



STRATEGIC REVIEW: THE SPACE LAUNCH SECTOR

*Geopolitics and the New Space Economy
in a Multipolar Era*

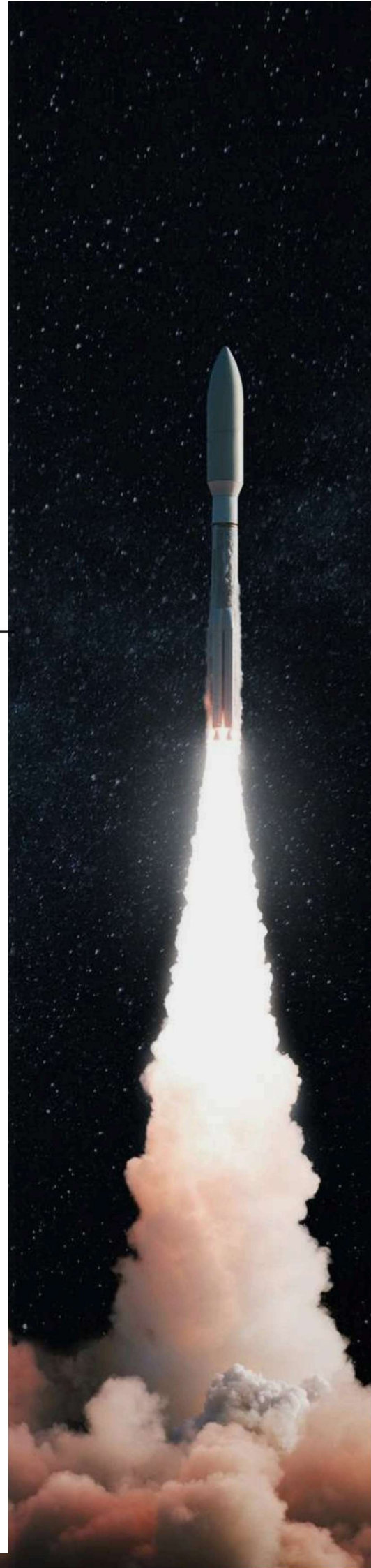
By James Reeves, Carol Buxton, Tristan Langlade, Sam Ravi, Michelle Fangqi Qu, Franziska Kändler, Alejandra Bouzas-Monroy, Ed Shannon-Adams

Special Thanks: Mark Allworthy

August, 2025

Website: www.challengerresearchgroup.com

Email: team@challengerresearchgroup.com



Executive Summary

This report, Strategic Review: The Space Launch Sector, is produced by Challenger Research, an organisation focused on the intersections of geopolitics, security, and strategic industry dynamics. The report assesses how space launch capabilities have become central to global power projection, economic resilience, and military deterrence.

Once the preserve of state space agencies, the launch sector is now a crucible of geopolitical rivalry, commercial innovation, and military integration. The global landscape is shifting fast, with states and private actors competing to secure access to orbit, reduce dependency on rivals, and shape the rules governing space itself

The space launch sector has entered a period of rapid transformation and strategic significance, marked by both technological advancement and intensifying geopolitical competition. Once the exclusive domain of a handful of established state actors, the launch landscape is now characterised by the rise of commercial enterprises, the proliferation of new national capabilities, and the emergence of launch infrastructure as a critical lever of global power. This report examines the multifaceted evolution of the sector up to the halfway point of 2025, with a particular focus on its geopolitical, strategic, and economic dimensions.

The report is structured to provide a comprehensive examination of the space launch sector, beginning with a market and industry overview (**Chapter 2**), followed by technology and industry trends (**Chapter 3**), an assessment of national programs/strategies (**Chapter 4**). **Chapter 5** addresses the interplay of geopolitics and security, including the proliferation of new spaceports and the need for a skilled workforce. **Chapter 6** provides a deeper look into the market dynamics (including government spending) shaping the space launch future trajectory. lastly, **Chapter 7** provides our strategic recommendations for policymakers, commercial actors, and international institutions.





Key Findings

Accelerating Growth and Demand: The recent surge in government and commercial interest-driven by the proliferation of satellite constellations for communication, surveillance, and military applications - has created unprecedented demand for reliable launch services. Notably, 97% of all spacecraft launched in 2024 were smallsats, leading to a persistent supply shortage expected to endure for a decade at current capacity.

The Rise of China: China's space launch capabilities have begun to rapidly overtake Europe and Russia and look set to challenge the US. China plan for this eventuality over the next two decades. Where they are vulnerable in capital market trust, they make up for in the sheer scale of government support through CASC and other government bodies that plan all their programs around strategic advantage - particularly with being the first to set up an outpost on the moon.

Proliferation of National Capabilities: In response to both supply constraints and growing strategic imperatives, over a dozen countries are developing indigenous launch vehicles and/or constructing spaceports. These efforts span a broad spectrum of payload classes and regional contexts, reflecting a global push for greater access and autonomy in space operations.

Shifting Geopolitical Landscape: While the dominance of the US space sector remains strong, due to Space X's meteoric rise, it is being gradually challenged by China's rapid ascent and the strategic aspirations of Europe. The global South are also becoming more involved in the space launch sector, with Oman prepping for 5 launches from their spaceport in 2025.

The exclusion of Russian launch vehicles from many markets has further fragmented the sector, compelling nations to diversify both their technological base and international partnerships.

Militarisation and Security Concerns: Space is increasingly regarded by leading powers as a strategic military domain. Alongside the pursuit of launch capacity, the US, China, and Russia are advancing doctrines and capabilities oriented towards space deterrence, including cyber and kinetic operations targeting adversarial space assets. The 'Golden Dome' and other missile deterrence proposals speak to the global unease around hypersonic missiles after their claimed use in Ukraine by the Russians. This has heightened concerns regarding the vulnerability and resilience of launch infrastructure (spaceports in particular) and the broader space ecosystem.

Strategic Importance of Infrastructure: Successful space operations depend not only on advanced spacecraft but also on reliable launch infrastructure - launchpads, integration facilities, telemetry, and robust supply chains. Control over this infrastructure now constitutes a vital element of national security, strategic autonomy, and geopolitical influence.

Global Distribution of Spaceports: The construction and modernisation of spaceports in both established and emerging spacefaring nations are reshaping the access landscape. The pursuit of geographically advantageous locations - such as Brazil and Hainan Island- reflects both commercial opportunity and strategic calculation, with major powers investing in overseas infrastructure to project influence and diversify launch options.

Rise of Commercial Actors and PPPs: The entrance of private companies such as SpaceX, Rocket Lab, and ULA has fundamentally altered the industry, shifting launch responsibility from state agencies to the private sector and driving innovation in both technology and business models. The mechanism most favourable is the Public-Private Partnerships (PPPs) which allow risk sharing between governments and their top companies in the sector. This dynamic is reshaping the traditional state-industry relationships and fostering rapid launch sector growth.

Dynamic Policy and Regulatory Environment: The rapid pace of technological and market change has outstripped existing governance frameworks, prompting calls for updated multilateral and national policies capable of ensuring security, sustainability, and equitable access to space launch capabilities.





Accelerating Growth and Demand: The recent surge in government and commercial interest-driven by the proliferation of satellite constellations for communication, surveillance, and military applications - has created unprecedented demand for reliable launch services. Notably, 97% of all spacecraft launched in 2024 were smallsats, leading to a persistent supply shortage expected to endure for a decade at current capacity.

The Rise of China: China's space launch capabilities have begun to rapidly overtake Europe and Russia and look set to challenge the US. China plan for this eventuality over the next two decades. Where they are vulnerable in capital market trust, they make up for in the sheer scale of government support through CASC and other government bodies that plan all their programs around strategic advantage - particularly with being the first to set up an outpost on the moon.

Proliferation of National Capabilities: In response to both supply constraints and growing strategic imperatives, over a dozen countries are developing indigenous launch vehicles and/or constructing spaceports. These efforts span a broad spectrum of payload classes and regional contexts, reflecting a global push for greater access and autonomy in space operations.

Shifting Geopolitical Landscape: While the dominance of the US space sector remains strong, due to Space X's meteoric rise, it is being gradually challenged by China's rapid

ascent and the strategic aspirations of Europe. The global South are also becoming more involved in the space launch sector, with Oman prepping for 5 launches from their spaceport in 2025. The exclusion of Russian launch vehicles from many markets has further fragmented the sector, compelling nations to diversify both their technological base and international partnerships.

Militarisation and Security Concerns: Space is increasingly regarded by leading powers as a strategic military domain. Alongside the pursuit of launch capacity, the US, China, and Russia are advancing doctrines and capabilities oriented towards space deterrence, including cyber and kinetic operations targeting adversarial space assets. The 'Golden Dome' and other missile deterrence proposals speak to global unease around hypersonic missiles after their claimed use in Ukraine by the Russians. This has heightened concerns regarding the vulnerability and resilience of launch infrastructure - spaceports in particular - and the broader space ecosystem.

Strategic Importance of Infrastructure: Successful space operations depend not only on advanced spacecraft but also on reliable launch infrastructure - launchpads, integration facilities, telemetry, and robust supply chains. Control over this infrastructure now constitutes a vital element of national security, strategic autonomy, and geopolitical influence.



Strategic Challenges & Imperatives

Europe's Space Autonomy Gap (7.1): Europe continues to underinvest in sovereign space capabilities, with initiatives like IRIS² underfunded and politically fragmented, undermining its goal of strategic autonomy amid growing dependence on foreign systems like Starlink.

Need for Unified European Strategy (7.2): Europe's fragmented model and domestic political constraints are limiting its ability to compete with the U.S. and China; coordinated procurement, industry collaboration, and performance-based incentives are needed to unlock collective strength.

Deterrence in Space and Allied Posture (7.3-5): The U.S. and its allies must counter Chinese and Russian counterspace capabilities through multi-orbit resilience, rapid launch, and stronger space domain awareness (SDA), while promoting international norms and legal deterrents against ASAT threats.

- **Commercial Sector as Strategic Asset:** Governments must formally integrate commercial space providers into national security planning, with protocols for incident response, intelligence sharing, and protection standards for dual-use satellite systems.
- **Economic Sanctions as Strategic Tools:** Sanctions have effectively limited Russian commercial space capacity and remain a low-cost, long-term tool to constrain adversarial launch development, especially in capital-intensive programs.

- **Strategic Public-Private Partnerships:** PPPs must evolve into long-term, co-investment frameworks aligned with national space strategy, ensuring innovation, industrial capacity, and resilience through public financing, policy alignment, and supply chain security.

- **Spaceports as Strategic Infrastructure:** Spaceports should be treated as critical national assets requiring cyber-physical protection, diversification, and rapid-response capabilities, with increased investment in dispersed and commercial launch facilities.

- **Cybersecurity of the Launch Stack:** Launch systems have become more networked and software-driven. As a result, end-to-end cybersecurity - across hardware, software, supply chains, and telemetry - is essential to preserving operational integrity and strategic deterrence.

Balancing Multilateral Governance with Sovereignty (7.6): Democracies must lead in updating international space law while avoiding overreliance on slow multilateralism; national and regional strategies must address gaps in ASAT policy, satellite defence, and space rules enforcement.

Mitigating Space Debris and Environmental Risk (7.7): Rising debris and re-entry pollution require enforceable national regulations and international agreements for sustainable design, debris removal, and emissions standards, backed by transparent licensing frameworks.



Table of Contents

Space Launch Industry: A Comprehensive Strategic Analysis	
1. Introduction.	07
1.1 Purpose and Scope of the Report	08
1.2 Brief Overview of the Space Sector Evolution.	09
2. Industry Overview: Space Launch Ecosystem.	10
3. Key Technologies and Innovations	18
3.1 Launch Technology Evolution.	18
3.2 Space Ports & Data Infrastructure.	22
3.3 Climate Change Considerations	25
3.4 Logistics and Support Services	27
4. Global Launch Landscape	30
4.1 Leading Space Powers	30
4.2 Emerging Space Nations/Regions	60
4.3 Intergovernmental Organisations	64
5. Space as a Strategic Domain	67
5.1 Militarisation of Space and Space Defence Strategies	67
5.2 Geopolitical Flashpoints	73
6. Market Dynamics and Future Outlook.	81
6.1 Drivers of Growth and Disruption.	81
6.2 Challenges and Barriers to Entry.	87
7. Strategic Recommendations	91
7.1 Europe: Accepting the New Reality	91
7.2 Unify European Strategy	92
7.3 Deterrence in Space	94
7.4 Spaceports	97
7.5 Secure the Launch Stack: Cybersecurity for Space Systems	98
7.6 Advance Multilateral Governance – Not at the Cost of National/Regional Strategy.	100
7.7. Launching with Debris in Mind	101
7.8 Institutionalise Strategic Public–Private Partnerships (PPPs)	102
7.9 Conclusion: Navigating a Multipolar and Commercialised Space Launch Era	103
8. References	104
9. Appendices	117
Glossary of Terms and Acronyms	117