Materiality Issues In The Launch Services Sector: In Search Of A Sector Specific Sustainability Framework

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Background

- Space imagery such as the "Earthrise" photo are believed to have helped inspired the environmental movement of the 1970s (Bartels, 2019).
- Space-based sensors such as satellites have played an enormous role in improving the science and data around sustainability.
- Space-based technologies allow us to engage in many sustainability-focused activities such as; the monitoring of illegal unregulated and unreported fisheries; the identification of optimal sites to produce renewable energy; and information on drought and crop development (UNOOSA, 2018).
- Space agencies such as NASA and the ESA have been instrumental in shaping our understanding of climate change by contributing significantly to research and monitoring.
- There does not seem to be a clear consensus among different organizations regarding sustainability best practices and ways to mitigate the impacts caused by the space industry.
- If sustainability implemented in the early stages of the commercial space race, "we can avoid the economic cost of having to correct bad behaviours later" (Matthews, 2019).
- Therefore, it is crucial to understand the implications of the actions and practices of the space industry has on sustainability.
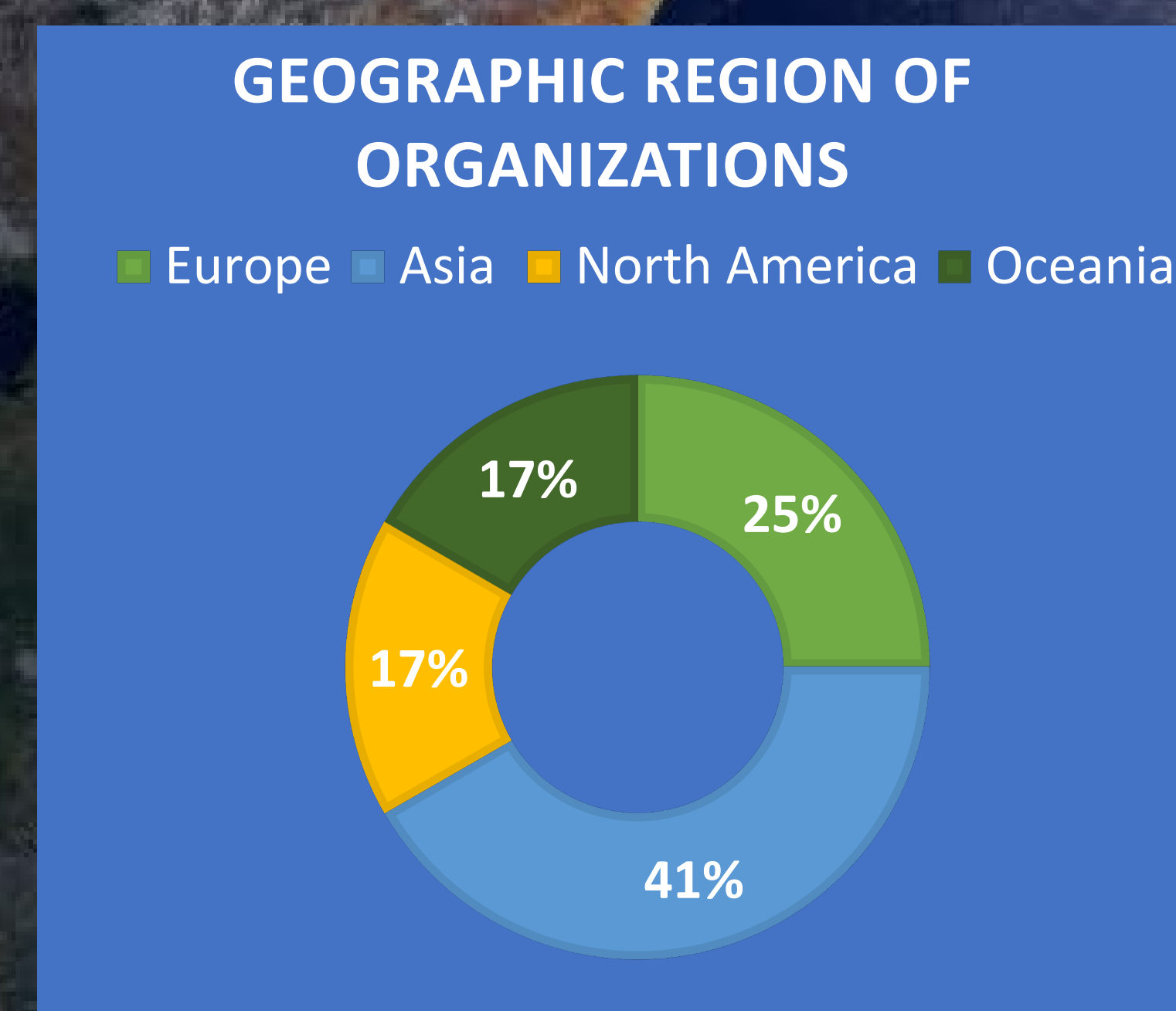
Methodology

Research Focus
- The space industry is large and is made up of many sub-sectors such as satellite manufacturers and ground support providers. Therefore, it is essential to narrow the scope of the research to one area of the industry.
- This research project will be focusing on Launch Service Providers (LSP), which are organizations that focus on launching spacecraft beyond our atmosphere.
  - Looking at both public and private sector organizations.

Literature review
- Researching the potential environmental impact of launch stages on
  - Atmosphere
  - Water
  - Land
  - Human and Animals
- Lastly looking at current guidelines focusing on the space industry which included
  - **Secure World Foundation**
  - **United Nations Committee on the Peaceful Uses of Outer Space**
- Examining the sustainability reporting frameworks of a similar industry (aerospace) using GRI and SASB

Sustainability analysis of Launch Services Sector
- Researched **a total of 30 organizations**, representing the entirety of both the private and public launch sector. Of which **12 had information** relating to sustainability.
- Compiling all mentioned disclosures and actions taken regarding sustainability into the three categories, **environmental**, **socioeconomical**, and **governance.**
- Synthesizing this information into **a final framework** that brings together the most common and important issues

Findings

Name	Organization Type	Founded	Information Source
European Space Agency (ESA)	National Space Agency	1975	Clean Space initiative
Japan Aerospace Exploration Agency (JAXA	National Space Agency	2003	Website – For the Environment
National Aeronautics and Space Administration (NASA)	National Space Agency	1958	2016 Strategic Sustainability Performance Plan + 2018 Strategic Plan
New Zealand Space Agency	National Space Agency	2016	Outer Space and High-altitude Activities Act 2017
Korea Aerospace Research Institute (KARI)	National Space Agency	1989	Website – Future Vision 2050
Antrix Corporation	State owned Private Launch Provider	1992	Corporate Social Responsibility Presentation
Arianespace	Private Launcher Provider	1980	Corporate Social Responsibility Report 2014 – 2015
China Aerospace Science and Technology Corporation	State owned Private Launch Provider	1993	Website – Social Responsibility
Mitsubishi Heavy Industries	Multinational corporation	1994	ESG Data Book 2019
Rocket Lab	Private Launch Provider	2006	Website - FAQS
Yuzhmash	State owned Private Launch Provider	1944	Website - Compliance Policy

GEOGRAPHIC REGION OF ORGANIZATIONS

■ Europe ■ Asia ■ North America ■ Oceania

17% 25% 17% 41%

Final Framework

Environmental	Socioeconomical	Governance
GHG Intensity of Operations	Contribution to Local Economy	Employee Health and Safety
Orbital Debris	Community Outreach	Labor Conditions
Atmospheric Launch Impacts	Public Welfare	Diversity and Equal Opportunity
Terrestrial Launch Impacts	Technology and Product Innovation	Business Ethics
Managing Waste	International Cooperation	Supporting Employee Development
Launch Vehicle Efficiency	Promotion of Space Based Activities	Information Transparency
Ground Based Transportation	Capacity Building	

Key Takeaways

Good
- Growing stakeholder pressure for improvement
- Significant sustainability concern throughout the industry regarding the space debris issue
- More organizations are taking sustainability-related than was initially anticipated
- High level of ongoing international collaboration would be useful in developing sustainability standards that are comprehensive and equitable

Bad
- Very few of the organizations are conducing environmental assessments of their rocket launches that go beyond compliance
- Companies need to be doing more sector-specific evaluations and less generic CSR disclosures
- Few are tracking metrics with the majority of the sustainability disclosures being qualitative

ESA Clean Space Infographic

e.deorbit + ACTIVE DEBRIS REMOVAL
ecodesign + ENVIRONMENTAL IMPACTS
clean space
cleansat + SPACE DEBRIS REDUCTION

References

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