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Effective And Adaptive Governance For A Lunar Ecosystem - Recommendations From The Young Generations

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Abstract

The expansion of humanity's presence beyond Earth could enable a new era of sustainable, inclusive and fair exploration. In the course of this process, the Moon will play a key role both as a testing ground and a stepping stone for further deep space operations. Therefore, it is of the utmost importance to ensure that the Moon remains a peaceful and cooperative environment for the benefit of all countries and humankind. To this end, in September 2020 the Space Generation Advisory Council (SGAC) established an action team to foster the development of Effective and Adaptive Governance for a Lunar Ecosystem – the EAGLE Action Team . The main goal of this Team is to formalize and articulate the perspectives of the students and young professionals in the space sector to help ensure that future lunar activities proceed in a sustainable, effective and peaceful way. From September 2020 to February 2021, the EAGLE Team consulted with 21 stakeholders from four continents, specifically selected to span the major segments of the space sector (governmental, commercial, academic, and private) with the goal of developing a comprehensive understanding of the various ideas and priorities for lunar governance. Based on the inputs received during these consultations, the EAGLE Team is now developing a Report to assess the current state of the debate and provide recommendations for the development of effective and adaptive governance mechanisms that are aligned with the needs and desires of today's youth (defined as being aged 18-35). Subject to receiving the official endorsement of SGAC, the EAGLE Team aims to present its Report at the 60th Session of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) as the official position of the young generations at the United Nations. The purpose of this paper is to discuss the contributions of the EAGLE Report towards the development of effective and adaptive governance for a lunar ecosystem. First, the paper will discuss the most significant findings developed during the consultations conducted with the abovementioned 21 stakeholder representatives. To complement this analysis, the paper will proceed to assess both the shared ground and the conflicting aspects among existing policy documents for lunar activities as developed by multi-stakeholder platforms and States. Finally, the paper concludes by presenting the recommendations of the EAGLE Team as further developed pursuant to the relevant discussion in UNCOPUOS.

Keywords: International space law, lunar governance, sustainability, adaptiveness, international cooperation.

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1. INTRODUCTION

A new era of lunar exploration is upon us. Through a suite of missions to the lunar surface and its vicinity, discoveries of resource deposits in the lunar regolith and ice traps at the poles, among other features, have transformed our conception of humanity's potential future on the Moon.[1] Consequently, private entities and nations worldwide with newly developed spacefaring capabilities have set their sights on returning to the Moon.[2] As representatives of the young generations, we look at these plans with great interest and trepidation, thrilled at the idea of humanity becoming a multiplanetary society. At the same time, the Moon is humanity's only natural satellite. Its importance for our species transcends borders and unites generations since time immemorial. Thus, we want to ensure that all actors, present and future, can have shared and assured access to its exploration and use, while protecting the unique features of its environment. In our view, the only way to do this is if we develop the Moon as an ecosystem: a circular environment where all humanity can thrive in peace.

As lunar plans turn to actions, it is essential to develop common guidelines and norms of behaviour as well as mechanisms to ensure their respect by all relevant actors. Coordinating activities on the surface of the Moon and ensuring the sustainable use of its resources are unprecedented endeavours that will require the development of innovative regulatory tools. To result in a circular ecosystem, we believe that a lunar governance regime should be based on four components: fairness, effectiveness, adaptiveness and sustainability. First, a lunar governance regime should guarantee safe access to, and shared enjoyment of, the exploration and use of the Moon as the province of all humankind. Second, a lunar governance regime should achieve these goals through stable decision-making processes and fast implementing procedures. Third, a lunar governance regime should connect these regulatory elements with the results of in-situ learning, incrementally evolving hand in hand with our knowledge of the lunar environment and experience with operations thereby. Fourth and finally, a lunar governance regime should pay due regard to the interests of future generations, preserving and enhancing their parallel right to explore and use the Moon.

The Space Generation Advisory Council (SGAC) is the largest network of students and young professionals in the space industry.[3] SGAC was conceived at UNISPACE III in 1999, whereby States resolved, as part of the Vienna Declaration, "to create a council to support the United Nations Committee on the Peaceful Uses of Outer Space, through raising awareness and exchange of fresh ideas by youth. Its vision is to employ the creativity and vigour of youth in advancing humanity through the peaceful uses of outer space".[4] In pursuance of this vision, SGAC recently entered the global debate on lunar governance to provide the perspective of the young generations on this crucial topic for the future of humanity. To this end, it established an action team focused on Effective and Adaptive Governance for a Lunar Ecosystem - the EAGLE Action Team - consisting of 14 scientists, engineers, lawyers, policy analysts, and more, with representation from 10 countries.[5] Built upon a genuine understanding of the value of cooperation and coordination across borders, the diversity of our team reflects our desire for international coordination. Over the course of a year, the EAGLE Team analysed the technical, policy and legal landscape for lunar activities to understand how these elements come together to compose a bigger picture. To complement this analysis, the Team also met with 21 stakeholders across national space agencies, private industry, and non-governmental organisations, to stitch together the viewpoints and proposals of these various groups.[6] The results of these efforts have been condensed in the EAGLE Lunar Governance Report, which lays down the views and proposals of the young generations for a fair, effective, adaptive and sustainable lunar governance regime.[7] Through our Report, we want to seal a global, intergenerational, and multistakeholder pact for the exploration and use of the Moon under a shared narrative of peace, inclusiveness, prosperity and sustainability.

This paper outlines the essential elements and proposals laid down in our Report, to which we refer the reader for more specific and extensive arguments.

2. THE STATUS QUO

The first contribution of the EAGLE Team to the present debate on lunar governance is an overview of the *status quo* for the conduct and regulation of lunar activities. To this end, we began our analysis

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by considering technological firsts for lunar exploration, together with their legal and policy implications. After a thorough review of the Apollo and Luna missions,[8] we found that the historical progression of lunar activity has in fact shaped lunar exploration's legality as laid down in the Outer Space Treaty (OST),[9] encompassing critical milestones related to space objects, debris, orbiting spacecraft, terrestrial organisms, crewed landings, sample removals and commercial lunar activities. To complement this analysis, we also considered the current technical realities behind the renewed global interest in lunar exploration. These new realities have shaped the present interest in different lunar surface regions[10] that provide a variety of value to scientific investigations,[11] crewed exploration missions and, potentially, future commercial operations.[12] As a result of this renewed interest in the Moon, lunar policy developments have greatly accelerated in recent years, with the goal to operationalise the rules of international space law. Accordingly, we considered these developments, including the Artemis Accords[13] and documents produced by groups like the Hague Working Group,[14] the Moon Village Association,[15] the Open Lunar Foundation,[16] the Space Treaty Project,[17] and others,[18] to identify shared ground and contentious issues in lunar policy developments.

Our analysis has highlighted seven topics on which existing policy proposals seem to generally align (listed in no particular order):

1) The importance of multilateralism.
2) The need for heritage protection.
3) The registration of lunar objects.
4) The importance of benefit sharing.
5) The need for dispute resolution.
6) The role of space resources.
7) The importance of interoperability.

To complement our analysis on the shared ground, we have also identified five contentious aspects in the development of lunar policies (listed in no particular order):

1) The governance regime.
2) The registration of activities.
3) Resource rights.
4) The role of safety zones.
5) Modes of coordination.

From this analysis, three overarching topics stood out both as shared ground and contentious issues: multilateralism, registration and space resources. While all actors praise the importance of multilateralism, they do not seem to agree on what should be the way forward to pursue it. Even though it is widely regarded that lunar objects should be registered under the Registration Convention,[19] parties are divided as to the creation of a dedicated registry for lunar activities, the kind of activities that should be included in it, and what entity should maintain it. Finally, although it is generally recognised that sustainable space exploration inevitably relies on *in situ* resources utilisation,[20] there is debate as to how exactly this endeavour should be regulated, especially in view of its commercialisation. Given the early stages of lunar policy, the lack of a clear demarcation line between shared grounds and contentious issues is normal. Our analysis also revealed that proposed policies tend more to agree than disagree, and where there is disagreement, this seems to be primarily caused by a lack of clear understanding of the "adversary" positions.

To conclude our assessment, we turned to identify and examine the needs and priorities of the global space community beyond what has been recommended in existing policy documents. These findings have been developed based upon a series of interviews conducted by the EAGLE team between September 2020 and February 2021 with 21 stakeholders representing the various segments and interests of the global space community.[21] During our interviews, the development of a lunar economy has been constantly underlined as an essential component of sustainable lunar activities. To address this, we have found that lunar companies may benefit from more robust integration with terrestrial industries and markets. Meanwhile, a greater in-space demand for products and services should be fostered with the enabling support of the public sector. This is where governments and space agencies come into play. These entities could and should provide better support to non-governmental lunar activities. From our understanding, public institutions are eager to act as catalysts for the

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growth of a stable lunar economy. The multi-stakeholder development of global standards and shared and interoperable infrastructures can prove to be a useful step forward in this direction. Adding the academic perspective into the equation, we have turned our attention to the potentially harmful and detrimental consequences of poor regulation and coordination. From the perspective of academia, the need for balanced solutions is underlined as more important than the need for *any* solution. Ultimately, we distilled the following five key global priorities, listed in no particular order:

1) **International harmonisation is the key to adaptive governance.**

   The first priority refers to the development of a middle-level framework that could guide the application of the OST principles to lunar activities, in order to enable coordination among operators, enhance cooperation among partners and provide guidance to companies.

2) **Inclusive and transparent negotiations are vital for legitimate governance.**

   The second priority underscores the importance of inclusive and open diplomatic negotiations conducted with due regard to the interests of all States, as a fundamental condition to provide lunar governance with an adequate level of democratic legitimacy.

3) **Multi-stakeholder discussions are crucial for effective governance.**

   The third priority reveals the added value of complementing diplomatic negotiations with contributions from a plurality of actors across the global society, to increase the effectiveness of the governance system thanks to their instances and expertise.

4) **Public/private partnerships will be an essential component of a lunar economy.**

   The fourth priority refers to public entities supporting private lunar enterprises in the development of robust business cases that can attract private financial investments, to democratise access to the Moon and reduce pressure upon publicly-financed missions.

5) **Technical aspects are just as critical as legal and policy developments.**

   The fifth and final priority underlines the critical role that can be played by technical integration for the establishment of a thriving lunar ecosystem, in particular through the development of shared standards, interoperable systems and common infrastructure.

This list of five global priorities is permeated by an overarching trend that we recognised as utmostly defining: sustainability. There cannot be a positive future on the Moon without this element, which must play a central role in the design of laws, technologies and missions.

3. THE WAY FORWARD

During our interviews, our work has been greeted with great enthusiasm. In particular, much emphasis has been placed on the fact that as representatives of the new generations, we have the possibility and the responsibility to express our perspectives for the future of lunar governance. To this end, we are pleased to present our proposal for a way forward. We hope it can contribute to the early solutioning of what a lunar governance landscape could look like, acknowledging that it will naturally evolve as human presence further expands on the Moon.

Driven by adaptiveness and inclusiveness, rather than crafting a dry list of fixed recommendations, we decided to focus on the development of a sharable narrative. The importance of this element became clear to us once we began to track the development of international space diplomacy, and noticed that there is a pattern. The regulatory tools devised in the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS)[22] seemingly follow a life span of roughly 20 years. Treaties, principles, and guidelines each characterised two decades of international space diplomacy by providing a reference narrative for the community. After long reflection, we realised that the narrative of the next two decades could be captured by charters. With this term we refer to a legal document enacted to define the essential features and boundaries of a legal framework through the solemn commitment of its signatories. Examples of famous charters used in this sense include the *Magna Carta Libertatum*,[23] the Charter of the United Nations[24] and the Charter of Fundamental Rights of the European Union.[25] All

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these documents implement the general properties of charters in different ways, depending on their context and purposes. Based on the findings developed during our year of work, we found many reasons why a Charter could be the type of legal instrument needed at this point in international space diplomacy. Historically, charters fit in a time where technology and economic development constantly progresses at a rapid rate, like ours. Conceptually, charters encapsulate a general but coherent approach to the regulation of a given topic, like the one we need now. Finally, charters have a flexible legal nature: they can either be binding or non-binding, depending on the intentions driving their processes.

Applying this reasoning to the regulation of lunar activities, the following paragraphs outline our proposal for the global development of a Lunar Governance Charter. We believe that this Charter could help us achieve the peaceful development of the Moon as well as the sustainable use of its resources. Broadening the discourse initiated already in various policy documents, a Lunar Governance Charter can clarify issues or misunderstandings on concepts such as safety zones, priority rights, heritage protection, interoperability, and commercial space. A Lunar Governance Charter can also consolidate existing consensus on the operationalisation of fundamental principles of space law within the context of lunar activities. Framed in these terms, we believe a Lunar Governance Charter will help us move forward from solid foundations while guiding the development of new ones.

Consistently with the approach adopted throughout our activities, our proposal for a Lunar Governance Charter is not conceived as a finished product, but rather as the beginning of it. At the same time, we felt the responsibility of accompanying it with some substantive and procedural suggestions to help frame the development of multi-stakeholder dialogue. On the one hand, we considered the fundamental topics that we believe should be included in the Charter. These could be divided into two groups: the foundations of the Charter and its potential provisions. Within the first group, we believe that a Lunar Governance Charter should begin by restating the fundamental rules of international space law that we all share, as well as the guiding principles shaping the development of the way forward. Within the second group, we believe that a Lunar Governance Charter should address ten aspects:

1) Inclusiveness.
2) Interoperability.
3) Human life protection.
4) Heritage preservation.
5) Science/business balance.
6) Use of lunar resources.
7) Safety zones.
8) Registration and liability.
9) Minimum coordination.
10) Conflict resolution.

In terms of mechanisms and procedures, we developed two suggestions for the development of the Charter. As a starting point, we naturally recognise UNCOPUOS as the primary forum for the negotiations of a Lunar Governance Charter. At the same time, we believe the global significance of the Moon requires a multi-stakeholder process drawing from the various perspectives of all humanity. Therefore, we suggest that UNCOPUOS find appropriate ways to receive and implement inputs from global society. Because of the lack of available space, below is the list of the substantive and procedural recommendations composing our proposal for a Lunar Governance Charter. All readers interested in a more detailed analysis are invited to check the related section of our Report.

1) Fundamental principles of space law

A Lunar Governance Charter should naturally build upon the OST and invite all States planning to engage in lunar activities to ratify it. To this end, the Charter should underline the critical importance of the fundamental principles of international space law as laid down in the OST for the peaceful and sustainable development of the Moon. As a complement to these principles, the Charter should recognise the usefulness of developing rules of responsible behaviour for sustainable lunar activities, similar to those provided for terrestrial ones by the UN Debris Mitigation

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Guidelines[26] and the Long-Term Sustainability Guidelines for Outer Space Activities.[27]

2) Guiding Principles for a Lunar Charter

The development of a Lunar Governance Charter should be guided by the principles of adaptive governance[28] and inclusiveness. The purpose of this Charter should be to enhance the peaceful development of the Moon as well as the sustainable use of its resources. To achieve these goals, the Charter should act as a minimum but comprehensive starting point providing the basis for further international and national regulation of lunar activities.

3) Inclusiveness

A Lunar Governance Charter should stress the importance of the province principle laid down in Article I OST and invite all States to cooperate and be inclusive in their exploration and use of the Moon. Accordingly, the Charter should invite all States involved in lunar operations to engage in capacity building and benefit sharing activities to the greatest extent practical, taking into particular account the needs of developing countries. To this end, the Charter should include an Annex laying down a protocol for internationally agreed benefit sharing and capacity building mechanisms for lunar activities. Following the principle of adaptive governance, this Annex should be updated by means of dedicated UNGA resolutions as developed in UNCOPUOS.

4) Interoperability

A Lunar Governance Charter should recognise the fundamental importance of interoperability for the sustainable development of the Moon. Based on the principle of subsidiarity, the Charter should invite States to identify a global platform for the multi-stakeholder development (and subsequent regular updates) of multiple open international standards for lunar activities.

5) Human Life Protection

Building upon Art. V OST and the Rescue and Return Agreement,[29] a Lunar Governance Charter should declare the protection of human life as an absolute priority for every lunar operation. Accordingly, the Charter should invite all States to render all possible assistance to astronauts in distress no matter their nationalities. To this end, the Charter should underline the critical importance of developing interoperable human-life-support systems based on open international standards and invite States to prioritise them within the multi-stakeholder process suggested above.

6) Heritage Preservation

A Lunar Governance Charter should define a mechanism for identifying internationally recognised heritage sites[30] on the Moon and invite all States to refrain from altering them to the greatest extent practical. To this end, the Charter could include an Annex providing a non-definitive list of internationally recognised heritage sites on the Moon. Following the principle of adaptive governance, this Annex should be updated by means of dedicated UNGA resolutions developed in UNCOPUOS.

7) Science/Business Balance

A Lunar Governance Charter should recognise that both scientific and commercial activities are equally important and that their interests should be adequately balanced on a case-by-case basis. To protect the fundamental freedom of scientific investigation on the Moon, the Charter should invite States to develop an Annex with a list of internationally recognised scientific sites on the Moon, including appropriate preservation measures, as soon as technological developments allow for such assessments and in cooperation with relevant stakeholders. Following the principle of adaptive governance, this list should be updated through dedicated resolutions of the United Nations General Assembly (UNGA) as developed in UNCOPUOS. To promote the development of a Lunar economy, the Charter should recognise the role of pioneering commercial operators and invite States to take appropriate measures to support their activities and protect their legitimate interests.

8) Use of Lunar Resources

A Lunar Governance Charter should recall that while the Moon is free for exploration and use by all States, this freedom is subject to the applicable limits as defined by existing

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international space law. In accordance with the principle of adaptive governance, we believe these limits must evolve in time to reflect scientific, technological, and economic developments. At the very least, the Charter should require that the Moon's territorial-based uses must be limited in time and size to ensure compliance with Articles I and II OST. Further, we suggest that the Charter acknowledges that the definition of what constitutes a lunar resource will likely evolve in time due to scientific, technological, and economic advancements and that related laws and governance principles must adapt accordingly. To ensure the sustainable development of the Moon, the Charter should invite States to develop an Annex with a list of internationally recognised scarce resources and appropriate preservation measures as soon as scientific and technological occurrences will allow for such assessments. Following the principle of adaptive governance, this list should be updated through dedicated UNGA resolutions as developed in UNCOPUOS.

9) Safety zones

A Lunar Governance Charter should define the fundamental purposes and features of safety zones.[31] To this end, we suggest that the purpose of safety zones should be to avoid harmful interference among lunar operations. Further, we recommend that the size of safety zones should be limited to what is strictly necessary for avoiding harmful interference. Finally, we believe that the temporal extension and classification of safety zones should always be connected with ongoing operations in the concerned area. In compliance with Articles I, II, and IX OST, the Charter should clarify that safety zones cannot be keep-out zones and that actors entering a safety zone should previously consult with the State who declared it. To foster transparency and ensure coordination, the Charter should invite States to timely and publicly declare their safety zones to the UN under Art. XI OST.

10) Liability and Registration

A Lunar Governance Charter should invite all States involved in lunar activities to ratify both the Liability[32] and Registration[33] Conventions. To enhance the applicability of liability rules, the Charter should clarify that States deviating from the standards developed pursuant to the Charter should be considered at fault in case of damages caused to compliant States. To promote transparency and foster coordination, the Charter should invite States to promptly register their lunar objects and provide fundamental information on their nature, location and purposes.

11) Minimum Coordination

In accordance with the principle of adaptive governance, and building upon existing norms of international space law, a Lunar Governance Charter should identify minimum mechanisms for international coordination among both planned and ongoing lunar activities. To this end, the Charter should invite all States to proactively share essential information on their lunar activities under Article XI OST. Complementarily, the Charter should remind all States of their obligation to pay due regard and consult in case of potentially harmful interference with said activities under Article IX OST. To ensure uniformity in the national regulation of lunar activities, the Charter should invite all States to develop dedicated licensing systems for private lunar missions based on the principles of this Charter. To prevent contrasts among missions, the Charter should invite States to mutually recognise foreign licenses on a basis of reciprocity.

12) Conflict Resolution

In order to preserve the exclusively peaceful uses of the Moon, a Lunar Governance Charter should stress the importance of having internationally recognised mechanisms for the amicable resolution of disputes in case bilateral negotiations would prove unsuccessful. As a starting point, the Charter should invite all States involved in lunar activities to include references to arbitration before international institutions like the Permanent Court of Arbitration (PCA)[34] within their agreements and contracts.

13) Multilateral Development

We recommend that UNCOPUOS should be the primary forum for the development of the

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proposed Lunar Governance Charter. To begin this process, we suggest the establishment of a new agenda item on "Adaptive Governance for Peaceful and Sustainable Lunar Activities" within the appropriate subcommittee(s). Consequently, we recommend entrusting the development of the Charter to a dedicated working group under the lunar agenda item.

14) Multi-Stakeholder Dialogue

We believe that UNCOPUOS should not be the only body involved in the development of a Lunar Governance Charter. To promote multi-stakeholder discussions, we recommend that the dedicated working group admits UNCOPUOS observers, relies on the support of internal expert groups and dialogues with external platforms discussing similar topics. Should the development of the Charter not be entrusted to a dedicated working group, we recommend that States actively engage with non-governmental and private entities to leverage their perspective and contributions.

4. CONCLUSION

On the 10th of May 2021, the Lunar Governance Report developed by the EAGLE Team became the first policy document to ever receive the official endorsement of SGAC.[35] Since then, we focused our energies on its public distribution, global advocacy and multi-level implementation. During the 60th Session UNCOPUOS' Legal Subcommittee (LSC), SGAC presented EAGLE's Lunar Governance Report to the attention of the Subcommittee, inviting States to consider the multilateral development of a Lunar Governance Charter as a starting point for the effective and adaptive regulation of lunar activities. Following the positive reactions expressed by the Delegations as well as the support received from various stakeholders within the global space community, we have now entered a new phase of our work. The purpose of this phase is twofold: advocating for the development of a Lunar Governance Charter in international fora and cooperating with interested stakeholders for the practical implementation of its elements at the regional/national levels. Concerning the first goal, SGAC will submit the Lunar Governance Report to the Chair and Vice-Chair of the recently established UN Working Group on Space Resources (UN SRWG)[36] within the LSC, for the consideration of the WG in the pursuance of its mandate. In parallel, we are cooperating with like minded entities - such as the Global Expert Group for Sustainable Lunar Activities (GEGSLA)[37] and the Open Lunar Foundation[38] - for the integration and improvement of our own efforts. Concerning the second goal, we are currently identifying and approaching interested stakeholders for the practical implementation of selected items from the Lunar Governance Report. Ideally, this will prepare the ground for the enactment of the proposed Lunar Governance Charter at the multilateral level, while also advancing on the application of those aspects that could be immediately useful.

For one year, we listened to the voices of the space community. With this proposal, the time has come to express our own. Mindful of the benefits of plurality, we would like for our voice to help synchronise all the others, turning the current cacophony into a harmonious choir. Above all, we hope to spark the bright flame that has lit the best years of international space law, catalysing the existing potential for developing a lunar legal ecosystem that can honour the exploration and use of the Moon as the province of all humankind. With this purpose in mind, we birthed the idea of a Lunar Governance Charter as a shared narrative that could frame the global debate on lunar governance within pragmatic but also idealistic terms. We believe a Lunar Governance Charter could be a unique opportunity to seal an intergenerational pact for the peaceful and sustainable development of the Moon. As representatives of the young generations, to us the Moon is just the beginning, a springboard for our future interplanetary society. Similarly, we truly hope that our Report could be the beginning of a new process uniting all humanity under a narrative of peace, prosperity and sustainability. Sixty-two years ago, on July 20th, 1969, an eagle carrying two men had landed on the Moon. Today, as humanity prepares for the historical landing of the first woman, a new eagle with fourteen young space enthusiasts onboard is taking off. And we cannot wait to see where it will land.

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References

[1] Anthony Colaprete, Peter Schulz et al., Detection Of Water In The Lcross Ejecta Plume, 330 (6003) Science 463-468 (2010). *See also* Ian A. Crawford, Lunar Resources, 39 Progress in Physical Geography 137-167 (2015).

[2] Bryce Space, Projected Exploration Missions (2020-2030), available online (accessed September 2021).

[3] More information on SGAC is available on its website (accessed September 2021).

[4] As reported online (accessed September 2021).

[5] More information on the EAGLE Team is available on its website (accessed September 2021).

[6] The list of the individuals interviewed by the EAGLE Team can be found in the acknowledgment section at the end of this paper.

[7] SPACE GENERATION ADVISORY COUNCIL, EAGLE LUNAR GOVERNANCE REPORT (2021), available online (accessed September 2021).

[8] Whose overviews are available online: Apollo and Luna (accessed September 2021).

[9] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, entered into force Oct. 10, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205 (hereinafter: OST).

[10] Elvis Martin, Krolikowski Alanna and Milligan Tony, Concentrated lunar resources: imminent implications for governance and justice, Phil. Trans. R. Soc. A.379 (2021).

[11] Jessica Flahaut, Jean-François Blanchette-Guertin et al., Identification And Characterization of Science-rich Landing Sites For Lunar Lander Missions Using Integrated Remote Sensing Observations, 50 (12) Advances in Space Research 1647-1665 (2012).

[12] Mahesh Anand, Ian Crawford et al., A Brief Review Of Chemical And Mineralogical Resources On The Moon And Likely Initial In Situ Resource Utilization (Isru) Applications, 74 (1) Planetary and Space Science 74 42-48 (2012).

[13] The Artemis Accords - Principles For Cooperation In The Civil Exploration And Use Of The Moon, Mars, Comets and Asteroids For Peaceful Purposes, available online (accessed September 2021).

[14] Building Blocks For The Development of an International Framework For The Governance Of Space Resource Activities, available online (accessed September 2021).

[15] Best Practices for Sustainable Lunar Activities, available online (accessed September 2021).

[16] Lunar Resources Policy, available online (accessed September 2021).

[17] Model Implementation Agreement For The Moon Treaty, available online (accessed April 2021).

[18] Like the Vancouver Recommendations on Space Mining, developed by the Outer Space Institute and available online (accessed April 2021).

[19] Convention on Registration of Objects Launched into Outer Space, entered into force Sep. 15, 1976, 28 U.S.T. 695, 1023 U.N.T.S. 15

[20] Jim Brindestine, Space Resources are the Key to Safe and Sustainable Space Exploration, available online (accessed September 2021).

[21] The list of the individuals interviewed by the EAGLE Team can be found in the acknowledgment section at the end of this paper.

[22] Information on UNCOPUOS is available online on its website (accessed September 2021).

[23] A modern English version of the Magna Carta is available online (accessed September 2021).

[24] U.N. CHARTER.

[25] Available online (accessed September 2021).

[26] Available online (accessed September 2021).

[27] Available online (accessed September 2021).

[28] Originally developed in the field of environmental law, the principle of adaptive governance has been notably proposed in the space sector by The Hague Working Group. Building Blocks, *supra* note 12.

[29] Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, entered into force Dec. 3rd, 1968, 672 UNTS 119 [hereinafter: “ARRA”].

[30] The protection of lunar heritage sites is the main objective of an intergovernmental organization called “For All Moonkind”. More information on this organization and its activities can be found online on its website (accessed September 2021).

[31] The term safety zones is currently used in international policy documents like the Artemis Accords to categorize an area of operations which is subject to a high risk of potentially harmful interference.

[32] Convention on International Liability for Damage Caused by Space Objects entered into force Oct. 9, 1973, 24 U.S.T. 2389, 961 U.N.T.S. 187 [hereinafter: “LIAB”].

[33] Registration Convention, *supra* note 17.

[34] More information on the PCA can be found online on its website (accessed September 2021).

[35] As reported online on SGAC website (accessed September 2021).

[36] Information on the UN SRWG can be found online on its dedicated website (accessed September 2021).

[37] Information on GEGSLA can be found online on its website (accessed September 2021).

[38] Information on Open Lunar can be found online on its website (accessed September 2021).