely conferred strategic benefits on China, eroding the competitive edge the U.S. seeks to maintain. In 2024, the Office of the Inspector General investigated a state [University for violations of the Wolf Amendment](#) and announced in December that the University [agreed to pay \\$715,580](#) to resolve civil allegations. When applying for and receiving NASA research grants, the University failed to disclose a professor's affiliations with and support from the Chinese government. Similarly, according to [a report](#) published by the Select Committee on the Strategic Competition Between the U.S. and the Chinese Communist Party

(CCP), hundreds of articles crediting NASA funding were identified that were jointly published by U.S. researchers (including public universities and federal research entities) and CCP institutions. In early February 2026, [the University of Texas at San Antonio agreed to pay nearly \\$130,000 in penalties](#) after federal investigators alleged that the lead principal investigator for a NASA-funded Center for Advanced Measurements in Extreme Environments failed to disclose affiliations with researchers in China.

[China's sustained intellectual property theft](#) is eroding U.S. dominance in space and diminishing the impact of formative U.S. space mining policy measures. Prioritizing R&D for space mining, particularly return-to-Earth capabilities, is a central focus for spacefaring nations and must be a priority for the United States. However, R&D initiatives must be paired with enforceable oversight structures that protect intellectual property from adversarial appropriation. Enforcement entities should also demonstrate a clear commitment to implementing protective measures and punishing violators. Without such protections, any research investments risk benefiting adversarial states as much as the U.S., as evidenced by instances in which China has capitalized on U.S.-funded advancements.

Conclusion

Although the U.S. is facing increasing demands across emerging warfighting domains, with numerous competing national security concerns, space resource governance and capability development can no longer be sidelined. The U.S. must act decisively and with strategic clarity to build the legal and behavioral foundations for space mining, and to enact protections for space mining R&D, as competitors advance their own initiatives. Space mining has become a strategic imperative, one that this Administration must seize to ensure that American values, interests, and leadership define this emerging domain, resource governance and capability development resource governance and capability development.

Rachel Butler is a doctoral student in the Department of Defense and Strategic Studies at Missouri State University. She holds master's degrees in history and strategic studies, with research interests focused on ethical and cognitive warfare. Views expressed in this article are the author's own.