

Exploitation of celestial bodies' resources

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International cooperation



- **Outer Space Treaty (OST), Article IX**
- In the **exploration and use** of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be **guided** by the **principle of cooperation** and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty

Exploration and exploitation of celestial bodies



- In recent years, renewed interest in the **exploration** of the Moon, and possibly the **mining** of asteroids and the Moon, especially on the part of **emerging space powers** (China, India, Japan) and of **private entities**



Article II, OST



- **Art. II**
- **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**
- **Has to be read in conjunction with Art. VI → national appropriation encompasses private entities**
→ **any claim, by whomsoever, to property rights over any area of outer space or celestial bodies is null and void under international law (see also Statement by the Board of Directors of the IISL, 2004)**

Claims to space property



- *Nemitz v. U.S.*
- U.S. citizen claims before U.S. District Court for the District of Nevada compensation from NASA for the landing of a satellite on asteroid Eros, on which he asserts ownership rights
- Action dismissed
- Dismissal confirmed on 2005/02/02 by U.S. Court of Appeals for the Ninth Circuit
- Also Chinese courts have in recent years sanctioned a company purporting to sell slots on the Moon

Article I, OST



- 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
- 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
- There shall be **freedom of scientific investigation** in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation

Space resources

- Art. II is subject to **two different interpretations** with regard to space resources (in particular, **mineral resources of celestial bodies**)
 - A) Art. II does not cover appropriation of materials removed from celestial bodies (→ **freedom of use**, Art. I)
 - B) Art. II also prohibits removal and appropriation of materials from celestial bodies

First interpretation




- States (and licensed private entities) are free to undertake commercial exploitation of the Moon and other celestial bodies
- They shall not prevent other States from exploiting those resources (they shall not exhaust them)
- They shall not interfere with exploitation activities of other States



Art. IX, OST



- States shall conduct their space activities in a spirit of cooperation and mutual assistance and keeping **due regard for the corresponding interests of other States**
 - **Before undertaking activities causing potentially harmful interference with the activities of other States → duty to consult**
 - State having reason to believe that an activity planned by another State may cause harmful interference may request consultation
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U.S. Space Act 2015



- U.S. Commercial Space Launch Competitiveness Act, November 25, 2015
- Title IV:
- «The President... shall
- “(1) facilitate commercial exploration for and commercial recovery of space resources by United States citizens;
- “(2) discourage government barriers to the development in the United States of economically viable, safe, and stable industries for commercial exploration for and commercial recovery of space resources in manners consistent with the international obligations of the United States; and
- “(3) promote the right of United States citizens to engage in commercial exploration for and commercial recovery of space resources free from harmful interference, in accordance with the international obligations of the United States and subject to authorization and continuing supervision by the Federal Government

Luxemburg Law



- Art. 1.
- **Space resources are capable of being appropriated**
- Art. 2.
- No person can explore or use space resources without holding a written mission authorisation from the minister or ministers in charge of the economy and space activities

Subsequent practice?



- **Vienna Convention on the Law of Treaties (1969), Article 31**
- 1. 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 ...
- 3. There shall be taken into account, together with the context: ...
- **(b) Any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation**

Exploitation of space resources



- Whatever the correct interpretation, **exploitation activities need to be regulated**, especially since space powers and private companies do clearly intend proceeding to exploit space resources
- Exploitation should be regulated in order to preserve the interests of all States (see **space benefit principle**, OST, Art. I) and to preserve the environment of celestial bodies
- Adoption of an agreement in order to (temporarily) ban all exploitation activities, as it was done by the Madrid Protocol (1991) for Antarctica, thus giving priority to the preservation of the space environment, seems less plausible

The Moon Agreement



- **Agreement Governing the Activities of States on the Moon and Other Celestial Bodies**, 18 December 1979
- Adopted by the UNGA Res. 34/68 of 5 December 1979
- Entered into force on **11 July 1984**
- **18 States parties** (Armenia, Australia, Austria, Belgium, Chile, Kazakhstan, Kuwait, Lebanon, Mexico, Morocco, Netherlands, Pakistan, Peru, Philippines, Saudi Arabia, Turkey, Uruguay, Venezuela)
- **4 signatories** (France, Guatemala, India, Romania)

Moon Agreement



- Purpose of the Moon Agreement is that of **regulating the use and exploitation of celestial bodies, while guaranteeing that all States may benefit from such use**
- It intends to **specify the terms of the OST**, not to modify them
- It introduces the principle of the **common heritage of mankind (CHM)**
- CHM was first applied by UNGA Res. 2749 (XXV) of 15 December 1970 (later codified by Montego Bay Convention of 1982) to the resources of the seabed outside the limits of national jurisdiction, then introduced by MA with regard to Moon and celestial bodies

Common heritage of mankind



- Concept developed to govern exploitation of **limited natural resources** of international concern
- The **freedom principle** is **insufficient** to prevent the exhaustion of those resources
- It implies the creation of an **international regime** guaranteeing that the **benefits of exploitation** are **equitably distributed among all countries** (≠ “equally”)

Moon Agreement



- Art. 11.1
- **The Moon and its resources are the Common heritage of mankind**
- Provisions relating to the Moon shall also apply to other celestial bodies within the solar system (Art. 1.1)
- The international regime will have to be established by a review conference under Art. 18



International regime



- The MA only defines the **purposes** (Art. 11.7):
 - a) The orderly and safe development of the natural resources of the Moon
 - b) The rational management of those resources
 - c) The expansion of opportunities in the use of those resources
 - d) An **equitable sharing by all States Parties in the benefits** derived from those resources, with **particular regard to the interests and needs of developing countries** and to the efforts of those countries which have contributed directly or indirectly to the exploration of the Moon

Moon Agreement



- Does it impose a **moratorium** on exploitation?
- **Art. 11.8: All the activities with respect to the natural resources of the Moon shall be carried out in a manner compatible with the purposes specified in paragraph 7 of this article and the provisions of article 6.2**

Moon Agreement



- Art. 6.2: States Parties shall have the **right to collect samples** of Moon mineral substances for **scientific purposes**. They can use those substances in quantities appropriate for support of their missions
- Art. 11.3: **no part of the Moon or natural resources in place shall become property of any State, international organization, non-governmental entity or any natural person** (without prejudice to the international regime)

Moon Agreement



- **No exploitation seems possible, before** the international regime is established
- Moreover, MA has not been ratified by main space powers
- They accepted the CHM principle during the negotiations (supported by the US; no State objected in COPUOS), but now fear MA might hinder commercial exploitation
- → **low relevance** of the Agreement; however it has been recently attracting new ratifications
- Without any international regime (based or not on the MA) commercial exploitation will give rise to bitter controversies

Moon Agreement



- Advantages of the Moon Agreement (which might induce space powers to ratify):
- It offers a viable framework for the commercial exploitation of the Moon's and other planetary resources
- It does not prevent commercial exploitation
- The concept of CHM can be developed in various different ways

Protection of the environment



- Art. 7, Moon Agreement
- 1. In exploring and using the Moon, States Parties shall take measures to **prevent the disruption of the existing balance of its environment**, whether by introducing adverse changes in that environment, by its harmful contamination through the introduction of extra-environmental matter or otherwise

Protection of the environment



- Art. 7, Moon Agreement
- 2. States parties shall inform the Secretary-General of the UN of the measures being adopted in accordance with paragraph 1 and shall also, to the maximum extent feasible, **notify** him in advance of **all placements** by them of **radioactive materials on the Moon** and of the **purposes of such placements**
- Possibility of designating certain areas having special scientific interest as **international scientific preserves**

Sustainability?



- «the ability to maintain the conduct of space activities indefinitely into the future in a manner that realizes the objectives of equitable access to the benefits of the exploration and use of outer space for peaceful purposes, in order to meet the needs of the present generations while preserving the outer space environment for future generations» (STSC Guidelines on Long-term Sustainability of Outer Space Activities 2018)

The Hague Space Resources Governance Working Group



- Final Report 2017
- **6. Access to space resources**
- 6.1 The international framework should enable the unrestricted search for space resources
- 6.2 The international framework should enable the attribution of priority rights to an operator to search and/or recover space resources *in situ* 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 the area of the priority right should be determined on the basis of the specific circumstances of a proposed space resource activity

The Hague Space Resources Governance Working Group



- **7. Utilization of space resources**
- 7.1 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**, and provide for the mutual recognition between States of such resource rights
- 7.2 The international framework should ensure that the utilization of space resources does not contravene the principle of non-appropriation under Article II OST