International Space Law and the Environment

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Outer space and the environment

• More and diverse actors, more activity, more objects in space
• Need to ensure long-term sustainability of space activities (LEO!)
• Need to protect environment of Earth & celestial bodies

• Issues:
  • Risk of congestion, collision
  • Harmful interference
  • Backward/forward contamination

• Remedies:
  • Hard law; soft law; industry practices; capacity building
Hard law and the environment

e.g., Outer Space Treaty:

- **Art III**: international law applies
  - Incl. environmental law, case law
- **Art. VI**: international responsibility
  - Authorization/supervision
- **Art. VII**: international liability
  - For damage caused by space object
- **Art. VIII**: registration, jurisdiction & control
  - Ownership ‘at eternam’

- **Art. IX**:
  - Cooperation and mutual assistance, due regard for interests of other states
  - Avoid harmful contamination of celestial bodies & adverse changes in earth’s environment
  - Harmful interference with activities of other states: consultation
Soft law and the environment

• Soft law may be voluntary, but it is not without obligations

• UN (and other) Space Debris Mitigation Guidelines
  • Not legally binding, ‘guidelines’
  • But find way into national law

• UN Long-term Sustainability guidelines
  • Need to be implemented in national law

• Recently adopted UNCOPUOS agenda items that may lead to new instruments
  • Space Traffic Management
  • Small satellites
  • Dark & Quiet Skies
Debris mitigation: legal issues

• No rules in treaties, term not mentioned
  • No duty to not create debris
  • No definition of space object
  • Collision: no standard of fault for damage
  • Crash: difficulty of identification, recovery/return
  • Potential liability for as long as object is in orbit
Debris remediation: legal issues

• No rules in treaties, term not mentioned
  • No duty to clean up debris
  • Who pays, e.g., polluter pays principle
  • Consent / permission of owner needed for removal by 3rd party
  • Who owns recovered parts, if any
  • What if damage to a 3rd satellite in space, or on earth/in the air
  • What if the wrong satellite is picked up (national security, IP)
Harmful interference: legal issues

- No definition, no clear prohibition
  - Only obligation is to consult
  - Current issue of interference by large constellations with astronomy
- States must take into consideration the interests of all stakeholders during authorization/supervision process
- States which experience interference can request consultation
Contamination: legal issues

- Contamination of other planets by terrestrial organisms (‘forward’)
- Contamination of the Earth by extra-terrestrial organisms (‘backward’)

- COSPAR Planetary Protection Policy, rev. 2020
  - Standards to guide compliance with art. IX OST
  - Not legally binding, recognized by COPUOS
  - Implemented by states, IGO, since 50+ years

- 5 categories of planetary protection, depending on
  - Type of mission (e.g., orbiter, lander, sample return)
  - Target body (e.g. Moon, Mars, asteroid)
Industry initiatives, capacity building

- Industry is convinced that action is needed
- Bottom-up approach is emerging, e.g.,
  - Net Zero space initiative
  - Space Sustainability Rating
  - Space Safety Coalition
  - Debris removal & STM technology development
  - SpaceX trials to darken satellites for less reflection of sunlight

- Also a need for capacity building, e.g.,
  - UNOOSA/ITU guidance on registration, frequency management
  - SWF Handbook for new space actors
In conclusion: environmental concerns increase

- Difficulty to reach consensus in COPUOS
- New issues
  - Large constellations
    - More congestion, collisions, debris, and interference
  - Human missions to Moon and Mars
    - Update PPP
  - Planetary missions by private entities
    - Risk of non-compliance

SOLUTIONS? International coordination & regulation (COPUOS), national implementation, supervision, industry self-regulation
Thank you!

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