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GLOBAL LEGAL AND POLICY DEBATES PERTAINING TO LUNAR IN-SITU RESOURCE
UTILISATION

Abstract

In-situ resource utilisation (ISRU) refers to the generation of products for human or autonomous use from local materials found on the Moon or other planetary bodies. Key products of interest for space activity include H₂O for propellant, as well as O₂ and H₂O for life support and agriculture. Conducting ISRU on the Moon could enable humans to live and work in deep-space for many months or years, reducing the cost and risk of human exploration of the Moon and beyond. In the long-term, it is possible that commercial entities could generate revenue by collecting and selling these materials. Products such as He-3 and rare earth minerals such as scandium and yttrium provide value back on Earth for nuclear fusion as a clean energy source and in modern electronics, respectively. However, resources on the moon are not uniformly distributed, and not unlimited, hence there may be significant advantages for those that are first to locate and exploit these resources. This has generated significant private and public sector interest in moon mining.

While technical challenges remain, international policy challenges may pose the greatest barrier to the development of these activities. From an international perspective, the Outer Space Treaty, signed and ratified by all major space actors, prevents any actors from claiming sovereign ownership of the Moon or other celestial bodies. The Moon Treaty, which was not ratified by the United States, China, Russia, or most other major space-faring nations, requires that any resources collected from the Moon be shared equitably between all nations, as determined by an international organization. Given the lack of detailed guidance in international agreements, a number of nations have offered other perspectives, based on alternate interpretations of the Outer Space Treaty, some of which have been codified in law or international agreements. These efforts to codify national laws have also been pursued by the United States, the United Arab Emirates, Luxembourg, and Japan. This paper analyses the stated plans and programs of nations and companies around the world with regard to Lunar resource extraction, and discusses the global legal and policy debates surrounding these activities. We go beyond the basic question of whether lunar material can be used, examining positions and debates dealing with issues such as the methods for making claims, safety zones, and resolution of conflict. We provide recommendations relevant to nations interested in promoting sustainable Lunar development.