ENSURING SECURITY AND RULE OF LAW THROUGH OUTER SPACE: THE IMPACT OF COPERNICUS ON EUROPEAN UNION EXTERNAL ACTIONS, CITIZEN PROTECTION, AND INTERNATIONAL PEACE

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'Those things which I am saying now may be obscure, yet they will be made clearer in their proper place'.

Nicolaus Copernicus[3]

ABSTRACT

How does Outer Space contribute to peace, security, and the rule of law? Outer Space profoundly influences essential domains such as navigation, environmental surveillance, communication, and most importantly, security and defence. Therefore, satellites are crucial for detecting terrestrial and aerial dangers, evaluating conditions on Earth, and enabling crisis interventions.[4]

As a significant player in the global space domain, equipped with the world's most advanced Earth Observation system (Copernicus), the European Union (EU) holds both the opportunity and responsibility to utilise space-based capabilities to safeguard human rights and security, not only across member states but also globally. By taking these actions, the EU can foster a more secure and stable world and reinforce fundamental rights and freedoms.

Therefore, this study explores the connection between security and protection of human rights within the EU framework and examines the international regulations connected to Outer Space, Earth Observation, and security challenges, focusing on the impact of the Copernicus programme on the EU's External and Security Actions, and its role in protecting human rights and maintaining peace inside and outside EU borders from Outer Space.

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3 | Copernicus, 1543, p. 2.

4 | European Commission, 2024d, p. 172.

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1. Introduction

In an era marked by persistent geopolitical tensions, particularly in regions surrounding Europe, the foundational principles of the rule of law, human rights, and security remain under threat. While the international community has long prioritised global peace, recent conflicts have revealed that these values are far from being universally safeguarded. Parallel to these challenges, space activities and satellite technologies have emerged as transformative tools, not only for advancing science and innovation but also for supporting strategic objectives, such as security and defence. Recognising this potential, the European Union (EU) has developed a range of legal instruments aimed at harnessing space technologies for the protection and resilience of both the EU and the broader international community.

This evolution underscores a vital truth: the European space sector is not merely a symbol of technological progress but a contributor to global stability. The integration of space-based capabilities into everyday life has grown immensely, influencing sectors from environmental monitoring to humanitarian aid. As noted by well-known experts 'space activities are becoming increasingly relevant for the daily life in our times, and it is only natural that they also touch human rights issues'[5] In response, the EU has strategically positioned itself as a leading actor in the global space arena,[6] capitalising on its industrial strengths and commitment to innovation.

Despite notable progress in the development of its space sector, the EU's ambitions remain modest when measured against the scale and pace of space activities conducted by the United States (US). The US continues to set an almost unachievable global development standard through sustained, high-level investment and strategic leadership. As outlined in the Draghi Report, the EU has made substantial achievements in space infrastructure and exploration; however, it still lags in terms of overall capacity and international influence.[7]

Among the EU's accomplishments, the Copernicus programme stands as a flagship initiative. It is not only a technological milestone but also a cornerstone of the EU's contribution to the global public good. Copernicus delivers the most comprehensive Earth Observation (EO) data globally,[8] supporting applications across environmental monitoring, disaster response, climate change assessment, and security operations. Its utility extends far beyond technical innovation – it embodies the EU's commitment to leveraging space systems for broader geopolitical and humanitarian objectives.

5 | Marboe, 2013, pp. 135–149; Potter, 1989, p. 63.
6 | European Commission, 2022.
7 | European Commission, 2024d, p. 172.
8 | Ibid.

Therefore, this study aims to demonstrate that with great (technological) power comes (global) responsibility. In other words, if the EU possesses the most advanced EO technology, it is not only an ethical obligation but also a legal imperative – derived from multiple EU documents, as well as from Article I. of the Outer Space Treaty[9] – that this technology must be used to improve humanity's living conditions. The EU must utilise this system to fulfil its obligations to promote peace and sustainability, aligning its initiatives with the goals outlined in key treaties and legal frameworks. As such, the study examines how integrating space technology into the EU's security and defence frameworks can enhance its global role through a combination of normative, empirical, and interdisciplinary approaches. This study highlights the value of space technology through case studies and offers suggestions for strengthening EU governance in space, ultimately seeking to answer the question: How does Outer Space technology, specifically EO, contribute to peace, security, and the protection of fundamental rights?

1.1. Development of the protection of international peace, human rights, and the rule of law

Following the Second World War, national security, the maintenance of international peace,[10] the enforcement of the rule of law, and the safeguarding of human rights have become key objectives and the primary task of states, and by extension, entire regions and the international community.[11]

The principles of rule of law and human rights are the fundamental principles of contemporary civilisation, reflected back in several international documents,[12] and have become the cornerstone of the EU. Their significance is underscored by the existence of a 'multilevel protection of human rights,'[13] which is established through national constitutions and various international legal instruments and mechanisms. This framework includes Constitutional Courts at the national level, the European Court of Human Rights within the Council of Europe, the Court of Justice of the European Union at the EU level, and the U.N. Human Rights Council or NATO at the international level, all tasked with safeguarding these rights.[14] This complex protection of human rights proves that efforts to ensure the rule of law and freedoms are not always effective, neither at the international-regional nor at the national level, due to constant societal and technological changes.[15] Particularly, considering the recent conflicts and violent circumstances in Europe's close proximity (Ukraine and the Middle East), both of these conflicts have undermined the rule of law and principles of human rights, which were previously regarded as inviolable due to the complex legal framework safeguarding them. Consequently, these actions are undermining the international order, the efficacy of the UN, and the very essence of international law.

This uncertainty inherently results in new forms of security threats to the European region, while the protection of the fundamental principles of the EU and the prevention of

9 | United Nations, 1967.
10 | Novokmet, 2022, p. 71.
11 | Ibid.
12 | United Nations, 1948.
13 | Paczolay, 2022, p. 133.
14 | Paczolay, 2022, p. 133.
15 | Ibid.

further atrocities are more important than ever. The only solution would be the effective implementation of international treaties to fight against injustices and strengthening cooperation between (member) states to ensure security. Security, by definition, is the foundation of the prosperity of European culture, which extends far beyond the absence of violence. It incorporates the 'stability of a government and its political system'[16] and also includes strengthening and protecting the democratic order, ultimately resulting in peaceful coexistence.

The war in Ukraine and the conflict in the Middle East have opened a new scene for the security environment, particularly in Outer Space, which is increasingly becoming a theatre for state supremacy, with the early development of anti-satellite weaponry.[17] Outer Space constitutes a 'double-edged sword' regarding security and peace. It is a domain where unexpected types of potential human rights violations may arise (e.g. Israel has intercepted a ballistic missile beyond Earth's atmosphere, launched by Houthi rebels)[18] and is filled with emerging security threats. For instance, Russia has recently deployed anti-satellite weapons into orbit.[19] The escalation of conflicts into Outer Space is a natural progression, as our daily existence increasingly relies on Outer Space, thereby impacting our security, peace, and safeguarding of human rights.

This interdependence between security, the rule of law, and human rights is critical to global governance, with advancements in one area often benefiting the others. However, challenges arise when security measures infringe on human rights, necessitating a careful legal framework to protect rights while maintaining security.[20] Human rights, when safeguarded, contribute to long-term security and the enforcement of law, thereby reinforcing the importance of maintaining a balance among all three.

1.2. International space law and security

> [The] space sector is currently considered to be one of the pillars of national security and is being developed both by countries with huge military potential, e.g. the US and Russia, as well as countries particularly vulnerable to intervention from outside, e.g. Pakistan and South Korea. It is a common practice to use space technologies first for military purposes and only later make them available for civilian needs.[21]

Military tension has inherently existed in the domain of Outer Space, as its exploration has played an important role in the Cold War's 'Space Race' through developing space capabilities, and the most important international treaties (the Outer Space Treaty, the Rescue Agreement,[22] the Liability Convention,[23] the Registration Convention,[24] and

16 | Novokmet, 2022, p. 74.
17 | United Nations, 2024.
18 | Barber, 2023.
19 | Thomas, 2023.
20 | Dunne and Wheeler, 2004.
21 | Myszona-Kostrzewa, 2018, p. 98.
22 | United Nations, 1968.
23 | United Nations, 1972.
24 | United Nations, 1975.

the Moon Agreement)[25] have effectively prevented any violent conflicts and maintained peace in Outer Space.[26]

However, it must be stressed that due to their vague and general nature, the provisions of Article IV of the Space Treaty have left open the possibility of considering which space activities are detrimental to peaceful objectives and which ones are compatible with them. Many American and Western European politicians equated the peaceful nature of space activities with 'non-aggressive' and allowed for the possibility of military use of space for defence purposes. According to the McGill Manual on international law applicable to military uses of Outer Space,[27]

> Military space activities are space activities of a military character. In the determination of the military character of a space activity, the actors involved in the activity, the aims of the activity, and the effects of the activity are to be taken into account, as appropriate. (Rule 103)

International space law consequently ensures that Outer Space is not an arena for militarisation but is exclusively for peaceful purposes,[28] forbids testing weapons and 'installing nuclear or other weapons of mass destruction',[29] and prohibits the use of force in Outer Space and from space against the Earth. Most importantly, it declares that activities in the exploration and use of outer space must be conducted 'in the interest of maintaining international peace and security and promoting international co-operation and understanding'.[30]

Recently, numerous experts have characterised the aggression against Ukraine as the first (commercial) space war, highlighting and emphasising the strategic importance of the cyberattack on a commercial satellite operated by the US company ViaSat,[31] which attack was primarily aimed at impacting military actors in Ukraine but had a spillover effect as it also disrupted civilian terminals across Europe and stopped thousands of wind turbines in Germany. In response, to replace the strategic value of the attacked commercial satellite, Elon Musk's private companies SpaceX and Starlink satellites have attempted to maintain open information channels for Ukraine.[32]

In light of these developments, the EU must further prioritise the integration of space into its security and defence strategies. This involves not only safeguarding critical infrastructure but also promoting legal clarity and international norms that reinforce the peaceful use of Outer Space.[33] As the EU continues to develop its space capacities, it must do so with a clear legal and strategic vision – anchored in cooperation, resilience, and responsibility – to maintain space as a global common serving both regional and the broader international community's defence needs.

25 | United Nations, 1979.
26 | United Nations, 2024.
27 | Jakhu and Freeland, 2022.
28 | United Nations, 1967, Article IV.
29 | United Nations, 2024.
30 | United Nations, 1967, Article IV.
31 | European Parliament, 2023b.
32 | Ibid.
33 | European Parliament, 2023b.

2. Common foreign and security policy in EU

The economic importance of Europe positions the region among the biggest global actors; however, this also signifies a heightened responsibility to ensure not only its own peace and interests but also to encourage the continued existence and growth of its fundamental principles and prosperity worldwide.[34]

In this rapidly evolving world, security challenges have become increasingly complex, multidimensional, and interconnected, and while all European citizens rightfully expect and deserve to live in a secure and stable environment,[35] no single EU Member State can address security threats completely independently. As the current violent conflicts occur outside of the EU territory, the region's security extends beyond its borders by preventing the escalation of the conflicts.

The Treaty on European Union already established an effective 'Common Foreign and Security Policy' in 1992 as one of two additional areas of cooperation (next to Justice and Home Affairs) supporting the first pillar: the formation of European Communities.[36] The Treaty of Lisbon, which came into effect in 2009, established an institutional framework for the EU's external service by removing the three-pillar system, leading to the Common Foreign and Security Policy to promote the EU's actions and express its viewpoint on the global stage.[37]

The fifth title of the Treaty on European Union[38] contains the 'General provisions on the Union's external action and specific provisions on the common foreign and security policy', and in the first chapter, Article 21 outlines that the EU's actions are 'driven by the rule of law and universal human rights',[39] while it also describes the main goals and aims of these actions[40] (which includes securing and promoting EU values, preserving peace, preventing conflicts, strengthening international security, sustainable economic development, and fostering multilateral cooperation).[41]

The second chapter of the same Treaty establishes particular provisions about the Common Foreign and Security Policy[42] while also defining the Common Security and Defence Policy as an essential element of the previous one, which includes a common defence, military collaboration, and the External Action Service.[43] The Common Security and Defence Policy part of the Common Foreign and Security Policy has rapidly evolved in response to the current geopolitical situation. The enhanced strength and capability of the EU in security and defence is favourably affecting both global and transatlantic security.[44]

34 | European Union, 2023a.
35 | Ibid.
36 | European Union, 1992.
37 | Ministry of Foreign Affairs Spain, n.d.
38 | European Union, 1992.
39 | European Union, 1992, Chapter V, Title I, Article 21.
40 | Ibid.
41 | Federal Foreign Office Germany, 2023.
42 | European Parliament, 2023a.
43 | Ibid.
44 | European Union, 2023a.

The conclusion of the chapter is, first, that we must highlight that the 'common foreign and security policy' is rather a vague and unpredictable term, as it has been significantly influenced by contemporary foreign policy events (see, for example, how the Russian aggression against Ukraine has provided additional momentum towards establishing an EU Defence Union).[45] A significant connection exists between events beyond the EU's borders and security.[46] Second, as a global actor, Europe bears the responsibility of fostering stable conditions for human and economic development, upholding human rights, and supporting democracy and fundamental freedoms. Consequently, the primary objective and interest of the EU is to aid third-world countries in crisis situations to prevent global and trans-regional threats from destabilising effects.[47]

3. Use of space for security and defence within the EU

It is crucial to underscore that the Treaty on European Union does not impose geographical limitations on the EU's external operations. Thus, these rules extend beyond EU boundaries and include Outer Space as an area where the EU must ensure security.[48] In 2022, EU leaders declared space a strategic domain by formulating the EU Space Strategy for Security and Defence.[49] The document, titled 'Council Conclusions on the EU Space Strategy for Security and Defence'[50] highlights the fact that this strategy aligns not only with the EU's broader security and defence policies but also with the evolving international space law framework, affirming the EU's commitment to mitigating space threats through normative regulations.[51] This document encompasses multiple objectives important to our discussion.

First, the EU Space Defence Strategy aims to optimise space usage for security and defence by enhancing space domain awareness (SDA) and EO. This includes two main initiatives: leveraging Member States' capabilities for SDA and establishing new EO services linked to the Copernicus programme.[52] Here, it is worth mentioning that while the Copernicus focuses on broad EO, another separate initiative aimed at the security of the EU is IRIS² (the Union Security Connectivity Programme),[53] whose goal is to secure satellite communications for defence and security, strengthening the EU's resilience and connectivity.

Second, the strategy also promotes cooperation among EU Member States in exploring methods for coordinating the use of national assets for military objectives, including the safeguarding of assets owned by other Member States.[54]

45 | Krentz, 2024.
46 | European Union, 2023a.
47 | European Union Satellite Center, 2023.
48 | European Commission, 2022.
49 | European Space Policy Institute, 2023.
50 | Council of the European Union, 2023.
51 | European Commission, 2024.
52 | Ibid.
53 | European Commission, 2024c.
54 | European Space Policy Institute, 2023.

Finally, the strategy highlights the importance of international collaboration (outside of the EU) by establishing security dialogues with developing space-faring countries and through NATO cooperation[55] (especially given the Ukraine-Russia crisis, which has shown that, despite the importance of the space industry, several EU nations possess relatively weak space capabilities).

3.1. The EU space law

From a security standpoint, the defence strategy underscores the importance of cultivating a shared understanding of security threats.[56] A key objective of this strategy is to foster collective comprehension of space-related risks. Additionally, it aims to establish effective response mechanisms to promote a unified perception of space hazards among Member States. By developing a standardised definition of the space domain, which is currently not explicitly defined in international treaties, the EU will be in a stronger position to conduct classified assessments of the space threat landscape. This would involve utilising intelligence from Member States and clearly defining roles and responsibilities during crises,[57] thereby ensuring accountability in threat detection.[58]

This discussion also raises questions about the EU's legal competence in establishing 'Common European Space Law', particularly within the context of the Treaty on the Functioning of the European Union (TFEU). The news on the establishment of EU Space Law has gained significant attention in both academic and policy circles, and from the perspective of this study, a Common European Space Law could significantly contribute to achieving security both within the EU and globally. The EU's involvement in space law is particularly relevant considering the fundamental principles of resilience, safety, and sustainability, which have been central to debates surrounding the EU's potential regulatory role in space activities.

Article 4(3) of the TFEU establishes that space falls under the category of shared or 'parallel' competences, allowing both the European Union and its Member States to pursue activities in this domain. Specifically, in areas such as research, technological development, and space, the Union may initiate and implement programmes, provided it does not inhibit Member States from exercising their own competences.[59] This model introduces legal flexibility while preserving national sovereignty, particularly as many Member States continue to maintain independent space policies and industrial priorities. Article 189 TFEU further empowers the EU to define a common European Space Policy, implement related programmes, and adopt measures, including the establishment of a European space programme; however, it explicitly excludes any harmonisation of national laws and regulations. This 'no-harmonisation' clause ensures a decentralised legal framework, wherein Member States retain authority over national regulation. Legal scholars agree that while Article 189 provides a solid foundation for EU-led coordination, it does not enable the EU to override national legislation unless Member States explicitly agree to harmonised efforts. Consequently, while the adoption of a common EU space law could enhance cohesion, particularly in areas such as cybersecurity, space traffic

55 | European Commission, 2024.
56 | General Secretariat of the Council, 2023.
57 | European Commission, n.d.a.
58 | European Space Policy Institute, 2023.
59 | Cesari, 2024.

management, and resilience of critical space infrastructure, thus ensuring a consistent, Union-wide approach to safety, security, and sustainability in space activities,[60] its legality is questionable.

4. The Copernicus system

As previously mentioned, the EU Space Strategy emphasizes the significance of a shared EO system, highlighting its role upholding the rule of law and human rights. The EU's Copernicus programme is among the top providers of EO data, although technical limitations currently hinder users from fully benefiting from the data and services it offers.[61] This chapter therefore introduces the international legal rules connected to EO, examining the possible practical use of this technology of ensuring peace and other fundamental values.

4.1. Space law related to Earth Observation

As described in the Outer Space Treaty,[62] 'Freedom of activities' inherently includes the right to use Outer Space for EO. While EO is defined as the 'process of gathering information about the Earth's surface'[63] and refers to the use of remote sensing technologies to monitor land and the atmosphere, the images must be processed and analysed to extract different types of information that can serve a very wide range of applications and industries.[64] However, one aspect of EO, namely 'remote sensing,' has its own non-binding international space law principles,[65] which were declared in Principle is the Resolution Adopted by the General Assembly 41/65. (Principles Relating to Remote Sensing of the Earth from Outer Space).

Principle I(a) of this document describes remote sensing as 'sensing of the Earth's surface from space by making use of the properties of electromagnetic waves emitted, reflected, or diffracted by the sensed objects, to improve natural resources management, land use and the protection of the environment', and while 'all remote sensing is a form of EO, not all EO is remote sensing'.[66]

The use of remote sensing data is somewhat limited by the 'peaceful purposes' principle of the Outer Space Treaty,[67] and by the remote sensing principles only allowing 'the purpose of improving natural resources management, land use and the protection of the environment',[68] while it must also adhere to the principle of full and permanent sovereignty of all states and peoples over their wealth and natural resources,[69] ensuring that it does not infringe upon the legitimate rights and interests of the sensed state, and

60 | European Parliament, 2025.
61 | European Commission, 2016.
62 | von der Dunk, 2013, p. 244.
63 | EUSPA, 2024.
64 | European Commission, 2022.
65 | Cho, 2013, p. 265.
66 | New Space Economy, 2023.
67 | von der Dunk, 2013, p. 254.
68 | United Nations General Assembly, 1986, Principle I(a).
69 | United Nations General Assembly, 1986, Principle IV.

'shall not be conducted in a manner detrimental to the legitimate rights and interests of the sensed State'.[70]

4.2. Application of Earth Observation for security purposes

By leveraging information from sources such as remote sensing, EO data plays a pivotal role in the prevention of both man-made and natural disasters. With the development of space technology, EO, and remote sensing data have been unavoidable instruments in documenting the most significant crimes against humanity (it has been used in trials in front of the ICC about the burning of ethnic Rohingya villages in Burma).[71] Therefore, data derived from EO are a critical instrument for bolstering international, domestic, and regional security. At the international level, the principles of remote sensing underscore these points; specifically, Principles X[72] and XI[73] of the Remote Sensing Resolution document emphasizes that remote sensing should aid in the preservation of Earth's natural environment and prevent harmful activities by providing pertinent information to concerned states. Consequently, satellite data provide a significant contribution to various fields of ensuring the rule of law:

By uncovering the truth about violations and facilitating justice,[74] satellite data provide accountability for alleged criminal activities. (The active arrest warrant for Vladimir Putin issued by the International Criminal Court exemplifies how satellite imagery and data regarding Russian military atrocities may serve as crucial evidence[75] to establish 'reasonable grounds' for demonstrating Putin's individual criminal responsibility.)[76]

By implementing early warning systems, the prevention of crimes would be possible using evacuation strategies and by developing logistics networks that consider regional risks.[77]

In summary, the data derived from remote sensing are important for quick and efficient disaster prevention and response, mitigation, and rehabilitation activities, and are all instrumental in ensuring the rule of law and protection of human rights through space technology.

4.3. Establishment and governance of Copernicus

In 1998, The EU[78] already launched a Global Monitoring for Environment and Security (GMES) initiative to provide 'timely and high-quality data and information' and establish 'operational, independent[79] and autonomous European capability for the global monitoring of environmental and security parameters'.[80]

70 | von der Dunk, 2013, p. 254.
71 | Hurova, 2022, p. 15.
72 | United Nations General Assembly, 1986, Principle X.
73 | United Nations General Assembly, 1986, Principle IX.
74 | Hurova, 2022, p. 18.
75 | Hurova, 2022, p. 15.
76 | International Criminal Court, 2023.
77 | Hurova, 2022, p. 18.
78 | von der Dunk, 2009.
79 | European Space Agency, n.d.
80 | European Union, 2003.

In 2021, the 'EU space program (2021–2027) – European Union Agency for the Space Programme'[81] came into force. It encompasses the establishment of several space flagship initiatives (Galileo, EGNOS, Copernicus).[82]

The Copernicus serves as the EO component of the EU's Space Programme,[83] and it is intended to provide essential information services to persons and organisations both inside and outside the EU.[84]

The governance of the Copernicus programme involves a coordinated effort between the European Commission (EC), the European Union Agency for the Space Programme (EUSPA), and the European Space Agency (ESA).

The EC plays a central role in defining and implementing EU space policies, managing the budget, and ensuring that Copernicus aligns with EU priorities such as sustainability and security.[85] Meanwhile, the Copernicus programme is also financed, supervised, and overseen by the EC in partnership with organisations such as ESA and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT).[86]

On the other hand, EUSPA is responsible for the operational management of Copernicus, overseeing its day-to-day activities, coordinating with EU Member States, and ensuring that the programme meets user requirements, particularly in areas such as security and environmental monitoring.[87]

Finally, ESA contributes to Copernicus by developing and deploying the space infrastructure, including the design, procurement, and launch of satellites.[88] While EUSPA manages operations, ESA ensures the technical success and continuity of the programme. Together, these institutions collaborate to ensure that Copernicus provides valuable data and services to meet the EU's strategic goals, balancing policy, technical infrastructure, and operational delivery.[89]

Copernicus provides services that combine satellite EO data with in-situ (non-space) data.[90] The EO component is provided by specialised satellites (the Sentinel families) and contributing missions (currently, commercial and public satellites). This Space component, supervised by ESA, provides customers with satellite data from the Sentinels, thereby supporting missions at the European, national, and international levels.[91] The in-situ component emphasises identifying data access shortcomings, coordinating collaborations with data sources to improve access, and developing innovative solutions with service providers or national authorities.[92]

Overall, the high quality and relevance of the data produced by Copernicus have transformed the EO industry. Its free and open data policy is fundamental to the programme, aiming to make EO-based solutions accessible to all, leveraging these data to

81 | Regulation (EU) 2021/696, 2021.
82 | European Space Legislation, n.d.
83 | European Commission, n.d.a.
84 | European Commission, n.d.b.
85 | Orešković and Grgić, 2021.
86 | European Commission, n.d.a.
87 | Institutional Organization of the European Space Program, 2022.
88 | Citaristi, 2022.
89 | Miglio et al., 2024.
90 | European Commission, n.d.a.
91 | European Commission, n.d.a.
92 | Ibid.

drive positive change and preserve our planet.[93] The majority of the information services, along with the derived data, are freely accessible to the public and utilised by service providers and public authorities, which enhances the quality of life for citizens in Europe and globally.[94]

However, the primary users of Copernicus services are policymakers and public authorities who require this information to develop environmental legislation and policies or to make critical decisions during emergencies, such as natural disasters or humanitarian crises.[95]

4.4. Application areas of Copernicus in SESA actions

In May 2017, the Copernicus in Support of EU External and Security Actions (SESA).[96] became active, functioning as a European geointelligence service to assist the EU and its Member States in actions beyond EU boundaries.[97] This service provides decision-makers with geospatial information on hard to reach areas with substantial security concerns,[98] and it can be activated for operations both within and beyond EU territory, thereby enhancing European capabilities in crisis prevention, preparedness, and response.[99]

As stated earlier, the EU's action on the international scene shall be guided by principles (democracy, the rule of law, the universality and indivisibility of human rights, etc.) that have inspired its own creation, development, and enlargement, and which it seeks to promote globally.[100] The Treaty on European Union, specifically Article 21(2),[101] defines the objectives of 'Common Policies and Actions,' which I intend to use as a structure for connecting the services offered by Copernicus with the overarching aim of security and external activities.

In accordance with Article 21(2a), the Union shall 'safeguard its values, fundamental interests, security, independence, and integrity'. By ensuring the Security of EU Citizens,[102] Copernicus is able to recognise unconventional threats and contribute to situational awareness, practically by developing emergency plans for 'managing sudden, unforeseen situations'.[103]

Based on Article 21(2b), common policies must 'consolidate and support democracy, the rule of law, human rights and the principles of international law'. The EU has consistently supported the promotion of the rule of law,[104] within its geographical borders, however, in accordance with the aforementioned article, the EU must establish an international perspective as well to reflect these core foundational values globally. The Copernicus programme could facilitate this by applying 'geoinformation products'[105] for

93 | European Commission, n.d.b.
94 | Krentz, 2024.
95 | European Commission, n.d.a.
96 | Copernicus, 2024a.
97 | European Commission, n.d.a.
98 | Ibid.
99 | Copernicus, 2024f.
100 | Copernicus, 2024e.
101 | European Union, 1992, Article 21(2).
102 | Copernicus, 2024f.
103 | Ibid.
104 | Copernicus, 2024e.
105 | Copernicus, 2024e.

analysing human activities through the monitoring of possibly illicit acts across many contexts (e.g. mapping piracy camps, detecting potential smuggling routes, etc.)[106] and providing evidence in criminal proceedings. Nonetheless, the establishment of the rule of law may also be achieved through post-crisis rehabilitation, reconstruction, and peacebuilding measures, where geospatial information could be vital.[107]

Regarding crisis and conflict management,[108] Article 21(2c) emphasises the need to 'preserve peace, prevent conflicts and strengthen international security'. This objective is intrinsically linked to the principles of adhering to the rule of law, as it stems from the necessity for the EU to be actively involved in peacebuilding and peacekeeping initiatives. It is imperative to acknowledge that conflicts typically appear locally, often with geopolitical implications, necessitating a thorough comprehension of the fundamental causes of the circumstances.[109]

In terms of humanitarian aid,[110] Article 21(2d) stipulates that our region must 'foster the sustainable economic, social and environmental development of developing countries, with the primary aim of eradicating poverty'. Consequently, the EU also aids partner countries in becoming more resilient to contemporary global challenges by adhering to international humanitarian principles (e.g. 'supporting interventions: food, shelter, healthcare, etc.').[111]

Article 21(2e) highlights the need to 'encourage the integration of all countries into the world economy, including through the progressive abolition of restrictions on international trade'. Copernicus analysis and mapping are fundamental in ensuring transport safety and security[112] and international trade and economic diplomacy[113] by preventing accidents. International trade significantly influences political power, through satellite data, enabling the estimation and monitoring of commercial information, which is essential for national leaders.[114]

Article 21(2f) emphasises the importance of 'helping develop international measures to preserve and improve the quality of the environment and the sustainable management of global natural resources, in order to ensure sustainable development'. The EU uses legislation and policies to foster good governance and human and economic development through stability and resilience for development and climate security,[115] and Copernicus can facilitate efficient mechanisms for planning and monitoring the implementation of development initiatives, supporting informed decision-making and policy execution.[116] While climate change functions as a trigger for threats and instabilities, significantly impacting global peace and security as it could result in climate-induced migration and resource competition, Copernicus could foresee and detect emerging growing natural

106 | Copernicus, 2024e.
107 | Ibid.
108 | Ibid.
109 | Ibid.
110 | Copernicus, 2024d.
111 | Ibid.
112 | Copernicus, 2024h.
113 | Copernicus, 2024i.
114 | Ibid.
115 | Copernicus, 2024g.
116 | Ibid.

resource exploitation through monitoring.[117] It is also important to note that, as mentioned earlier, the EU space law also aims to implement sustainability measures by developing a life cycle assessment tool and standards, applicable to all space assets operating within the EU, to minimise the environmental impact of space activities on Earth; therefore the importance of the Act regarding this topic is also growing.

Based on Article 21(2g), the EU exists to 'assist populations, countries and regions confronting natural or man-made disasters'. Due to our dependence on nature, the environment's cross-border nature, and significant value emphasise fighting against environmental crime as an important effort at the EU level, and the utilisation of EO data could help in environmental compliance[118] and health and security[119] issues (e.g. 'monitoring waste facilities and identifying potentially illicit waste sites' or in connection with man-made disasters such as the COVID-19 pandemic).[120]

In conclusion, the Copernicus programme aligns with the EU's strategic objectives by enhancing security, supporting the rule of law, promoting peace, and facilitating sustainable development and disaster management and the goals of the international community as outlined in UN conventions.

To practically prove that the Copernicus or EO satellites have the potential to influence SESA actions, it is useful to bring up the Ukraine case. The aggression against Ukraine highlights this reality. Despite Ukraine's existing space sector and six operational EO satellites before the war, the aggression exposed the inadequacy of its space sector to safeguard national security independently. The European Space Agency guarantees Ukraine full, free, and open access to data from European Sentinel EO satellites[121]; however, since these efforts are insufficient, the EU Agency for Space Programme launched the EUSpace4Ukraine initiative,[122] allowing the utilisation of freely accessible data from Galileo and Copernicus to bolster humanitarian support for Ukraine.[123]

This situation underscores the necessity of all EU Member States to engage with and rely on Outer Space for their security, while it aligns with the Outer Space Treaty's principle that space activities should benefit all people[124] and reflects the spirit of Principle VIII, which advocates international cooperation. It also demonstrates how Copernicus actively contributes to the security of EU citizens, supports the rule of law, and promotes stability, health, and security. Additionally, this example underscores the necessity of integrating Copernicus into the EU's external and security strategies themselves, emphasising the need for a comprehensive space infrastructure to achieve these goals.

117 | Copernicus, 2024b.
118 | Copernicus, 2024b.
119 | Copernicus, 2024c.
120 | Copernicus, 2024b.
121 | Hurova, 2022, p. 21.
122 | Hurova, 2022, p. 23.
123 | Ibid.
124 | United Nations, 1967, Article I.

5. Conclusion

While this paper provides a brief overview of the issues surrounding EO and the responsibilities of Copernicus, it notably emphasises that this technology can and should be actively utilised. The interdependence in the EU is even stronger, as Member States, despite advancing their national security measures, must foster closer cooperation to uphold peace, security, freedoms, and the rule of law.[125]

Although the EU has demonstrated its capability to develop and deploy advanced EO systems, the extent of national involvement by Member States varies depending on their national legislations and choice of collaboration through the EU, ESA, or more traditional intergovernmental arrangements. This discussion, therefore, remains predominantly theoretical, as the practical implementation of the Copernicus programme within EU institutions and Member States has yet to materialise. However, this landscape is likely to change soon, with the introduction of the Common EU Space Law.

Nevertheless, Outer Space technology is crucial for upholding the rule of law, promoting human rights, and safeguarding national security. Employing such technology is both a legal duty and a shared responsibility. Its application should not be confined to the EU but extended to the entire international community.

To achieve the final objective, greater emphasis should be placed on the practical application of space technologies, particularly by exploring their integration into various national legal fields, such as environmental protection or criminal justice. However, as previously discussed, the diversity of national legal systems presents challenges to unified implementation. In this context too, the EU space law could play a pivotal role by offering a cohesive framework to protect space systems against systemic security threats, particularly amid current geopolitical instability.[126] A harmonised approach under EU law could facilitate the consistent use of the Copernicus system, which represents a remarkable achievement for Member States – yet one that must be safeguarded through clear legal protections and coordinated governance.

If successfully implemented, the EU could set a powerful global example by showing that, despite possessing the world's most advanced EO system, it is committed to making this resource freely available to all nations. Rather than using it solely for regional interests or commercial gain, the EU would demonstrate that such technology serves higher objectives – promoting human rights, strengthening the rule of law, and enhancing global security. This would reinforce the principle that space-based technologies can support the collective advancement of humanity.

125 | Novokmet, 2022.
126 | Desmarais, 2024.

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