

Responsible Business in Space

Priorities for Longevity in the Space Industry

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Introduction

The space industry is uniquely positioned to contribute to the improvement of life on Earth. From monitoring global emissions and climate change to enabling global communications, advancing healthcare technologies and research, and facilitating off-world mining and settlement, there are many reasons for investment in this industry. Space exploration has also provided some of the foremost inspiration of recent generations for science, art, music, and technological innovation.

“Protecting the space environment is of utmost importance to humanity’s short-term and long-term success.”

Today, the space industry is experiencing rapid growth. It is essential to recognize the business risks as well as the threats that the space economy poses to our planet. These issues must be addressed for the success and long-term sustainability of the industry.

In conversation with 16 aerospace leaders, BSR compiled a list of top strategic priorities for sustainability within the space industry. These leaders included executive levels from VP through to CEO and board members and covered commercial companies whose sectors ranged from launch providers and engineering services to space tourism. The issues and opportunities voiced are all based around a broad and strategic definition of sustainability: what issues are crucial for the space industry to address its long-term viability? The consultations also explored key barriers that inhibit the space industry's pace of action. It should be noted that technical priorities for the industry were not discussed as part of this dialogue.

Leader Voices

Key Issues

Industry-Wide Action on Orbital Debris

There is a consensus in the industry that the accumulation of space debris is untenable for the future of space activities. Over the years, space debris—including defunct satellites, spent rocket stages, and fragments from past space missions—has reached alarming levels. The high speeds at which objects orbit Earth means that even a small piece of debris can cause catastrophic damage upon collision. With the increasing number of satellites in space, the risk of collisions and debris is already limiting launch windows. Debris is a serious concern and is trending negatively despite attention. Industry leaders emphasize that addressing this issue requires scale, international cooperation, innovative technologies for debris removal, and improved space debris mitigation practices for all industry players. The mitigation of orbital debris through responsible design, launch, and end-of-life disposal practices is critical to safeguard space assets and ensure the long-term sustainability of space activities.



An artist impression of orbiting debris and satellites - NASA

Corporate Strategy Around Climate Care

Our interviews highlighted that leaders in the industry understand that “environmental stewardship should be integral to all sectors.” Like any other field, the space industry has its own environmental footprint, including greenhouse gas emissions from significant energy and resource consumption in manufacturing and operations as well as emissions from rocket launches. Space industry leaders recognize that national and international public movements and investors are increasingly looking to corporate performance in climate care. Moreover, various regulations, including SBTi for the space industry, are in progress and coming quickly. New regulations will require companies to assess and report on climate risks and impacts. To be accountable for climate impact and successful in long-term corporate compliance with coming regulations, industry leaders understand that they must actively lead their organizations to reduce the greenhouse gas footprints of their businesses.

Examples noted included investment in cleaner technologies and prioritizing renewable energy sources across all aspects of infrastructure operations. It was agreed that substantial opportunity exists in the space industry to improve overall emissions and that to remain competitive in business, it will be necessary to align space economy activities with global climate goals.

Coherence in Safety

Safety has always been of paramount importance in the space industry. With the industry's rapid growth, especially given the increasing number of new commercial space companies and the expansion of human spaceflight into the commercial sector, leaders and stakeholders have voiced concern over the variation in approach and philosophy toward spaceflight development

“There is nothing more important to the industry and its success in the coming years than having a good long period of safe and successful operations.”

and commerce activities. The need for collective agreement on standards was a predominant theme, seen to safeguard the industry as a whole from mishap. Agency support was viewed as helpful, while over-regulation was cautioned against. Implementing robust safety protocols and comprehensive risk assessments was seen as the most vital step to protect human life, assets, and public trust.

Addressing a Shrinking Talent Pool and Social Inequities

Competition for talent is being felt by many in the sector. Many companies are recognizing the limitations in the current talent pool available and are putting funds toward developing the talent pipeline by working to seed talent with school, university, and internship programs. Interviewees expressed unanimous agreement that “a company's strength is in the talent and diversity of our people.” As such, industry leaders are also addressing diversity and inclusivity to foster equal opportunities and as a strategy to expand the workforce. Simultaneously addressing disparities is understood as a powerful tool to create a supportive and inclusive work environment, minimize harassment, maximize creative resources, and generate the highest levels of innovation.

Risk Reduction in Supply Chains

Leaders we connected with all had examples of issues in their supply chains that at one point caused significant cost, delay, or debilitation to business. Due to some unique features, such as

the high proportion of niche and single-source commodities and high competition for fundamental materials such as carbon fiber, the space industry supply chain carries more risk than most industries. Leaders recognize that risk reduction in business interruption requires increasing business health, quality, and competition in the industry's supply network. Ensuring that suppliers have robust programs on anti-corruption, codes of conduct, environmental management, and human rights reduces risk exposure to their customers and partners and the ability to scale supply.

Areas of Opportunity

In addition to addressing these top issues, space industry leaders and stakeholders identified four areas of opportunity where the industry could make a significant positive impact on people and the planet and grow the sector's economy.

Leveraging Satellite Data for Social and Environmental Change

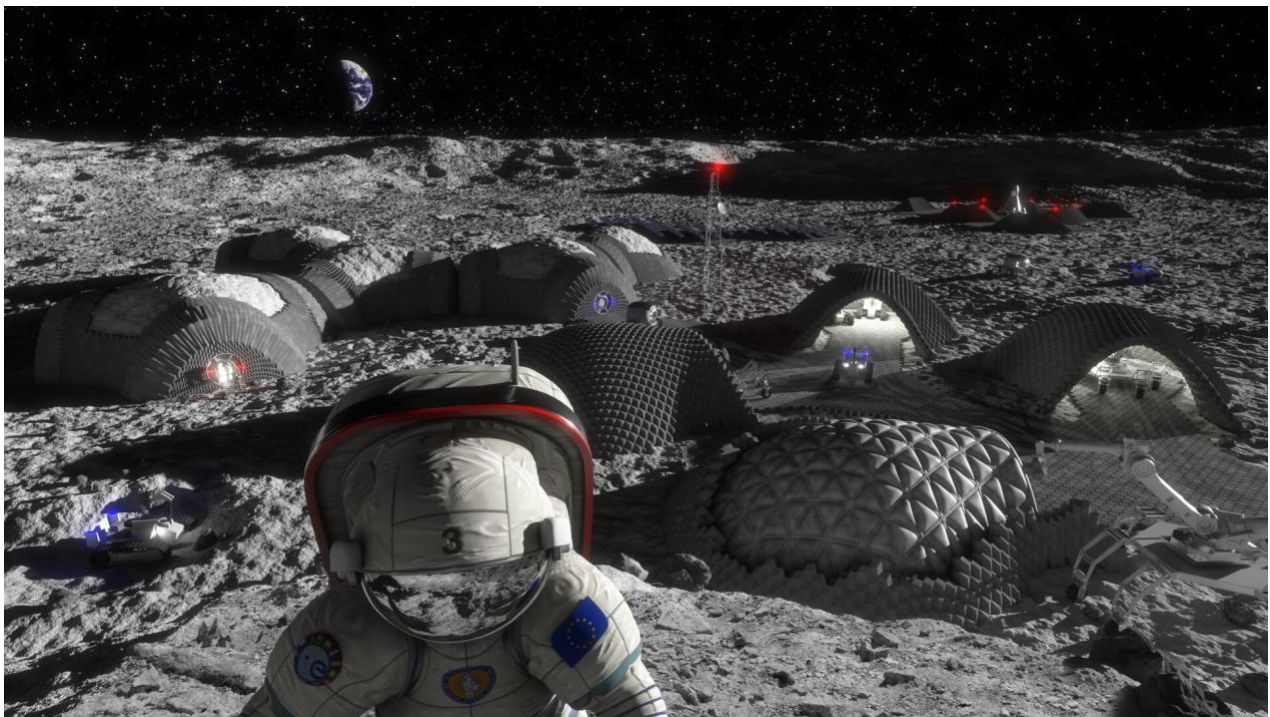
The large-scale use of data from satellites and high-altitude platforms presents immense opportunities to address critical challenges such as disaster management, urban planning, biodiversity conservation, and climate change. This data can enable informed decision-making, early warning systems, and evidence-based policies to protect vulnerable communities and ecosystems. However, it is openly understood that the lack of standardized data formats and metadata leads to difficulties in data interoperability and fusion. Industry leaders believe that seizing this opportunity requires collaborative efforts to establish common standards, product protocols, interoperable frameworks, and governance structures that can ensure an equitable distribution of benefits.

Aligning with the Sustainability Movement

Attention is slowly being brought to sustainability practices in the space industry as pressure is felt by senior leaders and boards to enhance the sector's reputation and robustness. Industry leaders are also doing more to attract an expanding group of sustainability-focused investors. In doing so, leaders are aligning the space industry with the global movement toward a more sustainable future and positioning themselves ahead of the competition. Greater opportunity exists for collaboration with other sectors to leverage existing knowledge, resources, and best practices. This could greatly accelerate the space industry in its own sustainability efforts and position the sector for growth.

Leadership in Space Future, Planetary Settlement, and Beyond

Long-term space habitation and off-world settlements bring both the requirement and an opportunity to drive innovation in sustainable practices. Long-term space settlement requires the incorporation of renewable energy sources, closed-loop systems for resource management, efficient use of materials, and the ability to foster innovation in sustainable technologies such as advanced recycling systems, regenerative life support systems, and environmentally friendly propulsion. Space industry leaders and stakeholders recognize the opportunity for this design and its potential for application on Earth. An opportunity to provide adaptive technology, employ solutions, and encourage responsible practices that can be applied both in space and on Earth is available to the space industry and could harbor much potential for business diversification.



Off-Earth manufacturing - ESA

Storytelling

We found that many industry leaders were inspired by feats of technology and space exploration prior to and during their careers. The experiences and narratives shared by astronauts and space mission members have been shown to inspire the next generation, promote STEM education, and highlight the significance of space exploration in addressing global challenges. Industry leaders still see untapped potential for storytelling. By effectively harnessing the storytelling aspect, the space industry can engage and inspire the next generation of scientists, engineers, and innovators. Sharing stories of space missions can foster a deeper understanding of the relevance of space exploration to address global challenges.

Unlocking Potential

Industry leaders agree that the space industry holds immense potential to contribute positively to life on Earth. While focusing on the priorities outlined will increase the stability and long-term success of the industry, several challenges were noted to be in the way of maneuvering the space industry to a more sustainable path:

- An overarching takeaway from aerospace leaders called for industry cooperation and/or the need for an even playing field on almost every issue. The lack of a consistent and productive forum for companies to collaborate on these issues as a group is holding back industry progress on space sustainability topics.
- Balancing the financial priority for a longer-term business strategy against the high cost of meeting missions in the space sector is a key challenge. Business leaders noted that while global business stakeholders, investors, and the public are demanding more from corporations, sustainability has not yet pressed highly on the corporate agenda.

“[Sustainability] is not yet a financially driven attribute. Ethically, yes, and we are starting to see business reputation risks ... but other performance factors still outweigh this one right now.”

- Additionally, the standard method for public company ESG ratings can work against the space industry and provide an inequitable and occasionally inaccurate assessment of sustainability performance for space industry businesses. A move to an ESG rating system suitable for the industry would more clearly identify those businesses that are robust and focused on long-term business performance.
- Lastly, leaders in the space industry recognize that effort in sustainability comes largely as a result of the personal predilection of senior executive teams rather than from grassroots culture and values within space industry organizations. A move toward a business culture that includes sustainable practices at its core is felt to be coming but is not yet prevalent in most business practices. Space industry leaders and boards hold the key to initiating this movement.

For a Sustainable Trajectory

The space industry has the potential to be a driving force for positive change on Earth. To unlock this potential and secure the long-term success of the industry, a paradigm shift toward sustainability is necessary. By embracing sustainability as an integral part of business strategy, the space sector can maximize its positive impact while mitigating threats, leaning into the long-term health of the industry.

Authors

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Julia is an experienced executive in the aviation and aerospace industry. Her core priorities have encompassed business strategy, operations, leadership development, and running talented technical teams delivering safe and successful spaceflight. She thrives on challenge and is motivated to radically improve planetary stewardship and social change.

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About BSR

BSR is a sustainable business network and consultancy focused on creating a world in which all people can thrive on a healthy planet. With offices in Asia, Europe, and North America, BSR provides its 300+ member companies with insight, advice, and collaborative initiatives to help them see a changing world more clearly, create long-term value, and scale impact.

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