

60th IISL COLLOQUIUM ON THE LAW OF OUTER SPACE (E7)  
9th Nandasiri Jasentuliyana Keynote Lecture on Space Law and Young Scholars Session (1)

Author: Mr. Federico Bergamasco  
Italy

SPACE MINING AND THE ENFORCEMENT OF ENVIRONMENTAL PROTECTION MEASURES IN  
THE LIGHT OF ARTICLE IX OF THE OUTER SPACE TREATY

**Abstract**

The last decade has witnessed the launch of several companies committed in the ambitious project of extracting natural resources from the celestial bodies of our solar system. The United States and the Grand Duchy of Luxembourg have taken the first regulatory initiatives in the field, triggering an intense debate over the interpretation of the Outer Space Treaty, in particular of its Article II. Next to the principle of non-appropriation, a paramount regulatory aspect that will influence the future space mining operations is the environmental protection of outer space and of celestial bodies. The framework principle for the protection of the space environment is provided by Article IX of the Outer Space Treaty. This paramount provision, despite being fully applicable to the extraction of natural resources, suffers the absence of an implementing legal regime tailored to meet the risks which derive from such activities. Consequently, there is wide discussion on the need to progress further in the development of a dedicated international system of norms. The development of such system – which is already proving to be controversial - shall take in account a further obstacle, i.e. the difficulty of enforcing the norms and ensure compliance by private companies in a unique and still unexplored field such as space mining. The challenges have a double nature: physical, given the extreme conditions of the environment and the remoteness of the interested areas; and legal, given the particular status of the space environment, which is *res communis omnium*, and the weakness of the enforcement mechanisms generally proper to public international law. Further problems involve the necessity to adopt harmonized laws at national level and to avoid the phenomenon of flag of convenience, where companies might attempt to register in States with a lenient or absent legislation in order to escape environmental protection constraints. The aim of the present paper is to identify the potential difficulties of enforcing environmental protection measures in such remote locations and to suggest potential solutions. In this sense, it is appropriate to take in account the principles established in different legal domains such as the international instruments protecting the terrestrial environment and the national legislations regulating traditional mining activities. Consistency with the principles established by the *corpus juris spatialis*, and in particular with Article IX of the Outer Space Treaty, needs also to be guaranteed.