12 November 2024

Joint contribution submitted by Luxembourg and the Kingdom of the Netherlands

on Elements for an Initial Draft Set of Recommended Principles for Space Resource Activities

Building blocks for the development of an international framework on space resource activities

Introduction

At its 67th session, UN COPUOS endorsed the report of the Chair and Vice-Chair of the Working Group on Legal Aspects of Space Resource Activities of the Legal Subcommittee (A/79/20, para. 221), which is contained in annex III to the report of the Committee. Following the agreement reached by the Working Group, Luxembourg and the Kingdom of the Netherlands wish to respond to the Chair and Vice-Chair's invitation to provide additional contributions relevant to the elements for an initial draft set of recommended principles for space resource activities.

This contribution aims to present to the attention of the Working Group the Building Blocks for the Development of an International Framework on Space Resources Activities, which constitute a valuable input to the discussions in UN COPUOS. The goal is to help shape and inform the drafting process of an initial set of recommended principles which are responsive to the highly innovative space sector and its technologies.

Background of The Hague International Space Resources Governance Working Group

In order to create an enabling environment for space resource activities, The Hague International Space Resources Governance Working Group ("The Hague Working Group") was created in 2016 to promote international and cross-regional cooperation and a multi-stakeholder dialogue.

On 12 November 2019, The Hague Working Group adopted twenty Building Blocks for the Development of an International Framework on Space Resource Activities (the "Building Blocks"). It has designed these Building Blocks, reflected below, to lay the groundwork for international discussions on the potential development of an international framework, without prejudice to its form and structure.

The Hague Working Group was a dynamic, inclusive, and cross-regional platform among the various stakeholders on the progress of and issues related to the current and future use of space resources, the need to adapt to and enable solutions for current and future technical issues, including legal and policy considerations.

The Hague Working Group consisted of around 30 members and observers and was hosted by a Consortium of organisations from each continent. The principal Consortium partner was the Institute of Air and Space Law of Leiden University, The Netherlands (www.iiasl.aero). The other Consortium partners are: the Catholic University of Santos, Brazil (www.unisantos.br), the Indonesian Centre for Air and Space Law of Padjajaran

University, Indonesia (www.casl.nalsar.ac.in/casl), the Secure World Foundation, USA (www.swfound.org), the University of Cape Town, South Africa (www.uct.ac.za), the University of Luxembourg, Luxembourg (https://wwwen.uni.lu/), the Nishimura Institute of Advanced Legal Studies, Japan (https://www.jurists.co.jp/en/common/nials) and the Ten to the Ninth Plus Foundation, USA. Through periodical meetings, The Hague Working Group held in-depth discussions on the requirements for an enabling regime, that would encourage pioneers, while at the same time remain inclusive.

The value of The Hague Working Group is that it fostered an open multistakeholder dialogue, cooperation and share of expertise between international organisations, academia, civil society, governments and industry.

Guided by the principle of adaptive governance, The Hague Working Group considered it neither necessary nor feasible to attempt to comprehensively address space resource activities in the Building Blocks: space resource activities should be incrementally addressed at the appropriate time on the basis of contemporary technology and practices.

A commentary on the development of the Building Blocks, with information on each of the blocks, was made available to the Member States of UN COPUOS at the beginning of 2020[1]. The Building Blocks presented below have been translated to French, Spanish, Chinese, Portuguese and Italian.

Luxembourg and the Kingdom of the Netherlands present the Building Blocks below to the Working Group on Legal Aspects of Space Resource Activities of the Legal Subcommittee, for the consideration of its members. In their view, each of the Building Blocks addresses a relevant issue that should be considered for inclusion in a regime governing the exploration, exploitation and utilisation of natural resources in outer space. They consider, in addition, that the direction and scope of the Building Blocks could provide a useful basis for further discussion of such governance.

1. Objective

1.1 The international framework should create an enabling environment for space resource activities that takes into account all interests and benefits all countries and humankind.

1.2 To achieve this objective, the international framework should:

(a) Identify and define the relationship of space resource activities with existing international space law, including the provisions of the United Nations treaties on outer space;

(b) Propose recommendations for the consideration of States for the application or development of domestic frameworks;

(c) Propose recommendations for the consideration of international organizations for the application or development of internal frameworks;

[1] www.universiteitleiden.nl/en/law/institute-of-public-law/institute-of-air-space-law/the-hague-spaceresources-governance-working-group.

(d) Promote the identification of best practices by States, international organizations and non-governmental entities.

2. Definition of key terms

2.1 Space resource: an extractable and/or recoverable abiotic resource in situ in outer space.[2]

2.2 Utilization of space resources: the recovery of space resources and the extraction of raw mineral or volatile materials therefrom.[3]

2.3 Space resource activity: an activity conducted in outer space for the purpose of searching for space resources, the recovery of those resources and the extraction of raw mineral or volatile materials therefrom, including the construction and operation of associated extraction, recovery, processing and transportation systems.

2.4 Space object: an object launched into outer space from Earth, including component parts thereof as well as its launch vehicle and parts thereof.

2.5 Space-made product: a product made in outer space wholly or partially from space resources.[4]

2.6 Operator: a governmental, international or non-governmental entity conducting space resource activities.

3. Scope

3.1 The international framework should address States and international organizations, and could provide for the regulation of the conduct of States, international organizations and non-governmental entities.

3.2 The international framework should address space resource activities within the solar system.

4. Principles

4.1 The international framework should be consistent with international law.

4.2 The international framework should be designed to:

(a) Adhere to the principle of adaptive governance by incrementally regulating space resource activities at the appropriate time;

(b) Promote compatibility and predictability of domestic frameworks of States and internal frameworks of international organizations;

(c) Contribute to sustainable development;

---

[2] According to the understanding of the Working Group, this includes mineral and volatile materials, including water, but excludes: (a) satellite orbits; (b) radio spectrum; and (c) energy from the sun except when collected from unique and scarce locations.

[3] According to the understanding of the Working Group, this excludes secondary utilization of space resources, i.e., (a) utilization of raw materials derived from space resources; and (b) marketing and distribution of space resources.

[4] According to the understanding of the Working Group, this excludes raw mineral and volatile materials, including water, irrespective of form.

(d) Prevent disputes arising out of space resource activities;

(e) Promote and secure the orderly and safe utilization of space resources;

(f) Promote the sustainable, rational, efficient and economic use of space resources;

(g) Promote the use of sustainable technology;

(h) Provide legal certainty and predictability for operators;

(i) Take into particular account the needs of developing countries;

(j) Take into particular account the needs of science;

(k) Take into particular account the contributions of pioneer operators.

4.3 The international framework should provide that:

(a) Space resources shall be used exclusively for peaceful purposes;

(b) Space resource activities shall be carried out for the benefit and in the interests of all countries and humankind irrespective of their degree of economic and scientific development;

(c) Appropriate international consultations shall be undertaken in accordance with article IX OST[5] if there is a reason to believe that any potentially harmful interference may be caused;

(d) International cooperation in space resource activities shall be conducted in accordance with international law.

5. International responsibility for space resource activities

The international framework should provide that:

(a) States shall bear international responsibility for national space resource activities, whether such activities are carried out by governmental agencies or non-governmental entities, and for ensuring that such activities are carried out in conformity with the international framework;

(b) Non-governmental space resource activities shall require prior authorization and continuing supervision by the appropriate State;

(c) When space resource activities are carried out by an international organization, responsibility for compliance with the international framework shall be borne by the international organization and by the States participating in such organization.

6. Jurisdiction and control over space-made products used in space resource activities

The international framework should provide that States have jurisdiction and control over any space-made products used in the space resource activities for which they are responsible.

---

[5] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies of 1967.

7. Priority rights

The international framework should enable the attribution of priority rights to an operator to search for and/or recover space resources for a maximum period of time and a maximum area upon registration in an international registry, and provide for the international recognition of such priority rights. The attribution, duration and area of the priority right should be determined on the basis of the specific circumstances of a proposed space resource activity.

8. Resource rights

8.1 The international framework should ensure that resource rights over raw mineral and volatile materials extracted from space resources, as well as products derived therefrom, can lawfully be acquired through domestic legislation, bilateral agreements and/or multilateral agreements.

8.2 The international framework should enable the mutual recognition between States of such resource rights.

8.3 The international framework should ensure that the utilization of space resources is carried out in accordance with the principle of non-appropriation under article II OST.

9. Due regard for corresponding interests of all countries and humankind

The international framework should provide that States and international organizations responsible for space resource activities shall give due regard to the corresponding interests of all countries and humankind.

10. Avoidance and mitigation of potentially harmful impacts resulting from space resource activities

Taking into account the current state of technology, the international framework should provide that States and international organizations responsible for space resource activities shall adopt appropriate measures with the aim of avoiding and mitigating potentially harmful impacts, including:

(a) Risks to the safety of persons, the environment or property;

(b) Damage to persons, the environment or property;

(c) Adverse changes in the environment of the Earth, taking into account internationally agreed planetary protection policies;

(d) Harmful contamination of celestial bodies, taking into account internationally agreed planetary protection policies;

(e) Harmful contamination of outer space;

(f) Harmful effects of the creation of space debris;

(g) Harmful interference with other ongoing space activities, including other space resource activities;

(h) Changes to designated and internationally endorsed outer space natural or cultural heritage sites;

(i) Adverse changes to designated and internationally endorsed outer space sites of scientific interest.

11. Technical standards for, prior review of, and safety zones around space resource activities

11.1 The international framework should provide that States and international organizations shall require the conduct of a review prior to a decision to proceed with a space resource activity to ascertain that such an activity is carried out in a safe manner to avoid harmful impacts.

11.2 The international framework should encourage the development of:

(a) Procedures to ensure that equipment, operational procedures, and processes applied in space resource activities avoid harmful impacts;

(b) Methodologies to assess that equipment, operational procedures, and processes applied in space resource activities meet common technical standards (conformity assessment);

(c) Technical standards for equipment, operational procedures, and processes applied in space resource activities (standardization).

11.3 Taking into account the principle of non-appropriation under article II OST, the international framework should permit States and international organizations responsible for space resource activities to establish a safety zone, or other area-based safety measure, around an area identified for a space resource activity as necessary to assure safety and to avoid any harmful interference with that space resource activity. Such safety measure shall not impede the free access, in accordance with international law, to any area of outer space by personnel, vehicles and equipment of another operator. In accordance with the area-based safety measure, a State or international organization may restrict access for a limited period of time, provided that timely public notice has been given setting out the reasons for such restriction.

11.4 The international framework should provide that appropriate international consultations are undertaken in case of possible overlap of safety zones or conflicts involving the freedom of access recognized by international law.

12. Monitoring and redressing harmful impacts resulting from space resource activities

12.1 The international framework should provide that States and international organizations shall ensure monitoring of any harmful impacts resulting from space resource activities for which they are responsible.

12.2 If a harmful impact resulting from a space resource activity occurs, or is reasonably expected to occur, the international framework should provide that the State or international organization responsible for the space resource activity shall implement measures to respond to such harmful impact (response measures) and consider whether the space resource activity should be adjusted or terminated (adaptive management).

13. Sharing of benefits arising out of the utilization of space resources

13.1 Bearing in mind that the exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and humankind, the international framework should provide that States and international organizations responsible for space resource activities shall provide for benefit-sharing through the promotion of the participation in space resource activities by all countries, in particular developing countries. Benefits may include, but not be limited to, enabling, facilitating, promoting, and fostering:

(a) The development of space science and technology and of its applications;

(b) The development of relevant and appropriate capabilities in interested States;

(c) Cooperation and contribution in education and training;

(d) Access to and exchange of information;

(e) Incentivization of joint ventures;

(f) The exchange of expertise and technology among States on a mutually acceptable basis;

(g) The establishment of an international fund.

13.2 The international framework should not require compulsory monetary benefit-sharing.

13.3 Operators should be encouraged to provide for benefit-sharing.

14. Registration and sharing of information

The international framework should provide that States and international organizations shall:

(a) Register priority rights of an operator to search and/or recover space resources in accordance with the international framework;

(b) Give advance notification of space resource activities, including any area-based safety measure associated with them, for which they are responsible through an international database;

(c) Register space objects in accordance with the REG,[6] General Assembly resolution 1721 B (XVI),[7] or article XI OST, taking into account General Assembly resolution 62/101;[8]

(d) Notify frequency assignments for recording in the Master International Frequency Register in accordance with the Radio Regulations of the International Telecommunication Union;

(e) Provide, taking into account article XI OST and the legitimate interests of operators, information and best practices on the prior authorization and continuing supervision of space resource activities for which they are responsible through an international database, including:

(i) The purposes, locations, orbital parameters, and duration of space resource activities;

(ii) The nature, conduct, and locations of space resource activities and associated logistic activities, for example deployment of stations, installations, equipment and vehicles;

---

[6] Convention on the Registration of Objects Launched into Outer Space of 1976.

[7] General Assembly resolution 1721 B (XVI) of 20 December 1961, on international cooperation in the peaceful uses of outer space.

[8] General Assembly resolution 62/101of 17 December 2007, on recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects.

(iii) The results of space resource activities;

(iv) Any phenomena discovered in outer space which could endanger terrestrial life or health, as well as of any indication of extraterrestrial life;

(v) Any harmful impacts resulting from space resource activities for which they are responsible and the measures planned or implemented to redress such impacts;

(f) Notify the termination of space resource activities for which they are responsible through an international database together with a statement on the condition of the area where the space resource activity was carried out, including the presence of any space objects or space-made products, or parts thereof.

15. Provision of assistance in case of distress

The international framework should provide for the applicability of article V OST and the ARRA[9] to persons involved in space resource activities.

16. Liability in case of damage resulting from space resource activities

16.1 The international framework should provide for the applicability of articles VI and VII OST and the LIAB[10] to damage resulting from space resource activities.

16.2 The international framework should encourage initiatives of operators to provide, individually or collectively, compensation for damage resulting from their space resource activities.

17. Visits relating to space resource activities

The international framework should provide for the applicability of article XII OST, taking into account the legitimate interests of operators, including safety of operations and protection of intellectual property.

18. Institutional arrangements

The international framework should provide for:

(a) The establishment and maintenance of a publicly available international registry for registering priority rights of an operator to search and/or recover space resources;

(b) The establishment and maintenance of an international database, in addition to the international registry, for making publicly available:

(i) Advance notifications of space resource activities, including any area-based safety measures;

(ii) Information and best practices;

(iii) The list of designated and internationally endorsed outer space natural and cultural heritage sites;

[9] Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Space of 1968.

[10] Convention on International Liability for Damage Caused by Space Objects of 1972.

(iv) The list of designated and internationally endorsed sites of scientific interest;

(v) Information and best practices on the prior authorization and continuing supervision of space resource activities for which States and international organizations are responsible;

(vi) Notifications of the termination of space resource activities for which States and international organizations are responsible;

(c) The designation or establishment of an international body or bodies responsible for:

(i) The consideration and promotion of best practices;

(ii) The listing of designated and internationally endorsed outer space natural and cultural heritage sites, and sites of scientific interest;

(iii) The monitoring and review of the implementation of the international framework; and

(iv) The governance of the international registry, the international database and any other mechanism that may be established for the implementation of the international framework.

19. Settlement of disputes

The international framework should encourage recourse by States, international organizations and operators to the resolution of disputes through adjudicatory, non-adjudicatory or hybrid mechanisms, for example by developing procedures for consultation or promoting the use of the 2011 Permanent Court of Arbitration Optional Rules for Arbitration of Disputes Relating to Outer Space Activities.

20. Monitoring and review

Mechanisms should be developed for monitoring implementation of the international framework, for example on the basis of reports of States and international organizations, as well as for its review and further development consistent with the principle of adaptive governance.