

# Legal Regimes for a Sustainable Space Resource Utilization

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Over the last few years, there is an intense debate on the development of commercial activities in outer space, of a private character. This discussion presupposes the existence of relevant intentions, the attraction of significant investment and the development of the necessary technology, so that said activities have a promising future.

This presentation focuses essentially on the legal feasibility of the so-called "space resource utilization", which is nowadays in the heart of the legal analysis.

# Space Resource Utilization

The term “Space resource utilization” either refer to:

- In-situ resource utilization (ISRU); or to:
- Commercial appropriation of space resources.

ISRU is the collection, processing, storing and use of materials encountered in the course of human or robotic space exploration that replace materials that would otherwise be brought from Earth to accomplish a mission critical need at reduced overall cost and risk.

(Sackstender & Sanders, "In-Situ Resource Utilization for Lunar and Mars Exploration", 2007)

ISRU is a lawful activity on the basis of article I paras. 2 and 3 of the Outer Space Treaty, as it serves the freedoms of use, exploration and scientific investigation of outer space and does not constitute appropriation.

On the other hand, “space resource utilization” can denote commercial appropriation of space resources: This is essentially the object of Title IV of the **US 2015 Space Competitiveness Act**, entitled: **“Space Resource Exploration and Utilization”**. Under this Title, it is provided that:

“A United States citizen engaged in commercial recovery of an asteroid resource or a space resource under this chapter shall be entitled to any asteroid resource or space resource obtained, including to possess, own, transport, use, and sell the asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of the United States”.

Current legal discussion deals with the conformity of this provision with international law.

Despite the arguments advanced in doctrine in favor of the permissibility of space resource utilization/appropriation, it seems that this is not the case under international space law in force, for the following reasons:

## “Freedom of Use” v. Non-appropriation

Article I (2) of the Outer Space Treaty establishes the principle of freedom of exploration and use of the outer space:

“Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and shall be free access to all areas of celestial bodies”.

However, this “freedom of exploration and use” is not limitless: It must be interpreted in the light of art. II OST, which sets out the principle “of non-appropriation”:

“Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means”.

Same principle is contained in art. 11(2) of the Moon Agreement:

“The Moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means”.

In accordance with the prevailing view at present, the expression “national appropriation” prohibits both the exercise of sovereign rights (by States) AND private appropriation (by non-governmental entities). This conclusion is further strengthened by the clear wording of art. 11(3) of the Moon Agreement, according to which

“Neither the surface nor the subsurface of the Moon, nor any part thereof or natural resources in place, shall become property of any State, international intergovernmental or non-governmental organization, national organization or non-governmental entity or of any natural person”.

Consequently, in view of the principle of non-appropriation, it is hard to see how (State or private) property rights can be legally established in outer space.



## Humankind, a subject of International Space Law

Furthermore, space law in force pushed towards a collective exploration and exploitation of outer space, through the concept of **“province of all mankind”** (art. I of the OST) as well as the adoption of a collective exploitation regime of the Moon and the celestial bodies, at least in principle (art. 11 par. 5 of the 1979 Moon Agreement). Article V of the OST considers astronauts as **“envoys of mankind in outer space”**, while Article 11(1) of the Moon Agreement stipulates that **“The Moon and its natural resources are the common heritage of mankind”**.

On the basis of these provisions, it seems that Humankind *per se* can be validly considered **as a distinct subject of international space law**. Such an acceptance implies a right of every State to require any activity in outer space be exercised in the interest of all States, in other words in the interest of (Hu)mankind.

## Province of Mankind, Common Heritage of Mankind

Nevertheless, some scholars consider that a distinction must be made between the two concepts: "Province of all mankind", "Common heritage of mankind": According to this point of view, the 'province of all mankind' concept does not establish any obligation to share the benefits derived from outer space activities. By contrast, under the 'Common Heritage of Mankind' concept, the exploration and exploitation of a certain 'area' and its resources shall be carried out in accordance with the rules established by an international regime or authority.

In any case, the essence for both concepts ("Province", "Heritage") lies in the *"common interest of mankind"*: According to the Preamble of the Outer Space Treaty, there is a "common interest of all mankind" in the progress of use of outer space, whereas such "use" "should be carried on for the benefit of all peoples, irrespective of the degree of their economic or scientific development". This "common interest of mankind" in outer space had already been recognized in the "historic" UNGA Resolutions 1348(XIII) of 13 December 1958, 1472(XIV) of 12 December 1959, 1721(XVI) of 20 December 1961, 1962(XVIII) of 13 December 1963, and, relatively recently, 55/122 of 27 February 2001.

The origins of the “Common heritage of mankind concept can be found back to a proposal of Malta to the UN Secretary General, through its representative Arvid Pardo: By note verbale dated 18 August 1967, Malta proposed the inclusion in the agenda of the 22<sup>nd</sup> Session of the UN General Assembly the adoption of a Declaration concerning the international regulation of the sea-bed and the ocean floor. In a historic statement before the First Committee of the United Nations, on November 1<sup>st</sup>, 1967, Pardo, *inter alia*, stated:

“In the light of current technological developments..., the compromise turns out to be no compromise at all; it is clear that the sea-bed beyond the 200-metre isobath will soon be subject to exploitation. The only question is, **will it be exploited under national auspices for *national* purposes, or will it be exploited under international auspices and for the benefit of mankind?...** The sea-bed and the ocean floor are a **common heritage of mankind** and should be used and exploited for peaceful purposes and for the exclusive benefit of mankind **as a whole**”.

It is certainly a fact that the industrialized countries have shown no intention to share the noble aspirations of Arvid Pardo, both with respect to the ocean depths as well as in relation to the Moon and other celestial bodies. This reluctance, derived from their technological superiority, dictated to them an approach of the "common heritage of mankind" concept which essentially meant "all States shall have access to the outer space resources (although, for some of them, the Moon is too far)". Thus, the dispute over the interpretation of the "Common Heritage" doctrine led to the formation of the following question:

equitable sharing (of benefits) or equal access (to space resources)?

## The Essence of “Humankind”

Thus, the fundamental concept is finally put forward: Whether the outer space is “the province of all mankind” either “the common heritage of mankind”, in any case the dominant conceptual element remains the same: It is “*(hu)mankind*” that charges both concepts.

**Humankind, as a notion, is based on consistency, not on division:** It is thus a profoundly different concept from “every nation”. Gorove emphasized this sense of community, when he considered that humankind describes “a collective body of peoples wherever they may be found”.

Although States (at least some of them) have tried to overlook the collective element contained in the “*(hu)mankind*” term - especially since its reference to the Outer Space Treaty takes place the same year that Pardo makes his monumental speech before the first Committee (1967) – its inclusion in the existing international legal instruments adversely affects the acceptance of private business activities in space.

## International v. national (space) law

Outer space belongs to the so-called **global commons**, which include spaces beyond national jurisdictions (High Seas, Deep Sea-Bed, International airspace, Antarctica). This is clear in the combined reading of articles I paras. 1 and 2 OST: "The exploration and use of outer space... shall be carried out for the benefit and in the interests of all countries... and shall be the province of all mankind. What is more, "outer space... shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies". The absence of any national jurisdiction is also patent in the principle of non-appropriation, enshrined in article 2 OST.

**Any activity in outer space is regulated by international law.** This is apparent in the combined reading of articles I, III and VI of the OST. Although Article VI leaves room for “national” activities in outer space, Article III provides that “States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the Moon and other celestial bodies, **in accordance with international law, including the Charter of the United Nations,** in the interest of maintaining international peace and security and promoting international cooperation and understanding”. The applicability of international law is further reinforced by Article I, where it is stipulated that “Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality **and in accordance with international law**”. Article III OST sets a binding obligation, which was universally accepted by the main Powers of the 60’s during the drafting of the Outer Space Treaty.

With respect to the exploration and exploitation of outer space, international space law in force mainly comprises the Outer Space Treaty and the Moon Agreement (MOON). Up to now, 18 States have ratified the MOON which provides, in its Article 11, for an international regime of exploitation of the natural resources of the Moon, "as such exploitation is about to become feasible". For the majority of States that have not yet ratified said instrument, the international norms applicable to the exploration and exploitation of outer space are the relevant provisions of the Outer Space Treaty of 1967. In this context, particular attention must be given to the (aforementioned) articles I and II OST.

The applicability of international law with respect to activities in outer space is, at least implicitly, recognized by national space legislations, which, in general, delimit their scope of application to matters that, although related to outer space, are closely linked with territorial sovereignty and state jurisdiction on Earth:



For instance, the **Belgian Space Law of 17 September 2005** and the **Greek Law 4508/2017** mainly regulate topics such as the licensing of space activities, the transfer of activities, national registration of space objects as well as liabilities, counterclaims and measures in the event of falling space objects. What is more, the primacy of international law is almost explicitly recognized, as articles 2 and 4 of the Belgian Law provide that its applicability is limited, *rationae loci*, to places under the jurisdiction and control of Belgium, whereas the applicability of international norms with respect to outer space activities, enshrined in Article III OST, is solemnly repeated.

## An International Governance for OS Activities

It follows that the global governance of outer space activities is forcibly of international character. Given the nature of outer space as a *global common* and taken into consideration the explicit applicability of international law in this regard (through Articles I para. 2 and III OST), it can be validly concluded that the rules in force with respect to the governance of the celestial bodies as well as of the “empty” space [including orbits around the Earth or a(nother) celestial body] are international rules. **Consequently, activities in outer space, either public or private in nature, are governed by international law.**

Such an international governance of space activities, in order to be effective, requires, in the medium- or long term, **the establishment of an international institutional framework.** Past legal experience in this respect includes the administration of international airspace by ICAO or the administration of Ocean seabed by the International Seabed Authority (UNCLOS, Part XI combined with the 1994 Agreement). It is hereby proposed that the establishment of an international governance framework for outer space activities constitutes a *sine qua non* condition for an efficient, lawful and sustainable exploitation of outer space resources, independently of the nature of the stakeholders involved.

These comments do not mean that commercial activities in outer space, of a private nature, should be discouraged. On the contrary, they are about to expand in the near future.

Nevertheless, in the light of the desire of some States to put the famous “use of outer space” concept in a business perspective, it seems that current international space law might prove insufficient in this respect.

Besides, it must be kept in mind that other important issues for an effective and secure commercial exploitation of outer space – as the **protection of the space environment** or the creation of a **space traffic management system** – should also need, in the near future, the intervention of State authorities through the undertaking of relevant international action. What is more, new concepts emerge: **the long-term sustainability of outer space activities** and the **Space 2030 Agenda** constitute additional factors and goals that ask for a **rational** and **equitable** use of outer space resources, which cannot be achieved through unilateral initiatives: an interesting model, in this respect, is provided by the **ITU Constitution**, which dictates the “rational, equitable, efficient and economical use of the radio-frequency spectrum by all radiocommunication services” (art. 12).

**IN CONCLUSION,** space resource utilization in the form of appropriation, in order to be legally authorized, should meet certain criteria: It should take into consideration the common interest of Mankind, it should be compatible with and serve the UN sustainable development goals and the Space 2030 Agenda, it should be governed by international law. In this respect, there is a lot to be done: update/amend the international legal framework in force or create a new, comprehensive one (UNCLOS could serve as model), COPUOS' competencies should be enhanced, new international entities should be created (the International Seabed Authority could be a model). Of course, for the time being, this is a *de lege ferenda* approach; our ability to do so will depend on whether there is enough political will to provide a stable and secure legal regime for space resource utilization.

**Thank you!**