

**Working Group on Legal Aspects of Space Resource Activities of the Legal
Subcommittee of COPUOS**

**Reference: OOSA/2024/43 - CU 2024/221 22 July 2024, Invitation to provide
contributions on elements for an initial draft set of recommended principles for space
resource activities**

Contribution by Germany

1. General remarks

In-Situ Resource Utilization (ISRU) on celestial bodies has the potential to be a key technology for sustainable space exploration. Using materials found on celestial bodies (e.g. rock, water, oxygen, metals, etc.) *in situ* to sustain life, provide fuel, or build infrastructure can significantly reduce the costs and negative impacts of transporting materials from Earth. Although the demonstration of ISRU technologies is still in its infancy, *in situ* production of mission critical products on the Moon is expected within the next decade and offers opportunities for both science and industry. In the medium term, ISRU technologies developed for space activities can also lead to a more economical use of resources on Earth.

But there are risks to be managed. First, it must be recognized that activities on celestial bodies including those involving space resources lead to changes in the existing environment. They will affect the original conditions for scientific investigations on celestial bodies. For example, ISRU activities can interfere with the study of the origin and evolution of life in our solar system. Second, the fundamental limitation and distribution of natural resources on celestial bodies hold the potential for conflict. Activities conducted by different actors for different purposes may conflict or interfere with each other.

International coordination and the definition of sustainability standards and best practices are therefore necessary, including for the pioneer phase. They should be flexible and adaptable in order to keep pace with technological developments and needs.

2. Aspects suggested to be considered with a view to drafting a set of initial principles

With a view to the principles to be drafted by the Working Group, we suggest to include, among other issues, the following aspects:

a) adherence to internationally agreed planetary protection requirements and procedures

ISRU activities should be conducted in adherence with internationally agreed planetary protection requirements and procedures. Their rationale is to ensure that scientific investigations related to the origin and distribution of life are not compromised and that the Earth is protected from potential hazards posed by extraterrestrial matter.

b) environmental protection and designation of protected scientific areas

Space resources shall be utilized in an equitable and reasonable manner with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests all countries. In order to promote safe and sustainable activities on celestial bodies, it is important to strike a balance between exploration activities and environmental protection. Noting the unique ecological and scientific value of outer space and its celestial bodies, any serious environmental harm, and therefore any serious

interference with the opportunities of others including future generations related to scientific investigation, should be avoided.

All necessary means should be taken to ensure effective protection of the natural environment of the moon and other celestial bodies from serious environmental harm, whether by introducing adverse changes in that environment, by its harmful contamination or otherwise. All necessary measures should be taken to prevent, reduce and control pollution and other hazards to the natural environment, as far as reasonably possible, applying best available techniques and best environmental practices. To that end, states and non-governmental actors conducting space resource activities should cooperate with internationally recognized scientific experts. An expert body mandated by COPUOS could be established to offer scientific and technical advice and recommendations on these matters.

An environmental impact assessment should be conducted prior to any activity in outer space involving the use of space resources. States should inform the UN, the scientific community and the public of the results of such environmental impact assessments, as well as of the means planned to be taken to ensure effective protection of the natural environment from serious environmental harm.

The possibility of allowing the international community to comment on such reports within a reasonable timeframe could be discussed, particularly for those missions with a greater environmental impact. Such comments could be processed either through the UN and/or through a designated point of contact by the State providing the information. States could then be invited to respond to the comments received and to take them into account, on a voluntary basis, in the further planning or authorization of activities involving space resources.

Upon completion of activities on celestial bodies, measures should be considered to restore, as far as possible and appropriate, the initial conditions found before (e.g. abandoned mining sites). In taking measures to prevent, reduce or control pollution of the space environment, States shall refrain from unjustified interference with activities carried out by other States in the exercise of their rights and in pursuance of their duties under the OST.

In order to protect the original conditions for scientific investigations on celestial bodies, States should submit to the UN information concerning areas of the moon having special environmental or scientific value. Applying a precautionary approach as reflected in principle 15 of the Rio Declaration and article 7.3 of the Moon Agreement, States should consider the designation of those areas as a specially protected area.

c) International consultations

Prior to any space resource activity, the responsible State should undertake appropriate international consultations before proceeding with any such activity or experiment. This is based on the understanding that the use of resources may potentially cause harmful interference with activities of other parties in the peaceful exploration, because missions on the lunar surface bare the potential of changing the lunar environment in a way that affects other missions. To that end, a State planning to conduct or authorize an activity involving space resources should communicate to the UN a predefined contact point to which requests for consultations should be addressed. When conducting a space resources activity, States should take all appropriate measures to prevent the causing of harm to others space activities.

States planning space resources activities should exchange information and consult each other and, if necessary, discuss the possible effects of planned measures on the status and condition of a space resource reserve. States conducting space resource activities should exchange readily available data and information on space resources on a regular basis, in particular on resources of a limited nature and related to the safety and sustainability of activities related to such space resources, as well as related projections and forecasts.

Consultations by default for any lunar activity may be taken into consideration as a means to ensure timely communication and avoidance of conflict.

3. Considerations concerning a future legal regime for space resources activities

The way in which a space resource is used is directly related to whether a form of utilization is considered legitimate or not. If the utilization of resources on celestial bodies is to go beyond that in support of scientific missions, an international legal framework is required to provide legal certainty in an area beyond national jurisdiction, to prevent conflict and to ensure that space resources activities are conducted for the benefit and in the interest of all humankind.