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INTERNATIONAL LEGAL FRAMEWORK ON EXPLOITATION AND UTILIZATION OF SPACE RESOURCES

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ABSTRACT

One of the earliest works regarding Space Technology advancement achieved by sovereign is exploration the idea of 'asteroid mining' was the opera "Edison's Conquest of Mars (1898)", by Garrett P. Servis, in which the hero follows a fleet of spaceships running into 'Martians' mining asteroids for gold. In recent years, technological developments have led to the conviction that this science fiction stuff might turn into reality. Countries like the USA, Luxembourg and UAE have enacted domestic laws to regulate or rather facilitate space resources exploitation. The growing interest in exploiting resources contained in the celestial bodies including the Moon and near-earth asteroids has opened up a global debate on the regulatory/legal framework under which such operations are to be carried out. In order to regulate space activity within national territory and foreign territories as per international agreement and commitments. The Power and Responsibility of Statutory Authority, Dispute Resolution mechanism for non-governmental private entities (NGPE) and cogent definition and application of Space Activity, Property Rights in the context of Space Intellectual Property Rights is also necessary for Exploration and Exploitation of Space Resources under International law besides promotion of domestic space activities.

In the above backdrop, this study reviews the status of the discussions on desirability of Space legislation for sustainable Space Activity Regulation at par with the international concerns and their adequacy in dealing with technical and legal challenges associated with the subject.

Key Words: *Space Activities & Resources, Property Rights Regulation, international cooperation.*

Introduction

The UN Charter is a universally applicable and accepted treaty and proposes "international cooperation" among States, irrespective of their differences. With present elements of the OST and international space law help in fostering space exploration and safety for peaceful purposes. Accordingly, there are necessity

of a Legislation to nurture the multifocal Space Activities to associate non-governmental private entities (NGPE) of space industry.

Further, as per Article IX of the Outer Space Treaty (OST), it is obligatory for state parties that the space activities shall must be in consonance with the equitable interests of other member State parties. The due regard principle validates that the freedom for any activity concerning exploration and use of outer space has to be permitted only in consonance with the national interests and equitable legal rights of other state parties, and consequent non-interference towards other states. Apart from the principle of non-interference, Article IX of the OST clearly embodies the principle of international cooperation and notes in conducting space activities, States must consider the common interest of other States and have due regard to their activities. The Accords call for transparency and sharing of technology, scientific information and interoperability between State parties which is also narrated in Article II of the OST.

Article III of the OST denotes that general international law and customary international law is complementary to the international space law. The UN Charter is a universally applicable and accepted treaty and proposes "international cooperation" among States, irrespective of their differences. With present elements of the OST and international space law help in fostering space exploration and safety for peaceful purposes. The inclusion of these principles in the Accords make them a channel for scientific development with voluntary transnational cooperation. Outer space is a "*common heritage of mankind*" and for its peaceful and sustainable exploration, there is a dire need for mutual assistance and transnational cooperation, without interfering with the activities of other States. Collaboration in space is indispensable for the realistic and practical application of space operations and mission. The global vision to collectively revolutionise space exploration, on 13th October 2020, eight space-active nations (the US, Australia, Canada, Japan, Luxembourg, Italy, the United Kingdom, and the United Arab Emirates) duly signed the Artemis Accords and became the founding international partners for NASA's Artemis Mission. The mission aims to land humans on the moon by 2024 and establish a crewed lunar base by 2030 via the Artemis Lunar Exploration Program. Abbreviated for "Acceleration, Reconnection, Turbulence and Electrodynamics of Moon's Interaction with the Sun," the Artemis Accords draw the guidelines for mining of the moon. India has also under obligation to associate themselves with the process and procedure of aforesaid Accords.

I. POWER AND RESPONSIBILITY OF STATUTORY AUTHORITY:

Similar to 'The Administrator' under the NATIONAL AND COMMERCIAL SPACE PROGRAMS CODE of NASA, IN-SPACe shall be a statutory Body for India's Space Legislation. It shall have the following function:

IN-SPACe is an independent body created by the Central Government for granting authorisation for space

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activities and usage of Indian Research Organisation created and maintained by the Department of Space owned facilities by NGPEs as well as to prioritise the launch manifest. through **Contracts, Leases, And Agreements** and Granting licences subject to capacity and provisions of the Space Activity legislation. Further, IN SPACe is authorized **with respect to Liability/Claims** to consider, ascertain, adjust, determine, and settle the matter on behalf of the Central Government.

II. DISPUTE RESOLUTION:

Dispute Resolution on the matter connected with space technology usually resolved by mutual consultation and arbitration mechanisms in India could follow the PCA Space Arbitration rules.

Rules for outer space dispute resolution are:

a. **PCA Space Arbitration Rules:** Framed by the Permanent Court of Arbitration, these were therefore created to address the lacuna in the dispute resolution framework which existed until then, whereby private entities had remained largely unrepresented.[1]

b. Any dispute resolution rules framed by the institution themselves.

c. Additional Cross waiver clause, similar to **Section 309 provided under NASA's** Code:

III. DEFINITION OF SPACE ACTIVITY: One of the most important to define in the domestic law will be space activities. After careful consideration, as per the author, France in its domestic law defines space activities in the most comprehensive yet an exclusive manner to allow interpretation. Such definition can be taken up for India's domestic law with suitable modifications.

IV. LICENSING REGULATIONS:

One of the core incentives for private players is regulating the license process by rules. There is but one way of easing the process. These are:

a. License Regulation to incentives private undertaking[2]:

Indians Regulatory Regime

1. **Authorisation Authority:** The action of Authorizing any launch or authoritative directions including transfer the commanding of a space object after launching and to act upon for return to Earth are granted once after due diligence by the administrative authority in India INSPACe or others. Such actions include verification of the related principals and considerations, financial capabilities and professional proficiency of the applicant. Wherever, necessary also verify shareholders conflicting interests and ascertained that the available arrangements and procedures related thereto intends to comply as per specifications given in technical regulations set forth in rules or procedure. Besides, that during course of the proposed activity

[1] https://www.mcgill.ca/iasl/files/iasl/optional-rules-arbitration-disputes-outer-space-6dec2011.pdf

[2] Dimitri Linden, *The Impact Of National Space Legislation On Private Space Undertakings: A Regulatory Competition Between States?* , Sept-2017

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the safety of persons, property, general public health and concern of environment. The public policy of Space Activity and Laws shall be guiding mechanics to authorise of refuse any such Authorisation in view of the national interest.

2. Power to Exempt: When an authorization is applied for an activity or operation which is to be conducted from the territory of a foreign State or any activity related thereto facilities to be performed within the same jurisdiction of a foreign State. Further, the factual conditions connected with national and international commitments made by that State or otherwise agreed as well as its legislation and practices include sufficient guarantees regarding the safety of persons and property and the protection of public health and the environment, and liability matters. the IN SPACE may exempt the applicant from all or any part of the compliance otherwise required.

3. Experimental Permit:

a. Experimental Aerospace Vehicle.—The term ‘‘experimental aerospace vehicle’’ means an object intended to be flown in, or launched into, orbital or suborbital flight for the purpose of demonstrating technologies necessary for a reusable launch vehicle, developed under an agreement between ISRO and a developer.

4. **Insurance/Reimbursement and Indemnification clause.**

5. Cross Waiver Clause.

6. Currently USA regulates only launch and re-entry operations but with increase **in in-orbit activities**, these should also be covered. The position in **France is as under;**[3]

“ Where any damage caused to a person during any space operation or the manufacturing process of a space object taking part in this operation or in that process of manufacturing, any other person present and taking part in the space operation or manufacturing process of the space object having caused the damage and bound to the previous one under the provisions of contract cannot be held liable on account of said damage, unless otherwise expressly stipulated that the said damage caused during the manufacturing process phase of a space object which is to be directed in outer space or during its commanding activities ***in orbit,*** *or in case of a wilful wrongdoing of person.”*

V. INTERNATIONAL LEGAL PERSPECTIVE:

Based on COPOUS Report of 2019- 62nd session: Legal Sub Committee 58TH session:

Things that are required to be inculcated in our legal framework[4]:

[3] **Article 20** Loi n° 2008-518 du 3 juin 2008 [Law No. 2008-518 of 3 June 2008]; articles 8-11 Décret n° 2009-643 du 9 juin 2009 [Decree No. 2009-643 of 9 June 2009].

[4] https://undocs.org/A/RES/73/91

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1. Need for **information sharing** of international intergovernmental and non-governmental organizations relating to space law

2. Following the **five UN treaties**[5] :

a. the five United Nations treaties on outer space, together with the relevant principles enshrined therein, endorsed by the General Assembly, were to be considered the multilateral foundation of international space law.

b. these treaties should be legally binding and universal in nature but should not have undue burden on the States.

a. The outer space is neither defined nor specified by the definition under the regime of International Telecommunication Union. That kind of ethical and legal uncertainty concerning the applicability of space law and air law and that matters concerning State sovereignty and the boundary between airspace and outer space needed to be clarified in order to reduce the possibility of disputes among States.

b. The geostationary orbit should be viewed as a specific area and special part of outer space that needed specific technical and legal governance and thus should be regulated by a sui generis regime.

c. Geostationary orbit cannot be interfered through sovereign authority and that its utilization should be governed by applicable international law.

d. In terms of article II of the Outer Space Treaty issue of non-appropriation regarding adoption and implementation of the freedom-of-use doctrine has not easy to practice, because unilateral appropriation of a resource by any State would generally be inconsistent with the principle of freedom of use by all other States. Therefore, appropriation of an orbit or spectrum resource in the geostationary orbit would constitute an exercise of exclusive control or use of that orbit on a permanent basis.

e. Certain legal principles should be elaborated concerning the utilization of the geostationary orbit, such as equitable access, freedom of use, non-appropriation and exclusively peaceful uses, and that the development of those principles should lay the foundation for a comprehensive legal regime that would be implemented in the form of technical regulations within the framework of ITU.

3. **<u>Space activity legislation for peaceful exploration and use of outer space</u>**

a. when drafting national space law, international frameworks of agreements, including the United Nations treaties and principles applicable on outer space. The provisions of ITU Constitution and Convention has regarded treaty in itself. Whereas the ITU Radio Regulations, and certain non-binding instruments, and other relevant guidelines issued time to time by the Committee on the Peaceful Uses of Outer Space should

[5] https://undocs.org/A/AC.105/1203 **para. 68, and annex I, paras. 9–13**

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be guiding factor for drafting legislation and agreement to carryout object thereof to provide assurance of the safety and sustainability of outer space activities.

b. It is important to continue to regularly exchange information on developments in the area of national space -related regulatory frameworks. In that regard, the Subcommittee encouraged member States to continue to submit to the Secretariat texts of their national space laws and regulations and to provide updates and input for the schematic overview of national regulatory frameworks for space activities.

3. Principles pertaining to use of **Nuclear Power Source in Outer Space** [6]: there needs to be binding laws on this since there is no review of the current legislation on the same.

4. **Space Debris Mitigation** And Remediation Measures[7]:

a. States have to implement space debris mitigation measures consistent with the Space Debris Mitigation Guidelines of the Committee, IADC, ISO standard ISO 24113:2011 (Space systems: space debris mitigation requirements) and/or ITU recommendation regarding Environmental concern for geostationary satellite orbit.

5. All States should register all space objects they launched into outer space and that no object should be removed from its orbit without the prior authorization of the State of registry.

Application Of International Law To **Small-Satellite Activities[8]:** Existing legal regime on outer space ensured the protection mechanism, transparency and sustainability of operations relating to small-satellite activities. Except aforementioned neither ad hoc legal regime, nor any other instrument or alike mechanisms could impose any adverse limitations on the design, building, launching or application of space objects, should be formed or structured.

6. **Policy Building for Exploration, Exploitation Utilization of Space Resources:[9]**

The view was expressed that, while it might not be technically feasible at present to engage in space resources activities, the enactment of National Space legislation on the subject required the issue to be addressed multilaterally with a view to developing an international legal framework within which such activities could be undertaken. The delegation expressing this view also expressed the view that space resource-related activities should be based on the principles of sustainable use of natural resources, avoidance of harmful contamination, and efficiency, that appropriate international safety standards should be established and adhered to, and that such activities should be coordinated at the international level in order to avoid competing interests and minimize conflicts

[6] https://undocs.org/A/AC.105/1203 **para 141-150**

[7] https://undocs.org/A/AC.105/1203 para 151-185.

[8] https://undocs.org/A/AC.105/1203 para 222-238

[9] https://undocs.org/A/AC.105/1203 para 239-267

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7. Promotion of Spin-off [10]:

a. A publication called Spinoff 2019, issued by NASA, was available on the NASA website.

b. Allowing spin-offs from space technology involving various actors, including the private sector and academia, resulted in the emergence of fruitful partnerships and shared learning opportunities among the private sector, international intergovernmental organizations and public research and education institutions.

c. Spin offs include: innovations in numerous scientific areas, including those relating to health, medicine, the environment, education, communication, transport, dentistry, safety, biology, chemistry and materials science. It also took note of practical applications of spin-offs from space technology of benefit to society, such as the use of enhanced software engineering tools and theories to improve instant online marketing processes, as well as the use of compact recreational facilities originally developed for the International Space Station, which had a beneficial impact on public health.

8. Space Weather:

a. Space weather, which was caused by solar variability, was an international concern owing to the potential threat it posed to space systems, human space flight and ground- and space-based infrastructures upon which society increasingly relied. As such, it needed to be addressed in a global manner.

VI. PROPERTY RIGHTS THAT EXIST IN SPACE:

There are actually a wide variety of space activities involving clearly delineated ownership recognized by national legal bodies throughout the world. These rights are clearly and explicitly provided and must be a part of every legal framework:

a. First, anything that is **launched into space is deemed to be owned by the launching party or state,** including the launch vehicle, all of its associated stages and parts, and the payload that is placed into space[11]. Not only do property rights attach to these objects, but the owner(s) can be held singularly and jointly liable for damage caused by these objects-if the owner is either itself the government of a launching state, or held to reimburse any international claims to be paid by such a government[12]. Thus, sovereignty in some form exists for satellites and aboard space stations.

[10] https://undocs.org/A/RES/73/91

[11]Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (1967), **Art VIII**, 18 UST 2410, 2413 (1969)(hereinafter Outer Space Treaty).

[12] International Liability for Damage Caused by Space Objects (1972), **Art IV**, 24 UST 2389, 2393 (1973) (hereinafter Liability Convention).

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b. Similarly, **ownership of permanent structures** that might be constructed on celestial bodies, including the moon, will vest in the company or state building the structure, at least to the extent it is placed "on a celestial body".[13]

c. With regard to any structure essentially made from locally available resources, there are no clear rules, and it may be valuable to establish clarity on this subject.

d. Commercial space today is dominated by communications satellites owned by private companies or national governments. These national governments and the International Telecommunications Union ("ITU") allocate the right to use spectrum to these communications satellites[14]. Although this right to use the spectrum is not exactly a traditional property right, it does grant use of a limited resource in space for business purposes for the lifetime of the particular satellite proposed to be used.

e. Anything taken from space and returned to the earth becomes the property of the person, company, or government that performs the action, given the absence of United Nations treaty provisions prohibiting such ownership.

Added legal certainty may eventually become necessary to prevent the undue stifling of relevant private interests, especially with regard to minerals and other potentially valuable resources that could be mined from celestial bodies. But as nations become increasingly aware of the possibility of inflicting environmental damage on celestial boles, most will likely limit any governmental or private activity that might endanger lunar or other celestial environment[15].

VII. Intellectual Property Rights:

In general, under **Article VIII of the Outer Space Treaty**, states are entitled to exercise national jurisdiction on board spacecraft registered with and by them. Thus, states launching spacecraft with manned capability, and hence confronting the possibility of an individual developing a new invention while in outer space may apply their relevant national laws to such spacecraft[16]. **Through the Patents in Outer Space Act, the United States has accordingly extended the scope of its patent legislation to inventions made on-board United States-registered spacecraft.** [17]. **This is something India should focus on.**

[13] Outer Space Treaty, **art VIII**

[14] Constitution and Convention of the International Telecommunication Union (1992), **Art I,** 1825 UN Treaty Ser 1, 333 (1998) (hereinafter ITU Constitution).

[15] Henry R. Hertzfeld, Frans von der Dunk, *Bringing Space Law into Bringing Space Law into the Commercial World: Property Rights without Sovereignty*, 2005.

[16] *Ibid*.

[17] § 105, "Inventions in outer space," to the Patents in Outer Space Act, Pub L No 101-580,104 State 2863 (1990), codified at 35 USC § 10 (2000).

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VIII. EXPLORATION AND EXPLOITATION OF SPACE RESOURCES UNDER INTERNATIONAL LAW:

The exploitation and exploration of space resources cannot be viable without adhering to the international law principles. For development of a domestic legal approach on the same, the international principles must be adhered to:

(i) Benefit sharing clause: the "benefit clause", article I (1) of the Outer Space Treaty is one of the key provisions of the Outer Space Treaty. Its goal is to promote international co-operation between all States[18]. It is based on the Declaration of Legal Principles of International Space Law (Treaty) for the intergenerational humanity. The aforementioned clause bears one of the typical characteristics of the COPUOS legal provisions that were adopted in the 1960's

(ii) In terms of Article I(2) of Outer Space Treaty and Article 31of Vienna Convention [19] the words, "exploration and use", are mentioned in article I(2), it would mean that "use" has a wider meaning than "exploration". According to opinions expressed by a broad majority of authors, the term "use" includes space related commercial activities[20].

(iii) In the backdrop Freedom of Scientific Investigation: The provision sof the outer space treaty accord for freedom of scientific investigation in any part of the outer space . Whereas the Moon Agreement further elaborates on the principle by adding requirements of non– discrimination as well as respect for the principle of equality and international law. The wording goes well beyond the Outer Space Treaty but remains limited to scientific investigation. In its article 6(2),[21] the Moon Agreement goes further by describing activities that are permitted with regard to space resources, thereby basically transforming the practices of both the US and Russia into international legal norms.[22]

State Parties are also entitled to **collect and remove samples** of their minerals and other substances from the Moon. It can be deduced from the above that the definition of the "natural resources" of the Moon was limited to "mineral and other substances" during the negotiation of the Agreement. State practise, particularly US and Russian practises, indicates that samples remain at the disposal of the States that have collected them. There is a chance for other States Parties and the international scientific community to make them available. Finally, it is explicitly mentioned that these minerals and other compounds from the Moon can be used in amounts suitable for support of their mission.

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[18] Isabelle Bouvet, "*An International Legal Framework to Govern Space Natural Resources Exploitation*", Institute Of Air And Space Law, Faculty Of Law, Mcgill University Montreal, July 2012.

[19] Article 31, Vienna Convention on the Law of Treaties 23 May 1969, 1155 UNTS 331 [VCLT]

[20] Supra note 24.

[21] Moon Agreement, **Art 6(2)**.

[22] Scott J. Shackelford, "The Tragedy of the Common Heritage of Mankind", Stanford Environmental Law Journal, Vol. 27/2008, pp. 101 – 120, online, <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1407332.>

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Scientific investigation falls under exploration, not exploitation.

a. **Non-Contamination of Environment**: As under Article IX of the OST, the State Parties must avoid any harmful contamination to the environment by any such exploration. For this reason, while making a space law on exploitation of natural resources, it must include strict and precise provisions on environment preservation as is the case in legal regimes governing exploitative activities in other international areas. By providing a specific protection mechanism for some areas on the Moon and celestial bodies, this would create a special status with dedicated protection. It could notably be the case for the dark side of the Moon. Environmental preservation in space is relevant to the exploitation of space natural resources. [23]

Therefore, these basic provisions may like to adopted in order to adhere to the legal international principles concerning regulations and development of Space Activities.

[23] Supra note 24.