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Bridging Gaps in Space Debris Policy: The EU Space Law

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Abstract

The number of tracked objects (>10cm) in Earth orbit has reached in 2024 an all-time record. Constellation making, miniaturized systems, space militarization and lower launch costs have all led to an unprecedented density of objects in orbit, increasing the risk of collisions and debris generation. The increasing proliferation of space debris poses significant threats to both current and future space operations. The growth of space activities generates increasing collision risks, jeopardizing space safety and sustainability. This research aims to explore how the upcoming European Union (EU) Space Law can bridge existing regulatory and technical gaps in space debris management, complementing existing frameworks such as the ESA Zero Debris Charter. Today, despite the growing risks presented by space debris, binding international regulations on space debris mitigation are severely lacking. While international treaties, such as the Outer Space Treaty (1967) and the Registration Convention (1974), regulate space, they do not explicitly address debris mitigation. The introductory section will outline approaches to debris mitigation across mission stages, from design to post-mission procedures. The second section of the paper will review existing regulations and guidelines, including the Inter-Agency Space Debris Coordination Committee (IADC) Guidelines, the Committee on the Peaceful Uses of Outer Space (COPUOS), Space Debris Mitigation Guidelines, and the ESA Charter. A focus will be given to three key areas that are Space Traffic Management (STM), Rendezvous and Proximity Operations (RPO), and de-orbitation practices to identify where technical gaps persist. The third section will delve into the EU Space Law, analyzing its potential to address these gaps. The paper will cover the three pillars of the law—Safety, Resilience, and Sustainability—and how they can enhance debris mitigation efforts. The regulatory aspects of the EU Space Law will also be examined, assessing its enforceability. The Union's ability to regulate space activities across member states is presented as a strategic opportunity to influence global space governance. The final section will address the challenges and criticisms associated with the EU Space Law. In conclusion, this research argues that the EU Space Law has the potential to significantly enhance global space debris mitigation efforts by addressing regulatory and technical gaps, fostering international collaboration, and promoting sustainable space activities. The paper calls for an ambitious approach, leveraging the EU's regulatory framework and influence to achieve long-term sustainability in space.

Keywords: space traffic management, space safety, debris mitigation, space diplomacy, European union

Acronyms/Abbreviations

Anti-Satellite (ASAT), China National Space Administration (CNSA), Committee on the Peaceful Uses of Outer Space (COPUOS), European Union Space Act(Space Act), European Union Space Law (EUSL), EU Space Surveillance and Tracking (EUSST), European Space Agency (ESA), Geostationary Orbit (GEO), Inter-Agency Space Debris Coordination Committee (IADC), International Space Station (ISS), International Organization for Standardization (ISO), Low Earth Orbit (LEO), Long-Term Sustainability (LTS), National Aeronautics and Space Administration (NASA), Russian Space Agency (ROSCOSMOS), Sustainable Development Goals (SDGs), Space Traffic Management (STM), United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), United Nations (UN).

1. Introduction

President of the European Commission, Ursula von der Leyen released on the 13th of September 2023 a letter of intent detailing the Commission's 2024 priorities.[1] Within this list could be found the mention of an upcoming European Union Space Law proposal (EUSL), renamed European Union Space Act (Space Act) since early 2025.

This piece of legislation aims at establishing unified EU regulations to enhance the safety, resilience, and sustainability of space operations. The regulation will primarily aim at harmonizing existing policies within the union but also create a framework for countries that are lacking one. The safety pillar focuses on mitigating the growing risks of collisions and damage caused by space debris, prioritizing mission safety. The resilience pillar aims to protect both EU and national space infrastructures from harmful threats, including cyberattacks, thereby safeguarding critical assets essential for navigation, communication, and defense. Lastly, the sustainability pillar emphasizes the long-term viability of space operations, ensuring that the EU can continue to leverage space as a key driver of innovation, economic development, and vital services**.**

Challenges pertaining to the growth of the space debris population fall under all three pillars. It is thus expected to be a core component of the upcoming Act. Through this act the EU has the opportunity to set new standards for space debris mitigation. A number of guidelines such as the InterAgency Space Debris Coordination Committee's (IADC), the European Space Agency (ESA) Zero Debris Charter, and more, co-exist today. However, a consolidated approach still lacks.

The Space Act presents a sizable opportunity to consolidate a collaborative approach between member states to space debris mitigation while simultaneously reinforcing Europe's role as a leader in sustainable space governance. By fostering coordination among member states and industry, the Space Act can establish a harmonized framework focused on shared responsibility in debris management. This would not only strengthen Europe's internal policy but also position itself as an influential actor on the global stage, capable of setting new standards for sustainable space operations.

2. The exponential need for Mitigation Initiatives

The growing population of space debris poses a sizable threat to the future of space operations and critical services. Currently, over 35,000 objects are tracked in orbit, 9,100 representing active satellites and the rest labeled as debris.[2] More concerning is the estimated one million fragments larger than 1 cm, each capable of causing extensive damage on operational assets.

As the number of debris increases so is the probability of a cascading collision, potentially leading to orbits becoming so cluttered with debris that future satellite launches and operations are heavily impacted. Space approximatively supports $469 billion in economic activity annually through navigation, communication, and environmental monitoring applications.[3] With over 100 nations now engaged in space activities and nearly 20,000 satellites launched since the 1950s, ensuring sustainable space operations should be a priority.[4]

For such multilateral matters, one institution comes to mind: the United Nations. However, despite the scale of the issue, the United Nations' role in addressing space debris remains limited. The main legal framework governing space

[1] European Commission, State of the Union 2023 – letter of intent, 2023.
[2] European Space Agency (ESA), ESA's Annual Space Environment Report, 19 July 2024.
[3] McKinsey & Company, How Will the Space Economy Change the World? https://www.mckinsey.com/industries/aerospace-and-defense/our-insights/how-will-the-space-economy-change-the-world (accessed 22.02.25).
[4] Statista, Number of Satellites Launched by Year, https://www.statista.com/statistics/896699/number-of-satellites-launched-by-year/ (accessed 27.03.25).

activities is the 1967 Outer Space Treaty. Article VI states that nations bear responsibility for national space activities, whether conducted by governmental or private entities, while Article VII holds states liable for damage caused by their orbital objects. Thus, in theory, states could be found liable for debris generation activities.[5]

However, in reality, these provisions lack enforcement mechanisms, thus preventing any sanctions. The United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), established in 1959, was founded with the aim of fostering cooperation on space sustainability despite limited international regulation. UNCOPUOS has released guidelines for mitigating space debris, such as the Space Debris Mitigation Guidelines and the Long-Term Sustainability of Outer Space Activities Guidelines. Nonetheless, given that these frameworks are guidelines, they rely on voluntary compliance. Moreover, despite growing relevance of global sustainability matters, the UN's existing Sustainable Development Goals (SDGs) do not currently address space sustainability.[6] Scientists and policymakers have urged the UN to integrate this realm into the SDGs to encourage accountability and responsible space practices.

As the cost to access space continues to lower, congestion increases. Several factors highlight the growing importance of debris mitigation measures. First, the expected increase in number of mega-constellations in LEO such as SpaceX's Starlink, OneWeb, and Amazon's Project Kuiper has been critical in raising concerns around collisions risks. Second, anti-satellite (ASAT) tests which have been conducted by a number of nations significantly contributed to increasing concerns. While China's destruction of its Fengyun-1C satellite in 2007 test created over 3,000 trackable debris pieces, Russia's similar demonstration on its Cosmos 1408 satellite, in 2021, generated at least 1,500 pieces of debris.[7] These tests are not to be taken lightly, as most fragments are still in orbit today and present constant challenges to safe operations. Indeed, in 2021, Russia's test forced the crew of the International Space Station (ISS) to take shelter. The challenges presented by space debris to human spaceflight remain persistent. Indeed, on November 19th the ISS maneuvered to avoid space debris for the 39th time.[8]

To mitigate the risks posed by space debris hazard a range of mitigating solutions can be taken such as minimizing the release of mission-related objects, reducing the creation of debris from degradation by optimizing components durability, investing in collision avoidance services or implementing space traffic management rules that would cover de-orbiting measures. However, according to ESA even if we fully stop launching objects in orbit the number of cumulative collisions as well as objects in LEO objects will keep increasing in the next centuries.[9]

3. Regulatory review

The regulation of space debris and traffic management is guided by several international frameworks, with the Inter-Agency Space Debris Coordination Committee (IADC) playing a pivotal role. Established in 1993, the Inter-Agency brings together major space agencies such as ESA, NASA, CNSA, and ROSCOSMOS to coordinate space debris research, risk assessment, and mitigation. Its Space Debris Mitigation Guidelines serve as a foundation for various national and international regulations, focusing on preventing on-orbit explosions and collisions, facilitating post-mission removal of spacecraft and orbital stages, and limiting debris generation. STM principles embedded in these guidelines emphasize continuous monitoring of spacecraft and orbital stages to detect malfunctions that could lead to breakups or loss of control, planning and conducting recovery measures when needed, and utilizing reliable

[5] J. Foust, The Space Review, 2023, https://www.thespacereview.com/article/2130/1 (accessed 27.03.25).
[6] P. Martinez et al., Space Sustainability in the Era of Mega-Constellations, Acta Astronautica, 2023, https://www.sciencedirect.com/science/article/pii/S2468896723000654 (accessed 27.03.25).
[7] Secure World Foundation, Global Counterspace Capabilities Report, May 2024.
[8] B. Strickland, ISS Dodges Its 39th Piece of Potentially Hazardous Space Junk, Live Science, 2024, https://www.livescience.com/space/space-exploration/iss-dodges-its-39th-piece-of-potentially-hazardous-space-junk-experts-say-it-wont-be-the-last (accessed 22.02.25).
[9] European Space Agency (ESA), ESA's Annual Space Environment Report, 19 July 2024.

orbital data for conjunction assessments and avoidance maneuvers.[10] End-of-life disposal strategies are also central to these guidelines, requiring spacecraft in Geostationary Orbit (GEO) to maneuver out of the protected region for at least 100 years and those in Low Earth Orbit (LEO) to be deorbited within 25 years with a minimum 90% probability of success.

Building on the IADC guidelines, the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) adopted Space Debris Mitigation Guidelines in 2007,[11] providing a globally recognized standard based on state responsibility. These guidelines focus on limiting debris released during normal operations, minimizing breakups and accidental collisions, and prohibiting intentional destruction and harmful activities. However, their reliance on state responsibility limits their direct regulatory impact on private operators. The COPUOS Long-Term Sustainability (LTS) Guidelines go further by addressing broader sustainability concerns such as space weather monitoring, spectrum management, alignment with national laws, and the enhancement of international cooperation and scientific R&D. Although non-binding, they set a voluntary standard for best practices in space operations.

At the regional level, the ESA has taken proactive steps to enhance space sustainability through the Zero Debris Charter, introduced in 2023, targeting debris neutrality for all the Agency programmes by 2030. This initiative fosters collaboration among industry, government agencies, and academia to establish high-level principles and targets for space debris mitigation. ESA has also updated its Space Debris Mitigation Requirements in 2023, incorporating stricter disposal phase durations, higher probability of successful disposal, and enhanced collision avoidance and traffic coordination measures. These efforts align with ESA's broader Zero Debris approach and reflect a growing commitment to sustainable space operations.

Despite these developments, private-sector participation in space debris mitigation remains an evolving challenge. Historically, space debris regulations have been state-driven, with limited input from private operators. However, recent years have seen increased private sector involvement in regulatory frameworks, exemplified by ISO 24113, which integrates both public and private stakeholder contributions. The European Union Space Act represents a balanced approach by engaging private entities in the legislative process while ensuring ambitious yet feasible regulations. In contrast, COPUOS' state-centric framework does not allow for the development of international mechanisms to directly regulate private operators whereas commercial entities now account for over 90% of spacecrafts.[12] This growing public-private collaboration signals a shift toward binding regulations, moving beyond voluntary guidelines.

While current frameworks provide a strong foundation for space debris mitigation, future policies must address regulatory gaps by strengthening compliance mechanisms, particularly for commercial space activities, and by refining enforcement strategies to ensure the long-term sustainability of outer space. It is worth noting that ambitious requirements are even more crucial given that over 60% of the 36,874 objects reside in LEO with this number is growing exponentially, mainly due to the upcoming mega constellations for telecommunication.[13] In that matter, despite an international limitation for lifetime disposal of 25 years at the international level, the US regulation is in line with ESA guidelines, agreeing on a 5-year limit.[14]

[10] United Nations Office for Outer Space Affairs (UNOOSA), Long-Term Sustainability of Outer Space Activities, 2025
[11] Center for Strategic and International Studies (CSIS), Launching the State Satellite Marketplace, 2025, https://www.csis.org/analysis/launching-state-satellite-marketplace (accessed 31.03.25).
[12] E.S.D. Office, Space Vehicle Dynamics and Control, 8th ed., European Space Agency, 2024.
[13] Federal Communications Commission (FCC), In the Matter of Space Innovation Mitigation of Orbital Debris in the New Space Age, FCC 22-74, 2022.
[14] Institut Français des Relations Internationales (IFRI), The Future European Space Law: A New Model of Development?, Conference, 16 December 2024.

In assessing international regulation for debris mitigation, ASAT weapon tests cannot be omitted. The Outer Space Treaty of 1967 prohibits nuclear weapons and any other type of weapons of mass destruction in orbit or on celestial bodies. Nonetheless, it does not explicitly ban the testing or use of conventional weapons, thus, ASAT systems free of use or almost. Some scholars argued that Article IX of the treaty which requires states to conduct their activities with "due regard" to the interests of others, can be interpreted as discouraging actions that generate long-lasting space debris. In December 2022, the United Nations General Assembly adopted a non-binding resolution that called on states to refrain from conducting destructive direct-ascent ASAT missile tests.[15] Despite this growing international consensu there is currently no legally binding international treaty that explicitly prohibits ASAT testing, leaving significant risks to space sustainability.

International regulatory instruments	**Space traffic coordination requirements**	**GEO disposal lifetime**	**LEO disposal lifetime**	**GEO collision probability**	**LEO collision probability**	**ASAT Test Regulations**
IADC	Launch window co-ordination and limit probability of collision from design to operational phase	100 years	Direct re-entry or residual orbital lifetime of max 25 years Probability of success > 90%	Estimate and limit risk of accidental collision	Estimate and limit risk of accidental collision	No explicit ASAT test regulation, but guidelines discourage debris-generating activities
COPUOS Space Debris mitigation		Avoid long term presence	Avoid long term presence	Estimate and limit risk of accidental collision	Estimate and limit risk of accidental collision	UN discussions under PAROS framework, but no binding ASAT ban
COPUOS Long-term sustainability	Rely on ISO technical standards and apply IADC guidelines			Continuous conjunction assessment	Continuous conjunction assessment	UNGA 2022 resolution discourages destructive ASAT tests, but non-binding

[15] Federal Communications Commission (FCC), In the Matter of Space Innovation Mitigation of Orbital Debris in the New Space Age, FCC 22-74, 2022.

ESA guidelines	Underlines operator's coordination e.g. "through the availability of PoCs"	100 years	5 years max. depending on risk profile	≤0,0001 cumulated after end of life	≤0,0001 cumulated after end of life	No direct regulation on ASAT
ESA Zero Debris charter		Time clearance Probability of success ≥ 99,99	Time clearance Probability of success ≥ 99,99	<0,001, over whole lifetime in orbit	<0,001, over whole lifetime in orbit	No direct regulation on ASAT

Table 1: Comparative study of debris guidelines

The table above shows a relative alignment between the different legal regimes governing space activities. COPUOS recognizes the relevance of IADC's space traffic management guidelines and endorses them, while ESA takes advantage of regional coordination to define more ambitious standards. By requiring the private space industry participating in its space programs to comply with these requirements, ESA expects these standards to be integrated and generalized at regional level. As a result, the European Union might be well advised to take advantage of this initiative to develop binding legislation ensuring these standards are set in a way that is both ambitious and realistic for the private sector.

4. EU Space Act: filling the gap?

The Space Act is an ambitious space policy effort that will support the growth and competitivity of the market while avoiding legal fragmentation. It will be structured around three pillars that are safety, resilience and sustainability.[16] The safety pillar focuses on mitigating the growing risks of collisions and damage caused by space debris, prioritizing mission safety. The resilience pillar aims to protect both EU and national space infrastructures from harmful threats, including cyberattacks, thereby safeguarding critical assets essential for navigation, communication, and defense. Lastly, the sustainability pillar emphasizes the long-term viability of space operations, ensuring that the EU can continue to leverage space as a key driver of innovation, economic development, and vital services.

Through the sustainability pillar, the European Commission has highlighted its ambition to emphasis space debris mitigation. The extensive consultation, comprising 25 questions, conducted by the Commission enabled to gather industry feedback on the matter and reconsider proposals based on their complexity and their degree of feasibility.[17] In relation to space debris, this consultation covered two key critical subjects : first, it emphasized escalating risks of orbital collisions and sough opinions on atmospheric reentry hazards; second, it proposed establishing a detailed risk classification system addressing five specific threat categories—accidental collisions, Kessler syndrome cascades, interruption of essential space services, ground casualties from reentering debris, and risks to aircraft and astronauts.

[16] McGill Institute of Air and Space Law, Developing EU Space Law: Process of Harmonising National Regulations, 2024, https://www.mcgill.ca/iasl/article/developing-eu-space-law-process-harmonising-national-regulations#:~:text=The%20European%20Commission%20strives%20to,'%20safety%2C%20resilience%20and%20sustainability (accessed 31.03.25).

[17] Institut Français des Relations Internationales (IFRI), Conference: The Future European Space Law: A New Model of Development?, 16 December 2024.

As such, the consultation provided stakeholders with a formal channel to share expertise on risk reduction strategies and prevention mechanisms before the regulatory framework was released. Through this deliberate inclusive approach, the Commission acknowledged that effective debris mitigation requires both regulatory oversight and industry involvement. The feedback provided may shape the Space Act sustainability requirements. Indeed, one can expect the act to include mandatory implementation of collision avoidance protocols with specific technical standards, requirements for active tracking technologies on satellite platforms, and comprehensive notification systems for space incidents. Furthermore, commercial operators might have to integrate collision avoidance services that match or exceed the EU Space Surveillance and Tracking (EU SST) partnership capabilities.[18]

The Space Act is expected to address some of the current regulatory gaps. First and foremost, although its exact level of bindingness has yet to be confirmed, the Act should establish an enforceable mechanism that will apply to any space company doing business in Europe, European or non-European. Early 2024, the Commission released a "Call for Evidence for an Impact Assessment" report that highlighted three regulatory options:[19]

- Promote Adherence to Non-Binding Measures: The EU would develop a mechanism to incentivize compliance with established standards, best practices, and guidelines addressing safety, resilience/security, and sustainability in the space sector. While non-binding, this approach would rely on voluntary adherence making a limited legal impact.

- Binding EU Framework: The EU would introduce legislation to establish mandatory regulations, complemented by non-binding recommendations for sustainability. This approach would create a harmonized legal framework to prevent market fragmentation within the EU and ensure a consistent standard for space services, products, and activities.

- Bilateral Agreements with Non-EU Countries: The EU would negotiate bilateral agreements with non-EU countries. However, the effectiveness of such agreements could be constrained by the willingness of third countries to align with EU priorities, potentially resulting in fragmented or inconsistent international practices.

Currently, despite 90% of spacecraft belonging to commercial companies, the COPUOS system only relies on state responsibility and cannot directly impose regulation on private operators.[20] As such the Space Act, if binding, could impose - through nation states -regulatory authority over commercial enterprises, ensuring that private operators face the same obligations as national space agencies regarding collision avoidance, end-of-life disposal, and more. Furthermore, the Space Act should provide more detailed technical standards needed for implementation which tend to be lacking in current international frameworks. It is likely that Space Act will adopt ESA's requirements such as the 5-year disposal timeline, against 25-year for the IADC, and more stringent collision probability thresholds of ≤ 0.0001 for cumulated risk after end-of-life.[21]

[18] J Reis, European union defense and security strategy for space and ground-based systems against hybrid threats, December 2024
[19] European Commission, DG DEFIS, Call for Evidence for an Impact Assessment, Safe, secure and sustainable space activities - EU Space Law, Q1 2024.
[20] Dewesoft, Every Satellite Orbiting Earth and Who Owns Them, 2024, https://dewesoft.com/blog/every-satellite-orbiting-earth-and-who-owns-them (accessed 31.03.25).
[21] J. Foust, The Space Review, Commercialization and Regulation in the New Space Era, 2024, https://www.thespacereview.com/article/4876/1 (accessed 31.03.25).

Overall, while the public awaits the release of the Space Act, it is expected to mark a regulatory shift by addressing the shortcomings of existing international space governance frameworks, establishing more effective approaches that could influence the evolution of global space traffic management.[22]

5.Conclusion

By aligning regulatory standards and legal frameworks across member states, the EU seeks to harmonize cross-country collaboration, encourage innovation, and mitigate operational risks that pertain to space activities. As space becomes increasingly crowded and contested, implementing effective STM policies will be essential to promote safety, reduce collision risks, and ensure that Europe can protect its own assets. Regional STM provisions will open the door for the EU to becoming a trend setter for established standards. Through continued effort and strategic collaboration, the EU can build a resilient, competitive, and sustainable space environment that supports both industry growth and the safety of space activities.

References

List of references

[1] European Commission, State of the Union 2023 – letter of intent, 2023.
[2] European Space Agency (ESA), ESA's Annual Space Environment Report, 19 July 2024.
[3] McKinsey & Company, How Will the Space Economy Change the World?, https://www.mckinsey.com/industries/aerospace-and-defense/our-insights/how-will-the-space-economy-change-the-world (accessed 22.02.25).
[4] Statista, Number of Satellites Launched by Year, https://www.statista.com/statistics/896699/number-of-satellites-launched-by-year/ (accessed 27.03.25).
[5] J. Foust, The Space Review, 2023, https://www.thespacereview.com/article/2130/1 (accessed 27.03.25).
[6] P. Martinez et al., Space Sustainability in the Era of Mega-Constellations, Acta Astronautica, 2023, https://www.sciencedirect.com/science/article/pii/S2468896723000654 (accessed 27.03.25).
[7] Secure World Foundation, Global Counterspace Capabilities Report, May 2024.
[8] B. Strickland, ISS Dodges Its 39th Piece of Potentially Hazardous Space Junk, Live Science, 2024,
[9] European Space Agency (ESA), ESA's Annual Space Environment Report, 19 July 2024.
[10] United Nations Office for Outer Space Affairs (UNOOSA), Long-Term Sustainability of Outer Space Activities, 2025
[11] Center for Strategic and International Studies (CSIS), Launching the State Satellite Marketplace, 2025, https://www.csis.org/analysis/launching-state-satellite-marketplace (accessed 31.03.25).
[12] E.S.D. Office, Space Vehicle Dynamics and Control, 8th ed., European Space Agency, 2024.
[13] Federal Communications Commission (FCC), In the Matter of Space Innovation Mitigation of Orbital Debris in the New Space Age, FCC 22-74, 2022.
[14] Institut Français des Relations Internationales (IFRI), The Future European Space Law: A New Model of Development?, Conference, 16 December 2024.
[15] Federal Communications Commission (FCC), In the Matter of Space Innovation Mitigation of Orbital Debris in the New Space Age, FCC 22-74, 2022.
[16] McGill Institute of Air and Space Law, Developing EU Space Law: Process of Harmonising National Regulations, 2024, https://www.mcgill.ca/iasl/article/developing-eu-space-law-process-harmonising-national-regulations#:~:text=The%20European%20Commission%20strives%20to,'%20safety%2C%20resilience%20and%20sustainability (accessed 31.03.25).
[17] Institut Français des Relations Internationales (IFRI), Conference: The Future European Space Law: A New Model of Development?, 16 December 2024.

[22] Modern Diplomacy, How Will EU Space Law Impact US National Strategic and Commercial Interests?, 18 May 2024, https://moderndiplomacy.eu/2024/05/18/how-will-eu-space-law-impact-us-national-strategic-and-commercial-interests/

[18] J Reis, European union defense and security strategy for space and ground-based systems against hybrid threats, December 2024
[19]European Commission, DG DEFIS, Call for Evidence for an Impact Assessment, Safe, secure and sustainable space activities - EU Space Law, Q1 2024.
[20]Dewesoft, Every Satellite Orbiting Earth and Who Owns Them, 2024, https://dewesoft.com/blog/every-satellite-orbiting-earth-and-who-owns-them (accessed 31.03.25).
[21] J. Foust, The Space Review, Commercialization and Regulation in the New Space Era, 2024, https://www.thespacereview.com/article/4876/1 (accessed 31.03.25).
[22]Modern Diplomacy, How Will EU Space Law Impact US National Strategic and Commercial Interests?, 18 May 2024, https://moderndiplomacy.eu/2024/05/18/how-will-eu-space-law-impact-us-national-strategic-and-commercial-interests/