



HELLENIC REPUBLIC

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**8th IAA Planetary Defense Conference – PDC 2023  
3-7 April 2023, Vienna, Austria**

SESSION 9 : The Decision to Act: Political, Legal, Social, and Economic Aspects

**PROPOSING A HOLISTIC APPROACH TO AN APPROPRIATE LEGAL  
FRAMEWORK FOR PLANETARY DEFENCE**

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**Near-Earth object (NEO)** → asteroid or comet orbiting the Sun with a perihelion distance of  $<1.3\text{AU}$  (ranging in size from metres to tens of kilometres) whose orbit come close to that of Earth's.

According to ESA estimates, more than 20.000 natural space objects in the Solar System are NEOs.

Main problem posed by NEOs: possibility of colliding with Earth → major disasters possible.



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**Planetary defence** → provides for mechanisms to detect and give early warning of NEOs that could potentially approach the Earth with a strong probability of collision as well as to stop their course or, if this is not possible, to limit the effects of a collision.

**ESA Near-Earth Objects Coordination Centre (NEOCC)** → ESA's centre for computing asteroid and comet orbits and their probabilities of Earth impact.

**NASA's Near-Earth Object Observations Program** → finding, tracking, and characterizing NEOs. Since 1998, more than 98% of the more than 30,000 NEOs currently known discovered.



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Is there a legal framework for planetary defence?

Existing approaches are national (or even regional) in nature, whereas the problem is global.



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### Article IX, Outer Space Treaty

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 co-operation 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... If a State Party to the Treaty has reason to believe that **an activity or experiment planned by it** or its nationals in outer space, including the Moon and other celestial bodies, **would cause potentially harmful interference with activities of other States** Parties in the peaceful exploration and use of outer space, including the Moon and other celestial bodies, **it shall undertake appropriate international consultations before proceeding with any such activity or experiment...**



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### Article VI, OST

**States Parties to the Treaty shall bear international responsibility for national activities in outer space,** including the Moon and other celestial bodies, **whether such activities are carried on by governmental agencies or by non-governmental entities,** and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty...



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- State responsibility could be raised for a State that unilaterally attempted to change the course of a NEO and failed.
- Responsibility may also arise in case no international consultations have taken place.

[Consultations obligation = obligation of conduct, BUT...]



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Further, obligations for States acting unilaterally to change the course of NEOs may arise under **a holistic approach** to planetary defence

→ taking into account factors/parameters that do not relate to the course of a NEO *per se* but arise from space activities which, in some way, can determine and/or otherwise affect the conditions under which planetary defence can be designed and carried out.





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### ***Use of nuclear weapons:***

Use of nuclear weapons in space = prohibited:

#### **Article IV OST**

States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.

**Does the use of nuclear devices for changing the course of a NEO be considered as use of nuclear weapons?**



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### ***Exploitation and utilization of (NEO) space resources:***

→ currently the most controversial issue in the context of space activities (in search of a legal regime)

**Does NEO resource utilization and exploitation be evaluated in the light of Planetary Defence and vice versa?**



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### ***provision of data through Space Situational Awareness mechanisms:***

→ STM – SSA = still in an early stage of development

**Does a comprehensive (international) regime for STM / SSA should also comprise NEO data?**



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At the level of the desirable (*de lege ferenda*), the creation of multilateral mechanisms and institutions (**e.g. an international treaty regulating the issue of planetary defence or the establishment of an international intergovernmental organization for this purpose**) could provide a collective response, of universal character, to a problem of global importance, a response that would *de facto* have the flexibility and effectiveness that unilateral actions cannot have. For obvious reasons, such a development would be qualitatively upgraded with respect to the most critical factor in the context of planetary defence, which is **the decision-making process for intervention against NEOs.**

