

Utilization of Natural Resources in Outer Space: Social License to Operate as an Alternative Source of Both Legality and Legitimacy

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Abstract

In recent years, utilization of space resources has become an increasingly important topic. However, insufficient legal framework effectively discourages private investors from making any substantial investments in extraterrestrial mining. Although there are several ongoing initiatives aimed at establishing an international legal framework, either under the auspices of the UN COPUOS or beyond (The Hague International Space Resources Governance Working Group), the slow pace of these international deliberations often encourages private companies to start thinking about alternative sources of legitimacy. As a response to significant uncertainty surrounding legality and conditions under which space resources can be utilized, some private investors pressed national governments to take some action. Against this backdrop, the US Commercial Space Launch Competitiveness Act and Luxembourg Law on Exploration and Use of Space Resources were enacted. Nonetheless, national legislations can never bypass the lack of an international legal framework applicable to an area beyond national jurisdictions, and compatibility of national legislations granting the property rights in space resources has been explicitly and frequently questioned by various delegations at the UN COPUOS and legal scholars. In this context, the paper explores a theoretical applicability of the Social License to Operate (SLO) concept to the utilization of space resources. The authors discuss whether SLO can serve as an alternative source of legitimacy and may satisfy the vague requirements set forth by the Outer Space Treaty.

1. Introduction

In recent years, utilization of space resources has become a topic of growing importance. Space resources including minerals, metals and gases could potentially be used directly in space as a source of energy or for the construction of lunar/celestial infrastructure,¹ or brought back to Earth to support its economic needs.² Due to the rapid technological development and adequately large financial capacities of private investors, extraterrestrial mining is now within the realms of the probable. In this context, initiatives seeking to build space economy such as the SpaceResources.lu argue that “space mining could open up a wealth of new resources and opportunity to build economies beyond what we have on Earth today and allow humans to become an interplanetary species”.³

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¹ JD Burke, ‘Development of a Lunar Infrastructure’ (1988) 17 Acta Astronautica 669.

² Luxembourg Space Agency, ‘Frequently Asked Questions about Space Mining’ <<https://space-agency.public.lu/en/space-resources/faq.html>> accessed 1 September 2019.

³ *ibid.*

A major obstacle for the utilization of space resources is the lack of a legal framework.⁴ Until such a regime is established, legality of space resource activities and conditions under which these activities have to be carried out can only be derived from general principles of international space law enshrined in the Outer Space Treaty (OST). However, these are of general nature and vague character, far from being precise enough to serve as a legal basis for a long-term investment decision to launch space mining operations.⁵ Against the background of resources needed to be committed by investors, the lack of a legal framework effectively discourages private investors from making any substantial investments in space mining activities. It is not surprising that no commercial space mining activities have ever been launched.

It is broadly accepted that the utilization of space resources is an area prompting the need for an extensive new legal framework.⁶ At the international level, space resource activities are systematically discussed within the UN COPUOS since 2017 under an item “*General exchange of views on potential legal models for activities in exploration, exploitation and utilization of space resources*”.⁷ However, the UN discussions revealed a divergence of views of states on fundamental aspects of space resource activities. Two years of discussions resulted in the informal consultations on the establishment of a working group on the development of an international regime for utilization and exploitation of space resources scheduled for 2020.⁸

Being exposed to a significant legal uncertainty about the content of the international space law principles, the mining industry has moved to press for alternative means of ensuring the necessary and reliable legal framework. Efforts of the US private investors (Planetary Resources and Deep Space Industries) pressing the United States to take some action have resulted in the adoption of the 2015 US Commercial Space Launch Competitiveness Act including the Title IV dedicated to space resource exploration and utilization.⁹ Taking the same path, Luxemburg passed the Law on Exploration and Use of Space Resources in 2017,¹⁰ and the United Arab Emirates has expressed its intention to regulate space mining at

⁴ According to Prof. Tronchetti, a major reason for explaining the fact that states and private operators have not started to exploit the resources of the Moon and other celestial bodies yet is the absence of rules setting out how this exploitation should be carried out. See Fabio Tronchetti, *The Exploitation of Natural Resources of the Moon and Other Celestial Bodies: A Proposal for a Legal Regime*, vol 4 (Martinus Nijhoff Publishers 2009) 2.

⁵ *ibid.*

⁶ Lotta Viikari, ‘Natural Resources of the Moon and Legal Regulation’ in Viorel Badescu (ed), *Moon* (Springer 2012) 523.

⁷ At the fifty-fifth session of the Legal Subcommittee of UN COPUOS held on 4-15 April 2016, member states agreed to include on the agenda of its fifty-sixth session the following new single item: ‘General exchange of views on potential legal models for activities in exploration, exploitation and utilization of space resources’. See UN COPUOS Legal Subcommittee, Report of the Legal Subcommittee on its Fifty-Fifth Session, held in Vienna from 4 to 15 April 2016, UN Doc A/AC.105/1113.

⁸ *ibid.*

⁹ Frans Von Der Dunk, ‘Asteroid Mining: International And National Legal Aspects’ 26 Michigan State International Law Review 83 <<https://digitalcommons.law.msu.edu/ilr/vol26/iss1/3>> accessed 1 September 2019; Fabio Tronchetti, ‘Title IV – Space Resource Exploration and Utilization of the US Commercial Space Launch Competitiveness Act: A Legal and Political Assessment’ (2016) 41 Air and Space Law 143.

¹⁰ Phillip De Man, ‘Luxembourg Law on Space Resources Rests on Contentious Relationship With International Framework’ KU Leuven Working Paper No. 189 – July 2017 <https://ghum.kuleuven.be/ggs/publications/working_papers/2017/189deman> accessed 1 September 2019.

the national level as well.¹¹ However, it remains questionable whether space resource activities can find their legal basis solely in national legislation. Divergence of views on conditions under which space resource activities would comply with international space law is likely to expose private investors holding national authorization for the utilization of natural resources in outer space to the spectre of adverse legal claims and international disputes.

Against the background of the abovementioned legal uncertainty, as well as unsatisfactory attempts to bypass the lack of an international regime by national law, this paper seeks to explore the applicability of Social License to Operate (SLO) as an alternative source of both legality and legitimacy ensuring a necessary legal certainty and making commercial utilization of space resources not only possible but also attractive for private investors.

The next chapter provides a brief introduction to international space law and explains its fundamental principles. The third chapter analyzes key features of SLO as a successful terrestrial concept developed to stabilize the socio-political environment for business. The authors consequently explore a theoretical applicability of SLO to the utilization of space resources and discuss whether SLO can serve as a source of legitimacy and may satisfy the vague requirements set forth by the OST.

2. Space Resource Activities in the Context of International and National Space Law

Outer space, an area beyond national jurisdictions, is governed by international public law. A current legal framework is composed of five international treaties (namely the Outer Space Treaty of 1967, the Rescue Agreement of 1968, the Liability Convention of 1971, the Registration Convention of 1976 and the Moon Agreement of 1979) and five sets of principles governing outer space.¹²

The Outer Space Treaty established fundamental legal principles applicable to activities in outer space and is often referred to also as the ‘Principle Treaty’, or the ‘Constitution of Space Law’.¹³ When the OST was drafted, exploitation of space resources was not considered feasible and thus, the treaty does not contain any specific reference to the space resource activities. Subsequent treaties were intended to be concluded once new problems emerge and a more detailed regulation is needed. Such was the process for the conclusion of the first three specific treaties – the Rescue Agreement of 1968, the Liability Convention of 1971, the Registration Convention of 1976.

Motivation for the conclusion of the fourth treaty – the Moon Agreement – has been clearly expressed in its preamble. The Moon Agreement was intended to “*promote, on the basis of equality, the further development of cooperation among states in the exploration and use of the Moon and other celestial bodies*” and “*to prevent the Moon from becoming an area of*

¹¹ ‘MidEast Set to Lead the Race in Space Mining’ (*Arabian Business*, 24 April 2017) <<https://www.arabianbusiness.com/mideast-set-lead-race-in-space-mining-671601.html>> accessed 1 September 2019.

¹² Five sets of principles governing outer space include the declaration of legal principles of 1963, the principles governing television broadcasting of 1982, remote sensing of 1986, nuclear power sources of 1992, and international cooperation in outer space of 1996.

¹³ Viikari (n 6) 524.

international conflict."¹⁴ Bearing in mind potential benefits which may be derived from the exploitation of natural resources of the Moon and other celestial bodies, the utilization of space resources is undoubtedly an area of potential conflict.¹⁵ Thus, the Moon Agreement declared the Moon and its natural resources to be the common heritage of mankind and parties to the Moon Agreement have undertaken to establish an international regime to govern the exploitation of natural resources "*as such exploitation is about to become feasible.*"¹⁶

However, this sole instrument of international space law addressing the utilization of space resources has been ratified only by 18 states and its widespread acceptance remains elusive. Thus, potential space resource activities would be governed only by general principles of international space law. It is worth mentioning that the international community has not produced any legally binding international law instruments since the Moon Agreement. Since only a few states formally support the Moon Agreement, this paper assumes that the regime suggested by the Moon Agreement has not been widely accepted and it is no longer considered to be a vital option for making the utilization of space resources possible.

2.1. Commercialization of Outer Space Activities

Nowadays, we may observe a growing tendency towards commercialization of outer space activities. Governments are no longer the only actors having necessary capabilities. On the contrary, non-state actors are clearly becoming leading actors in the outer space arena.¹⁷ However, international responsibility for national activities, whether such activities are carried out by governmental agencies or by non-governmental entities, is borne by state parties to the OST. Pursuant to art VI of the OST states are required to make sure that national activities are carried out in conformity with the OST. In other words, the OST has significant implications for commercialization of outer space activities because states are explicitly obliged to authorize and supervise any non-governmental activities.¹⁸

Therefore, an international legal framework governing space resource activities should be accompanied with respective laws and regulations adopted at the national level. The development of space activities and a subsequent engagement of non-state actors have been in many countries translated into national laws setting an authorization procedure and a supervision regime.¹⁹ It is worth mentioning that the US and Luxembourg went even further

¹⁴ Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (adopted 5 December 1979, entered into force 11 July 1984) 1363 UNTS 21 (the Moon Agreement) Preamble.

¹⁵ Nandasiri Jasentulyana, 'Conflict Resolution in Outer Space: New Approches - Old Techniques' in René Jean Dupuy (ed), *Le Règlement des différends sur les nouvelles ressources naturelles/The Settlement of disputes on the new natural resources* (Martinus Nijhoff Publishers 1983) 229.

¹⁶ The Moon Agreement (n 14) Article 11.

¹⁷ Stephan Hobe, 'The Impact of New Developments on International Space Law' [2010] UNCOPUOS 'Working Paper' 1 <<http://www.unoosa.org/pdf/pres/2010/SLW2010/02-12.pdf>> accessed 1 September 2019.

¹⁸ Hanneke L van Traa-Engelman, 'Commercialization of Space Activities' (1996) 12 Space Policy 119; Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (adopted by the General Assembly in its resolution 2222 (XXI), opened for signature on 27 January 1967, entered into force on 1 October 1967) 610 UNTS 205 (Outer Space Treaty or OST).

¹⁹ United Nations Office for Space Affairs, 'National Space Law Collection' <<http://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/index.html>> accessed 1 September 2019; Yun Zhao, 'Space Commercialization and the Development of Space Law' (2018) Oxford Research Encyclopedia of Planetary Science

and adopted national rules exclusively governing space resource activities.²⁰ Luxembourg legislation provides the licensing regime and sets out requirements to be met by applicants in order to obtain the authorization for a mission of exploration and use of space resources for commercial purposes.²¹

2.2. Utilization of Natural Resources in Outer Space: Identified Obstacles

According to the United Nations Conference on Trade and Development (UNCTAD), apart from the economic determinants (market size, cost of resources and other inputs such as costs of labor or the availability of natural resources), regulatory and political stability significantly affect attractiveness of countries for foreign investment.²² A predictable regulatory environment is equally important for investments in the utilization of space resources. Until it is universally accepted that international space law does not limit the property rights in space resources and conditions under which space resource activities have to be carried out are specified, private investors will avoid long-term investment commercial undertakings due to the above-mentioned risk factors as well as the spectre of adverse legal claims and international disputes.

In order to make the utilization of space resources by private investors possible and attractive enough, necessary legal frameworks at both international and national level must be established. Even though national legislations are currently available in the US and Luxembourg, the meaning and application of international space law is surrounded by uncertainty and controversies.²³

Since the international legal framework envisaged by the Moon Agreement has not yet been established, legality and conditions under which space resource activities are to be conducted can only be derived from the international space law principles enshrined in the OST. However, these are far from being precise enough to serve as a legal basis for long-term investments and fail to ensure a proper legal environment for the development of the commercial use of lunar and other celestial bodies' resources.²⁴

The major areas of controversy arise primarily from the ambiguity of language of the OST and include the very legality of space resource activities, the compatibility of space resource activities with the principle of non-appropriation and the interpretation of the common benefit clause.

<<https://oxfordre.com/planetaryscience/view/10.1093/acrefore/9780190647926.001.0001/acrefore-9780190647926-e-42>> accessed 1 September 2019.

²⁰ See Luxembourg Law on the exploration and use of space resources 2017 (LUX) or Title IV of the US Space Resource Exploration and Utilization of the US Commercial Space Launch Competitiveness Act 2015 (USA).

²¹ Frans von der Dunk, 'The US Space Launch Competitiveness Act of 2015' (2015) JURIST – Academic Commentary <<https://www.jurist.org/commentary/2015/11/frans-vonderdunk-space-launch/>> accessed 1 September 2019; De Man (n 10).

²² UNCTAD, *UNCTAD Series on International Investment Policies for Development: The Role of International Investment Agreements in Attracting Foreign Direct Investment to Developing Countries* (2009) 110 <https://unctad.org/en/Docs/diaeia20095_en.pdf> accessed 1 September 2019.

²³ Morgan Sterling Saletta and Kevin Orrman-Rossiter, 'Can Space Mining Benefit All of Humanity?: The Resource Fund and Citizen's Dividend Model of Alaska, the "Last Frontier"' (2018) 43 *Space Policy* 1.

²⁴ Tronchetti (n 4) 26.

2.2.1. Is the Utilization of Space Resources Implicitly Prohibited by the OST?

When the OST was drafted, exploitation of space resources was not considered feasible. Thus, the treaty does not contain any specific reference to space resource activities. However, silence of the OST does not necessarily imply unlawfulness of these activities. On the contrary, the freedom of exploration, use and access is one of the most fundamental principles of international space law. Art I of the OST reads: “*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 there shall be free access to all areas of celestial bodies.*”²⁵ It is worth mentioning that France already in 1966, during the negotiations of the OST, emphasised that it is important to know exactly what is meant by the term ‘use’, and whether it is an equivalent to the term ‘exploitation’.²⁶ While there is a general consensus on the interpretation of the term “exploration” as referring to discovery activities of the space environment for scientific reasons, a large disagreement exists concerning the term ‘use’.²⁷ In this context the Board of Directors of the International Institute of Space Law (IISL) hold that there is no international agreement whether the right of “free use” includes the right to take and consume non-renewable natural resources, including minerals and water on celestial bodies.²⁸

The authors of this article are of the opinion that the term “use” seems to be broad enough to encompass the exploitation of natural resources. Pursuant to the Vienna Convention on the Law of Treaties, a treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose. First, the term “use” usually refers to both the non-economic and economic utilization and, thus, the use of outer space for economic ends can include exploitation with the objective of making economic profit.²⁹ Second, the OST’s preamble reveals that the treaty does not aim to restrict the use of outer space, but rather to promote free exploration and use of outer space and the opposite interpretation would lead to an unnecessary impediment to the development of the uses of outer space.³⁰

What is more, these conclusions may also be derived from the Moon Agreement. Although this agreement has been ratified only by 18 states, it may help understand the meaning of the international space law principles enshrined in the OST. The preamble of the Moon Agreement refers to the “*benefits which may be derived from the exploitation of the natural resources of the moon and other celestial bodies,*” and art 11 envisages the establishment of an international regime to govern the exploitation of natural resources of the Moon. In

²⁵ Outer Space Treaty (n 18) art I.

²⁶ Summary Record of the Sixty-Third Meeting of the Legal Sub-Committee of the UN COPUOS, Consideration of a Treaty Governing the Exploration and Use of Outer Space and the Moon and Other Celestial Bodies (UN Doc. A/AC.105/C.2/SR.63) 8.

²⁷ Tronchetti (n 4) 22-23.

²⁸ International Institute of Space Law, ‘Position Paper on Space Resource Mining (20 December 2015) <<http://iislwebo.wwwnlss1.a2hosted.com/wp-content/uploads/2015/12/SpaceResourceMining.pdf>> accessed 1 September 2019.

²⁹ Stephan Hobe and others, *Cologne Commentary on Space Law. Vol. 1, Outer Space Treaty* (Carl Heymanns Verlag 2009) 34–35.

³⁰ Jinyuan Su, ‘Legality of Unilateral Exploitation of Space Resources under International Law’ (2017) 66 *International and Comparative Law Quarterly* 991.

addition, Hobe argues, that specific uses are only excluded if they are explicitly excluded in other provisions of the OST, such as prohibition of certain military activities.³¹

2.2.2. Does the Utilization of Space Resources Contradict the Principle of Non-Appropriation?

The principle of non-appropriation is one of the most fundamental rules regulating the exploration and use of outer space. Art II of the OST reads as follows: “*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.*” As a consequence, outer space is generally understood as a *res communis omnium*,³² in its legal characterisation similar to the law governing the high seas or the deep seabed. An analysis of these already existing regimes based on the non-appropriation principle reveals that an exploitation of natural resources is perfectly compatible with the principle of non-appropriation.³³

Additionally, even the Moon Agreement suggests that the exploitation of the natural resources of the moon does not constitute a means of appropriation. In particular, art 11 of the Moon Agreement reiterates that outer space is not subject to national appropriation and it explicitly envisages the establishment of an international legal regime to govern the exploitation of space resources.³⁴

2.2.3. How Does the Common Benefit Clause Affect Potential Utilization of Space Resources?

Art I of the OST reads as follows: “*The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interest of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.*” The co-called common benefit clause has been proved to be by far the most controversial principle of the OST relevant for the utilization of space resources. The clause is understood as a limitation to the rights granted by the same art (freedom of exploration, use and access). However, the precise content of the clause remains unclear, especially whether it amounts to an obligation of sharing the benefits of outer space activities. Hobe in this context concludes that art I underlines that to a certain degree also non-space-faring members of the international community should benefit from the results of space activities.³⁵

The most concrete document aimed at shedding light on the interpretation of the common benefit clause is the UNGA Declaration on Space Benefits.³⁶ It reveals that no general

³¹ Hobe and others (n 29) 35.

³² Sergio Marchisio, ‘National Jurisdiction for Regulating Space Activities of Governmental and Non-Governmental Entities (2010), presented during the UN /Thailand Workshop on Space Law Activities of States in Outer Space in Light of New Developments: Meeting International Responsibilities and Establishing National Legal and Policy Frameworks <<http://www.unoosa.org/pdf/pres/2010/SLW2010/02-02.pdf>> accessed 1 September 2019; Guyla Gál, *Space Law* (Oceana Publications 1969) 189-190.

³³ Both the deep seabed and the high seas are based on the principle of non-appropriation and both of them make utilization of natural resources legally possible.

³⁴ The Moon Agreement (n 14) art 11.

³⁵ Hobe and others (n 29) 42.

³⁶ UNGA Res 51/122 (13 December 1996) UN Doc A/RES/51/122.

obligations to grant benefits to non-space-faring nations are incumbent upon the space-faring nations.³⁷ On the other hand, this declaration does not explicitly address the utilization of space resources. The authors of this article are of the opinion that once space resource activities become feasible, some form of redistribution of profits obtained from space mining is likely to be advocated especially by developing countries. Thus, the common benefit clause and hypothetical redistribution of profits obtained from space mining may significantly hinder the creation of the stable legal environment necessary to encourage entrepreneurs to venture into space mining.³⁸ The authors of this paper argue that any activity carried out in outer space should comply with the common benefit clause. However, benefits and interests of all countries may be achieved in various ways.

Even more doubtful is the meaning of the OST's declaration that the use of outer space shall be the province of all mankind.³⁹ Taking into consideration state practice, it may be argued that the province of all mankind concept has been translated into the establishment of intergovernmental consortiums, such as INTELSAT enabling even non-space-faring members of the international community to use its respective facilities.⁴⁰ Since a fairly large number of countries, especially in the third world, could not afford to have a national satellite system, an international system such as INTELSAT⁴¹ has been the only means for them to have a guaranteed access to space benefits.⁴² On the other hand, an equitable access to the broadcasting satellites services has been internationalised only to a limited extent, and the International Telecommunication Union found the extent of equitable access to the limited natural resources of orbital positions dissatisfying.⁴³

3. An International Legal Framework and Alternative Sources of Legality and Legitimacy

3.1. Establishment of an International Legal Regime

Currently, there are several ongoing initiatives aiming to contribute to the establishment of an international legal framework for space resource activities. The most noteworthy attempts include informal consultations on the establishment of a working group on the development of an international regime for utilization and exploitation of space resources within the UN

³⁷ Hobe and others (n 29) 42.

³⁸ Edwin Paxson III, 'Sharing the Benefits of Outer Space Exploration: Space Law and Economic Development' (1993) 14 Michigan Journal of International Law 495.

³⁹ The common benefit clause and the province of all mankind recall the common heritage of mankind clause contained in the UNCLOS or the Moon Agreement. However, disagreements over the common heritage of mankind clause resulted in the absence of any substantial acceptance of the Moon Agreement. See Michael E Davis and Ricky J Lee, 'Twenty Years after the Moon Agreement and Its Legal Controversies' (1999) Australian International Law Journal 19–20 <<http://classic.austlii.edu.au/au/journals/AUIntLawJl/1999/4.pdf>> accessed 1 September 2019; Ricky Lee, *Law and Regulation of Commercial Mining of Minerals in Outer Space* (Springer 2012) 216-217.

⁴⁰ Daniel Porras, 'The "Common Heritage" of Outer Space: Equal Benefits For Most of Mankind' (2006) 37 California Western International Law Journal 172.

⁴¹ Due to pressure from both within and without the INTELSAT, the 24th INTELSAT Assembly of Parties in 1999 resolved to transform INTELSAT from a public intergovernmental treaty organization into a private corporation. See Hans F Ulrich and Ernst P Lehrmann, *Telecommunications Research Trends* (Nova Science Pub Inc 2008) 62.

⁴² Ram Jakhu, 'Legal Issues Relating to the Global Public Interest in Outer Space' (2006) Journal of Space Law 70.

⁴³ Hobe and others (n 29), 41.

COPUOS scheduled for 2020,⁴⁴ and activities of The Hague International Space Resources Governance Working Group created as a forum to discuss legal questions regarding the use of space resources and to prepare the ground for future negotiations of an international agreement or a non-legally binding instrument.⁴⁵ Nonetheless, due to divergent views among governments expressed at the UN COPUOS and a non-legally binding character of the Building blocks for the development of an international legal framework for space resource activities negotiated by The Hague International Space Resources Governance Working Group, an international legal framework is not likely to be established in the near future.

It is worthy to mention that the most often discussed examples of management of international areas and their natural resources beyond national jurisdictions include the Antarctic Treaty System,⁴⁶ the International Telecommunication Union⁴⁷ or the Area under the United Nations Convention on the Law of the Sea.⁴⁸

3.2. National Legislations

Against the background of the lack of an international legal framework, companies seeking to invest in the utilization of natural resources in outer space press for alternative means. As mentioned above, efforts of the US private investors (Planetary Resources and Deep Space Industries) have resulted in the adoption of the 2015 US Commercial Space Launch Competitiveness Act including the Title IV dedicated to space resource exploration and utilization,⁴⁹ Luxembourg passed Law on Exploration and Use of Space Resources in 2017,⁵⁰ and the United Arab Emirates has expressed its intention to regulate space mining at the national level as well.⁵¹

These national legislations should be understood as an implementation of art VI⁵² of the OST because only a legal framework established at the national level can ensure that space activities carried out by non-state entities are effectively authorized and supervised. However, apart from putting the authorization procedure in place, both the US and Luxembourg do

⁴⁴ Report of the Committee on the Peaceful Uses of Outer Space Sixty-Second Session (12–21 June 2019) UN Doc A/74/20; Report of the Legal Subcommittee of the UN COPUOS on Its Fifty-Eighth Session (1 to 12 April 2019) UN Doc A/AC.105/1203.

⁴⁵ In 2017 the Working Group circulated the draft building blocks for the development of an international legal framework on space resource activities; its final version is expected to be finalized in November 2019. See Leiden University International Institute of Air and Space Law, ‘The Hague International Space Resources Governance Working Group’ <<https://www.universiteitleiden.nl/en/law/institute-of-public-law/institute-for-air-space-law/the-hague-space-resources-governance-working-group>> accessed 1 September 2019; The Hague Space Resources Governance Working Group Information provided by the Netherlands during the Fifty-Seventh Session Committee on the Peaceful Uses of Outer Space Legal Subcommittee (9–20 April 2018) UN Doc A/AC.105/C.2/2018/CRP.18.

⁴⁶ Tronchetti (n 4) 132-159.

⁴⁷ *ibid.*

⁴⁸ Armel Kerrest, ‘Contribution of the Deep Seabed Mining Legal Regime to Space Resource Activities presented on 1 April 2019 at the IISL/ECSL Space Law Symposium 2019 “The Moon Agreement Revisited: The Road Ahead”’ <<http://www.unoosa.org/oosa/en/ourwork/copuos/lsc/2019/symposium.html>> accessed 1 September 2019; Lee (n 39) 203-256; Sterling Saletta and Orrman-Rossiter (n 23) 2-3.

⁴⁹ Von der Dunk and (n 9) 93-99; Tronchetti (n 9) 147-148.

⁵⁰ De Man (n 10).

⁵¹ ‘MidEast Set to Lead the Race in Space Mining’ (n 11).

⁵² “The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty.” *See* OST art VI (n 18).

effectively address some above-mentioned legal uncertainties arising from international law, particularly the legality and the compatibility of authorized space resource activities with the principle of non-appropriation. More specifically, Luxembourg legislation stipulates that legal persons having their registered office in Luxembourg may apply for an authorization for a mission of exploration and use of resources for commercial purposes, and acknowledges that space resources are capable of being appropriated. The US Commercial Space Launch Competitiveness Act declares: “*the United States citizens (...) 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 international obligations of the United States.*”⁵³

Nonetheless, none of the abovementioned national legislations address the uncertainty associated with the common benefits clause stipulating that space resources are to be carried out for the benefit and in the interest of all states, and that the exploration and use of outer space is the province of all mankind. Since neither the US nor Luxembourg impose any obligation on non-state entities to share benefits, it is questionable whether the future authorized activities will be considered as being compatible with international space law. Such a compatibility has been explicitly and frequently questioned by various delegations at the UN COPUOS⁵⁴ and legal scholars.⁵⁵

In particular, some delegations at the UNCOPUOS expressed their concerns that the national legislation unilaterally enacted to protect property rights in space resources may amount to a sovereignty claim or a national appropriation, and thus could constitute a violation of the OST. The point has been raised that only a multilateral approach to addressing issues of space resource extraction from the Moon and other celestial bodies could ensure that states adhered to the principle of equality of access to space, and that the benefits of the exploration and use of outer space were enjoyed by all humanity. It is worth noting that some delegations argued that resolving a legal aspect of space resources based on the principle of ‘first come, first served’ was not desirable or compatible with the principles of equality of access to space and allocating its resources to all humanity.⁵⁶

In conclusion, national legislations (the US and Luxembourg) do not fully reflect the fundamental principles of international space law, particularly the common benefit clause and thus, legality of potential space resource activities authorized by the US or Luxembourg is likely to be challenged. What is more, the establishment of a regime by a single state aimed at

⁵³ See von der Dunk (n 21); The US Commercial Space Launch Competitiveness Act 2015 (USA).

⁵⁴ Report of the UN COPUOS Legal Subcommittee on Its Fifty-Fifth Session (4- 15 April 2016) UN Doc A/AC.105/1113; Report of the Committee on the Peaceful Uses of Outer Space Sixty-Second Session (12–21 June 2019) (n 44).

⁵⁵ Stephan Hobe and Philip de Man, ‘The National Appropriation of Outer Space and Its Resources’, Presented on 27 March 2017 at the IISL/ECSL Symposium on “Legal Models for Exploration, Exploitation and Utilization of Space Resources 50 Years after the Adoption of the Outer Space Treaty” <<http://www.unoosa.org/documents/pdf/copuos/lsc/2017/symp-08.pdf>> accessed 1 September 2019; José Monserrat Filho, ‘Developing Countries and the Exploitation of Space Resources’, Presented on 27 March 2017 at the IISL/ECSL Symposium on “Legal Models for Exploration, Exploitation and Utilization of Space Resources 50 Years after the Adoption of the Outer Space Treaty”

<<http://www.unoosa.org/documents/pdf/copuos/lsc/2017/symp-07.pdf>> accessed 1 September 2019.

⁵⁶ Report of the UN COPUOS Legal Subcommittee on Its Fifty-Fifth Session (4- 15 April 2016) (n 54).

governing an area beyond national jurisdiction is likely to be regarded as a violation of international law.⁵⁷

3.3. “Deepsea Ventures” Claim

It may be useful to learn a lesson from the historical experience of non-governmental entities seeking to commence deep seabed mining before the UNCLOS was concluded. The only source of law available at that time, was the Convention on the High Seas and the mining industry was facing an analogous legal uncertainty. Several major companies committed substantial investment capital on the assumption that a stable legal framework for deep seabed mining would be available when needed. However, a slow pace of the international deliberations did not result in the establishment of an international legal framework and led the mining industry to press for alternative means. It is worth noting that one company, Deepsea Ventures, Inc. filed a novel miner’s claim of exclusive rights to mine a deposit of seabed manganese nodules in the specified area in the Pacific Ocean.⁵⁸ In addition, the company requested states, persons and all other commercial entities to respect the exclusive rights asserted. Copies of the latter were filed with the embassies of 12 nations.⁵⁹

Although the claim was not recognized by any sovereign state, it does represent an inspiring attempt to bypass the lack of an international legal framework in the area where no state may validly purport to subject any part of such area to its sovereignty. Since no recognized central authority existed to grant or register claims to exclusive rights on the deep seabed, Steven J. Burton argues that the Deepsea Ventures claim was an understandable response to an uncertain situation.⁶⁰

3.4. Social License to Operate on Earth

Social License to Operate (SLO) is a successful terrestrial concept developed to stabilize the socio-political environment for business.⁶¹ Community engagement and a fair share of the benefits in case of business activities having a significant environmental and social impact on local communities, or in situations where local communities can claim the right to the lands, territories and resources, have become a standard practice in the context of the utilization of natural resources. In order to further elaborate on the applicability of SLO to the utilization of space resources, a brief introduction of SLO is needed.⁶²

⁵⁷ Hobe and de Man (n 55).

⁵⁸ Deepsea Ventures, ‘Deepsea Ventures, INC.: Notice of Discovery and Claim of Exclusive Mining Rights, and Request for Diplomatic Protection and Protection of Investment’ (1975) 14 International Legal Materials 51.

⁵⁹ Steven J Burton, ‘Freedom of the Seas: International Law Applicable to Deep Seabed Mining Claims’ (1977) 29 Stanford Law Review 1135, 1141.

⁶⁰ Burton (n 59).

⁶¹ RG Boutilier, LD Black and I Thomson, ‘From Metaphor to Management Tool: How the Social License to Operate Can Stabilise the Socio-Political Environment for Business.’ (2012) International Mine Management 2012 Proceedings 227

<https://www.stakeholder360.com/Boutilier_Black_Thomson_From_metaphor_to_mgmt_tool_w_AUSIMM_p ermission.pdf> accessed 1 September.

⁶² World Bank and International Finance Corporation, ‘Large Mines and Local Communities: Forging Partnerships, Building Sustainability’

<<http://siteresources.worldbank.org/INTOGMC/Resources/largemineslocalcommunities.pdf>> accessed 1 September 2019.

3.4.1. What is SLO

SLO emerged as a term in the mid-1990s in order to respond to social risks.⁶³ Experience of actors engaged in the energy sector revealed that obtaining a formal license to operate from the government and meeting regulatory requirements have become no longer adequate. Socio-political opposition to mining has become more common in developed, emerging and developing economies.⁶⁴ Mining companies are now often exposed to delays, interruption or even shutdowns of mining operations initiated by public opposition.⁶⁵ From the industry's perspective, SLO has become a response to those risks, an instrument to avoid costly conflicts with local communities.⁶⁶ Thus, an acceptance and approval by local community in the form of the SLO has become an essential instrument to ensure long-term profitability of the investments in the sectors with high visible business activities, long time horizons and high exposure to global markets.⁶⁷

While the SLO concept continues to lack a clear and widely accepted universal definition, we can identify some of the most apparent characteristics and principles. It is traditionally understood as an intangible, impermanent indicator of ongoing acceptance of company's activities by communities.⁶⁸ As such, a social license to operate in mining has been widely and quickly adopted by a broad range of mining industry stakeholders.⁶⁹

The biggest obstacle conceptually surrounding the SLO are its normative dimensions.⁷⁰ Besides the industry, the SLO has also been employed by the civil society and industry to reach their own individual goals. These two opposing perspectives have effectively prevented its deeper conceptualization. While there is a widely accepted definition that the concept concerns the relationship between the industry and communities, there are different understandings of what SLO is between the industry and the communities as well as who the communities are.

From the industry's perspective, the growing desire for social accountability in the extractive industries⁷¹ has been described as one of the factors triggering the emergence of SLO. Yet, Brueckner and Eabrasu⁷² in their review of the industry's motivation to embrace SLO cite the

⁶³ Kieren Moffat and Airong Zhang, 'The Paths to Social Licence to Operate: An Integrative Model Explaining Community Acceptance of Mining' (2014) 39 Resources Policy 61-62. *See also* Jędrzej Górski and Christine Trenorden, 'Regulatory Framework on Environmental Impacts and Community Acceptance of Shale Gas' (24 May 2018) ShaleXenvironment Horizon 2020 project H2020-LCE-2014-1 Grant agreement No. 640979, 10.13140/RG.2.2.20135.85921, deliverable D.11.1, sec 2.3 at 31-33; Jędrzej Górski and Christine Trenorden, 'Social License to Operate (SLO) in the Shale Sector: A Contextual Study of the European Union' (28 May 2019) OGEL 1-121 (advance publication).

⁶⁴ Boutilier, Black and Thomson (n 61).

⁶⁵ Moffat and Zhang (n 63).

⁶⁶ *ibid.*

⁶⁷ Melanie (Lain) Dare, Jacki Schirmer and Frank Vanclay, 'Community Engagement and Social Licence to Operate' (2014) 32 Impact Assessment and Project Appraisal 188.

⁶⁸ RG Boutilier, 'Frequently asked questions about the social licence to operate' (2014) 32 Impact Assessment and Project Appraisal 264.

⁶⁹ Rachel Kelly, Gretta T Pecl and Aysha Fleming, 'Social Licence in the Marine Sector: A Review of Understanding and Application' (2017) 81 Marine Policy 21, 68.

⁷⁰ Martin Brueckner and Marian Eabrasu, 'Pinning down the Social License to Operate (SLO): The Problem of Normative Complexity' (2018) 59 Resources Policy 217.

⁷¹ Ian Thomson and Robert Boutilier, 'The Social License to Operate', in Peter Darling (ed), *SME Mining Engineering Handbook* (Society of Metallurgy and Exploration 2011) 1779-96.

⁷² Brueckner and Eabrasu (n 70).

need of the industry to safeguard against unwanted social risks,⁷³ minimize resource project disruptions,⁷⁴ various associated costs that could lower the viability of the project⁷⁵ or to generally deflect the criticism.⁷⁶ To reach these ends, companies have aimed to build a positive corporate reputation, local culture-history-language understanding or open communication in the attempts to legitimize their practices.⁷⁷ Some authors even coin SLO as a term invented by business, for business.⁷⁸

The community perspectives unsurprisingly differ. Thomson and Boutilier describe the SLO as an ongoing process of acceptance and approval based on a relationship between the community and the industry.⁷⁹ This relationship between the community and industry ought to be built on legitimacy, credibility and trust. To achieve this, industry uses structural, relational and cognitive devices to create a degree of practical, psychological and communicative interconnectedness with the specific community, which allows for gradual and consecutive development of legitimacy, credibility and later for trust towards industry. However, all these questions are dependent on the definition of the community. This also varies and SLO can include the community or people directly affected due to their location,⁸⁰ a broader civil society⁸¹ or even extend beyond mere local dimensions and include a variety of social licences from different communities.⁸² The Shell Brent Spar incident is cited as an example of a multinational SLO community.⁸³

The origins of the SLO in the energy sector may be found in the principles of international law; mainly the right of peoples and nations to permanent sovereignty over natural resources (PSNR) located within their territories,⁸⁴ and the right of indigenous people to the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired.⁸⁵ PSNR requires natural wealth and resources to be exercised in the interest of national development and of the well-being of the people of the state concerned.⁸⁶

⁷³ Jason Prno, 'An Analysis of Factors Leading to the Establishment of a Social Licence to Operate in the Mining Industry' (2013) 38 Resources Policy 577.

⁷⁴ John R Owen, 'Social License and the Fear of Mineras Interruptus' (2016) 77 Geoforum 102.

⁷⁵ Rachel Davis and Daniel Franks, 'Costs of Company-Community Conflict in the Extractive Sector' Harvard Kennedy School <<https://www.shiftproject.org/resources/publications/costs-company-community-conflict-extractive-sector/>> accessed 1 September 2019.

⁷⁶ John R Owen and Deanna Kemp, 'Social Licence and Mining: A Critical Perspective' (2013) 38 Resources Policy 29.

⁷⁷ Sara Bice, Martin Brueckner and Christof Pforr, 'Putting Social License to Operate on the Map: A Social, Actuarial and Political Risk and Licensing Model (SAP Model)' (2017) 53 Resources Policy 46; Owen and Kemp (n 76) 34.

⁷⁸ John Morrison, *The Social License: How to Keep Your Organization Legitimate* (Palgrave Macmillan UK 2014) 14.

⁷⁹ Thomson and Boutilier (n 71).

⁸⁰ Kieren Moffat and others, 'The Social Licence to Operate: A Critical Review' (2016) 89 Forestry 477.

⁸¹ Thomson and Boutilier (n 71); Jason Prno and D Scott Slocombe, 'Exploring the Origins of "social License to Operate" in the Mining Sector: Perspectives from Governance and Sustainability Theories' (2012) 37 Resources Policy 346.

⁸² Dare, Schirmer and Vanclay (n 67) 189.

⁸³ Grant Jordan, *Shell, Greenpeace and the Brent Spar* (Springer 2001).

⁸⁴ UNGA Res 1803 (XVII) (adopted 14 December 1962) UN Doc A/RES/1803(XVII).

⁸⁵ Declaration on the Rights of Indigenous Peoples, UNGA Res 61/295 (adopted 13 September 2007) UN Doc A/RES/61/295; Emma Wilson, 'What Is Benefit Sharing? Respecting Indigenous Rights and Addressing Inequities in Arctic Resource Projects' (2019) 8 Resources 1-6, 18 <<https://www.mdpi.com/2079-9276/8/2/74>> accessed 1 September 2019.

⁸⁶ UNGA Res 1803 (XVII) (14 December 1962) (n 84).

The paradigm of governance beyond government and a growing empowerment of civil society, together with the right of nations and peoples to permanent sovereignty of natural resources, have been translated into communities around the world increasingly demanding more involvement in decision-making for local mining projects, a greater share of benefits and assurances that mineral development will be conducted safely and responsibly.⁸⁷ In this context, SLO often serves as an instrument ensuring that the mining operations are perceived as beneficial even by local communities.⁸⁸

3.5. Social License to Operate off Earth

While terrestrial mining operations are being exposed to delays, interruption of even shutdowns due to public opposition (typically by affected communities),⁸⁹ space resources utilization (SRU) is likely to be labeled as unlawful and consequently challenged by governments. A risk associated with the lack of legitimacy brings SLO into play, because legitimacy of mining operations is equally important for mining companies operating off Earth. In this context it is worth mentioning the Deepsea Ventures' claim of exclusive rights to mine a deposit of seabed manganese nodules in the specified area in the Pacific Ocean as a response to the lack of a legal framework.⁹⁰ Since this claim was not accompanied by any attempts to acquire legitimacy it was 'doomed to failure'. Not surprisingly, the claim was not recognized by any state. One may ask, which community could have provided legitimacy for deep-sea mining before the UNCLOS entered into force if the mineral deposit was physically separated from anything that might be construed as a local community. This question is not relevant anymore, because the UNCLOS declared the resources of the seabed and ocean floor beyond the limits of national jurisdiction to be "the common heritage of mankind," and established both an international regime for deep seabed mining (Part XI) and an international authority (International Seabed Authority).⁹¹

Outer space is different. The legal status of natural resources in outer space has not yet been sufficiently addressed and no international legal framework has been established yet. The OST only states that outer space including celestial bodies is not subject to national appropriation, and the exploration and use of outer space should be carried out in the interests and for the benefit of all countries and shall be the province of all mankind.

SLO allows the affected communities to claim their concerns and to balance their interests with the interest of mining companies. While keeping the projects profitable and attractive for mining companies, SLO makes the utilization of natural resources acceptable and beneficial for the affected communities. Since the determination of the interests of affected communities and consequent balancing of those interest with the interests of mining companies lies in the heart of SLO, its elevation to the international level may effectively bypass the lack of a central international authority and ensure that the exploration and use of outer space is carried out in the interests and for the benefit of all countries.

⁸⁷ Dr Michelle Voyer and Dr Judith van Leeuwen, "Social License to Operate" in the Blue Economy' (2019) 62 Resources Policy 102; Prno and Scott Slocombe (n 81); Coco CA Smits, Judith van Leeuwen and Jan PM van Tatenhove, 'Oil and Gas Development in Greenland: A Social License to Operate, Trust and Legitimacy in Environmental Governance' (2017) 53 Resources Policy 109.

⁸⁸ Prno and Scott Slocombe (n 81) 348.

⁸⁹ Moffat and Zhang (n 63) 61.

⁹⁰ Deepsea Ventures (n 58).

⁹¹ United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3 (UNCLOS) art 133-155, 155-158.

Whereas communities affected by terrestrial mining operations base their legitimacy on the PSNR or the rights of indigenous people, legitimacy for space resource activities derives from the OST's requirement that the exploration and use of outer space shall be carried out in the interest and for the benefits of all countries and it shall be the province of all mankind.

The authors of this paper argue that due to its unique nature and functions, SLO may serve as an instrument to address the legal obstacles identified in relation to the utilization of space resources. To achieve that, the authors will firstly address what the affected community for SLO in space would be like. Secondly, they will discuss how to understand the legal requirement for exploration and use of outer space to benefit all countries.

3.5.1. Space Community for SLO?

Investors seeking to gain SLO in order to address the lack of an international legal framework for space resource activities need to identify a community from which they can obtain SLO having the above-mentioned effects. In general, we can identify three criteria usually applied for an identification of the community for the purposes of terrestrial SLOs. First, SLO is gained from the community directly and indirectly impacted by the utilization of natural resources.⁹² Second, SLO is gained from the community invoking its inherent rights to the natural resources or the land where such natural resources are located. Third, SLO is gained from the community posing a social risk and being able to inflict additional costs, disrupt operations or delegitimize mining and extraction activities.⁹³

At the first glance, the physical separation of space resources from anything that might be construed as a local community may put the applicability of SLO to SRU into doubts. However, once we elevate the SLO concept to the international level, we may easily identify stakeholders likely affected by space resource activities – all countries. Such a conclusion is supported by various provisions of the OST,⁹⁴ and efforts of the UN COPUOS to promote the long-term sustainability of outer space activities. In particular, preserving the use of outer space for current and future generations is consistent with upholding the long-standing principles contained in the OST.⁹⁵ There is a board consensus that outer space should remain an operationally stable and safe environment that is maintained for peaceful purposes and open for exploration, use and international cooperation by current and future generations.⁹⁶ Against the background of the UN COPUOS continuous promotion of the long-term sustainability of outer space activities, all countries may be identified as a community whose interests are to be affected by SRU.

⁹² Thomson and Boutilier (n 71); Jordan (n 83); Moffat and others (n 80) 485; Dare, Schirmer and Vanclay (n 67) 188.

⁹³ Owen (n 74) 102; Davis and Franks (n 75); Owen and Kemp (n 76) 31; Prno (n 73) 577.

⁹⁴ For instance art I (“The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.”), art IX (“States Parties to the Treaty shall pursue studies of outer space, including the Moon and other celestial bodies, and conduct exploration of them so as to avoid their harmful contamination and also adverse changes in the environment of the Earth resulting from the introduction of extraterrestrial matter and, where necessary, shall adopt appropriate measures for this purpose.”) See OST (n 18).

⁹⁵ The Guidelines for the Long-Term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space. Report of the Committee on the Peaceful Uses of Outer Space (20 August 2019) UN Doc A/74/20 para 163 and Annex II.

⁹⁶ *ibid.*

The rights to natural resources in outer space, have been addressed by the Moon Agreement. However, the vast majority of countries rejected the Moon Agreement and, therefore, the principles enshrined in the OST are the key source law applicable in relation to the utilization of space resources. While the permanent sovereignty over terrestrial natural resources can be claimed by nations or indigenous people, the legal status of space resources remains unclear. However, the OST is very explicit about how these resources have to be developed - for the benefit and in the interest of all countries.⁹⁷

Additional costs, disruption of operations of mining and extraction activities can be caused primarily by states. States' infringement may likely have a form of legal actions initiated by governments arguing unlawfulness of space resource activities. Governments are likely to claim violation of the non-appropriation principle and the common benefit clause. These disputes may include disputes between the country being responsible for the respective space activities (because states are required to authorize and supervise any space activities carried out by their nationals) and the rest of the international community. We can also imagine boycotts or financial sanctions against space mining companies that are allegedly ill-compliant with international space law or even countries authorizing such space activities.

Moreover, the mining operations are reliant on extremely sensitive space instruments being easily disrupted in the space environment. These risks are mostly associated with severe safety risks and a lack of any regulation limiting further space resources development.⁹⁸ For instance, low gravity, lack of atmosphere, fine-grained regolith and static-charged particles create an environment in which a simple proximity landing of another spacecraft could have detrimental disruptive effects to the operations. These disruptions can be caused technically by both governmental entities and even non-state actors. Nonetheless, even disruptive activities carried out by non-state actors may be prevented by states since they are required to assure that national activities are pursued in conformity with the OST.⁹⁹ Therefore, space resource activities can potentially be affected mostly by states and therefore states should be the ones from whom the investors should seek to gain SLO.

One may argue that parallel negotiations with all countries would be too lengthy and complicated. However, even companies seeking to utilize terrestrial natural resources are confronted with a coalition of interest groups endeavoring to convince both national and global audience that the mining license should not be granted. An interesting example to be mentioned is an attempt of Nautilus, a corporation seeking to obtain the deep-sea bed mining license.¹⁰⁰ When it wished to claim ownership of a social license to operate the world's first deep sea mine, it had to deal with a complex network of 'civil society' actors who were thoroughly opposed to the project.¹⁰¹ However, the company lacked a local community from which it could claim to have obtained a social license, because there was neither a community of 'project area landowners', nor a 'mine-affected' community in the

⁹⁷ OST (n 18) art I.

⁹⁸ Ram S Jakhu and Joseph N Pelton, 'Regulation of Safety of Space Mining and Its Implications for Space Safety (2016) 3 Journal of Space Safety Engineering 67.

⁹⁹ OST (n 18) art VI.

¹⁰⁰ Colin Filer and Jennifer Gabriel, 'How Could Nautilus Minerals Get a Social Licence to Operate the World's First Deep Sea Mine?' (2018) 95 Marine Policy 394.

¹⁰¹ *ibid* 395.

conventional sense of that term. Therefore, an artificial community – the “costal area of benefit” – was created.¹⁰²

Building on the SLO-concept flexibility, the United Nations appears to be a possible artificial community representing all countries. The UN Charter defines the UN as a center for harmonizing the actions of nations in the attainment of common goals and achieving international co-operation in solving international problems.¹⁰³ In this context, the authors of this paper believe that private investors seeking to commence space resource activities, may approach states directly, as Deepsea Ventures did, or approach the UN as an artificial community representing all countries.

3.5.2. Finding the Interests and the Benefits of All Countries: Engagement and Benefits

SLO aims at making the mining operations both profitable for investors and beneficial for affected communities. Therefore, securing the SLO implies a cautious balancing of the interests of those communities and the interests of the mining companies. To do so, the interests of these communities have to be determined and adequately addressed. Thus, community engagement, transparency and a fair share of benefits are important components of SLO. In other words, SLO provides an opportunity for a dialogue between investors and affected stakeholders.¹⁰⁴

There are essentially two forms of community engagement, according to Melanie Darea, Jacki Schirmer and Frank Vanclay. While operational engagement is related to the particular mining operation, strategic engagement allows the affected or interested communities to influence long term visions.¹⁰⁵ With regard to the utilization of space resources, community engagement should be present in both operational and strategic sense. All countries should be provided with SRU plans and should require assessments of various impacts of SRU on both Earth and space environment in order to ensure long-term sustainability of outer space activities.¹⁰⁶ By the same token, all countries should discuss a shared vision for the future in the exploration and use of outer space

SLO is traditionally associated with a fair share of the benefits from mining projects.¹⁰⁷ According to Boutilier, mining companies should make sure that the disproportionate costs of mining borne by local communities are reduced and balanced with meaningful benefits (not necessarily financial).¹⁰⁸ In other words, unless the stakeholders believe they will receive some meaningful benefits from a project, they are unlikely to grant it a social license.¹⁰⁹ Most of what mines give back to society is given in the form of tax revenue.¹¹⁰ However, if no

¹⁰² *ibid* 398.

¹⁰³ Charter of the United Nations (adopted 26 June 1945, entered into force 24 October 1945) 1 UNTS XVI (UN Charter).

¹⁰⁴ Darea, Schirmer and Vanclay (n 67) 188.

¹⁰⁵ *ibid*.

¹⁰⁶ The Guidelines for the Long-Term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space (n 95) para 163 and Annex II.

¹⁰⁷ UNDP and UN Environment, *Managing Mining for Sustainable Development: A Sourcebook* (2018) 18 <https://www.undp.org/content/dam/undp/library/Sustainable%20Development/Extractives/UNDP-MMFSD-ExecutiveSummary-HighResolution.pdf> accessed 1 September 2019; Wilson (n 85) 1-6.

¹⁰⁸ Boutilier, Black and Thomson (n 61) 236.

¹⁰⁹ World Bank and International Finance Corporation (n 62) 1; Boutilier, Black and Thomson (n 61) 236.

¹¹⁰ World Bank and International Finance Corporation (n 62) 2.

local tax credit schemes ensure that more of the benefits of mining stay in the community, local communities often view the disproportionate costs of mining borne by them as not being adequately reduced and balanced. Therefore, mining companies use community and local infrastructure investment funds, local procurement and hiring, partnerships with community, social and environmental groups, collaboration with local business and industry groups, in order to help ensure that stakeholders' daily cost/benefit calculations are positive.¹¹¹

The authors of this paper believe that the determination of the interests of all countries accompanied by a fair share of benefits are equally important components of SLO elevated to the international level. What is more, SLO in the context of SRU ensures not only legitimacy, but it also allows investors to meet the legal requirements enshrined in the OST, namely to ensure that space activity is carried out in the interests and for the benefits of all countries.¹¹² Therefore, SLO can effectively bypass the lack of an international legal framework providing more details about how the interests of all countries should be determined.

In general, benefits and interests of all countries can be achieved by various ways. However, space resources have never been utilized and the use of outer space is very much dependent on the development of technologies. This can make the determination of both the interests and the benefits particularly difficult. In this context, SLO as an ongoing approval and acceptances can be particularly helpful since it can reflect dynamic nature of the development of space activities. Both the interests and needs are likely to change over time and new technologies, growth in supply chains and developments in the whole cislunar economy will continue to change the quality and quantity of valuables derived from space resources.

Moreover, instead of putting together individual interests of single countries, it might be more effective to define an interest that represents all countries together, something that would qualify as a global interest. Without attempting to define what this global interest would be, the authors of this paper mention several objectives SRU can be used for. Firstly, there is a scientific objective for humans to learn more about the composition of celestial bodies, origins of our Solar System and other aspects of space science. Secondly, there is a space settlement and space exploration dimension in providing critical resources for the establishment of a cislunar economy and overall off-Earth human presence. Thirdly, it can serve as a security objective in terms of analysing potentially hazardous resource-rich asteroids as a shared global threat or enabling an expansion of space-based assets for global security. This can include assets coping with climate change, cosmic hazard (from Space Weather to Near Earth Objects) or global communication. And lastly, there is also the commercial logic as space resources can be capitalized.

This may lead to a provocative question, of whether we should prioritize achieving the interest of each and every country, or focus on truly global challenges and view all countries as an international community, as a mankind. In this context, it is worthy to recall art I of the OST declaring the exploration and use of outer space to be the province of all mankind.

¹¹¹ Boutilier, Black and Thomson (n 61) 236; World Bank and International Finance Corporation (n 62) 3.

¹¹² OST (n 18) art I.

4. Conclusion

The absence of a legal framework constitutes an unquestionable barrier to ensuring long-term sustainability and profitability of the utilization of space resources, especially that carried out by non-governmental entities. This paper has revealed that the lack of an international authority to grant licenses for space mining and the ambiguousness of the OST, being the only relevant applicable source of law, may significantly undermine our potential to unlocking the great economic potential of outer space.

In this context, the paper has explored several alternative attempts to bypass the lack of an international legal framework (including national legislation or a claim of exclusive mining rights filed by a mining company) and has revealed why such attempts can neither create a stable socio-political environment for private investors nor satisfy legal requirements set forth by the OST.

The unique features of SLO can effectively avoid associated costs resulting either from lawsuits by individual countries or other unforeseeable risks caused by the absent legitimacy. Moreover, a dialogue between all countries and the investors can ensure that the interests of all countries are determined and accordingly observed and that the space resources activities are carried out for the benefits of all countries.

The authors of this paper argue that legal certainty and a stable socio-political environment can attract large financial resources needed for the development of the first space mining operations. Besides that, SLO can ensure that the exploration and use of outer space will be truly beneficial for all states and for the mankind.