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IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Interactive Presentations - IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (IP)

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Abstract

Rapid growth across public and private space sectors necessitates mechanisms aligning expanding space infrastructure with ecological principles and United Nations Sustainable Development Goals (UN SDGs). This paper examines frameworks for comprehensive environmental impact assessments tailored to space projects, using measurable sustainability criteria to inform ethical investment decisions.

This paper reports on the results of the International Space University (ISU) Space Studies Program 2024 (SSP24) team project on this topic. The team project is an interdisciplinary collaboration between international participants.

The project explores different approaches to stewarding the creation of standardized review processes to ensure that space proposals account for factors like long-term debris mitigation, climate research utility and mitigating space impacts , and collective action supporting equitable global access to space benefits. Methodologies adapted from terrestrial domains can be used to rate commitments across areas like cumulative environmental impact minimization, component reusability, utilization of space-manufactured renewable resources, and habitat conservation in orbit and on Earth. Applying such diligence through public standards or independent audit throughout initiative life cycles can incentivize sustainability while empowering conscientious investors and emerging space economies seeking viable roles in upholding our shared cosmic commons. Mainstreaming ethical space development ultimately safeguards possibilities for vulnerable communities today and future generations tomorrow.

Specific aspects investigated include:

- Frameworks for tailored space project environmental assessments
- Sustainability rating methodologies (debris, renewability, etc.)
- Stewarding standardized impact review processes
- Informing values-based space investment decisions
- Prioritizing equitable access and ethics in space sectors

This paper makes recommendations on how best to implement the above considerations in a practical assessment tool that can be used by different stakeholders in the space industry.